EFFICIENCY
RELIABILITY
SUSTAINABILITY
PARTNERSHIP

BOILTE®
engineered trust



PRODUCT CATALOG

https://boilte.com

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BOILTE

| OUR HISTORY

Boilte was founded by a group of experts with backgrounds at leading European boiler equipment manufacturers. Joining forces, we carried out a large-scale industry audit, analyzing hundreds of typical failures and design weaknesses found in equipment from different brands.

The result did not satisfy us. The market had grown accustomed to compromises: price was reduced at the expense of service life, reliability was sacrificed for lower cost, and the customer was left alone with problems after a short warranty expired.

We decided to break this vicious cycle. Our goal is not a race for the lowest price, but the creation of an engineering standard in which safety margin, material quality and manufacturer responsibility are unconditional priorities.

| OUR MISSION

We were not created simply to manufacture boilers. We were created to change the perception of what reliable industrial equipment should be. Boilte brings together leading engineers, designers and technologists whose mission is to make thermal power engineering predictable, durable and truly efficient for decades to come.

| OUR PHILOSOPHY

We do not reject time-proven design solutions. We take the best of classical engineering practice and recalculate every assembly in accordance with Boilte's more stringent internal standards.

What this means in practice:

Reinforced critical components. Heat exchangers made from thicker steels with a safety margin 20-30% above industry norms.

| OUR PHILOSOPHY (CONTINUED)

Eliminating systemic weak points. We know exactly which components fail most often in competing equipment and eliminate these risks at the design stage.

Global adaptability. Every Boilte boiler is designed to comply simultaneously with ASME, PED, EN, GOST and TUV standards. You receive equipment ready for commissioning anywhere in the world.

| OUR TEAM

Behind every Boilte boiler are real people: design engineers who calculate every component, technologists who develop optimum processing regimes, highly qualified welders whose welds undergo the strictest inspections, assemblers, inspectors, logistics specialists and managers.

We are proud of our team. These are professionals for whom work quality is a matter of personal reputation. Many came to Boilte from leading industry companies, bringing unique experience and knowledge with them.

| OUR MAIN PROMISE

We are the only company in the market to provide a lifetime warranty on the boiler heat exchanger and primary load-bearing elements for every model without exception.

This is not a marketing gimmick. It is a direct result of our engineering philosophy. When every component is calculated with an excess safety margin, every weld undergoes multi-stage inspection (ultrasonic and radiographic), and materials are selected with reserve capacity, we simply have no doubts about our product.

Your investment is protected for the entire service life of the equipment. You are not just buying a boiler - you are buying confidence.

BOILTE STANDARDS

| OUR QUALITY SYSTEM

Boilte's quality management system, certified to the international ISO 9001 standard, is not a set of documents sitting on a shelf. It is a living, continuously operating mechanism that provides systematic control and continuous improvement in every aspect of our work.

We did not implement this system merely for compliance. We use it as a tool that guarantees the highest level of reliability, predictability and responsibility to every customer.

| OUR KEY OBJECTIVES

Leadership through quality: We continuously develop and tighten our internal standards. Our goal is for Boilte products to set a new level in the global industrial thermal-engineering market, not merely meet minimum requirements.

Culture of responsibility: Quality starts with people. We build a strong corporate culture based on shared values, loyalty and the involvement of every employee. At Boilte, everyone is responsible for quality - from the design engineer to the CEO.

Integrity and reliability as the foundation: We build transparent and fair relationships with both customers and employees. No hidden terms, no double accounting, no promises we cannot keep. Only integrity and reliability.

100% customer satisfaction: Our goal is to supply flawless products with enhanced performance. We strive for every Boilte customer to become our partner for decades, rather than make a one-time purchase.

| OUR KEY OBJECTIVES (CONTINUED)

Supply-chain development: We deliberately raise the quality and technical level of all our supplier partners. Through training programs, audits and direct technical support, we strengthen the entire Boilte ecosystem. The quality of our final product begins with the quality of the materials and components we receive.

Innovation for the environment and efficiency: We strengthen the Boilte brand by creating products that do more than simply operate: they make a real contribution to environmental balance, environmental protection and energy efficiency. Advanced design solutions and high manufacturing quality are our response to global challenges.

Solution-oriented service: We guarantee a prompt response to every customer request, following a customer-focused approach. For us, every call or email is not a problem but a task to be solved quickly and effectively.

Control and prevention: We systematically track feedback on our products and services. But our goal is not simply to react to situations that have already occurred. We analyze data, identify trends and implement preventive actions to eliminate problems before they arise.

| QUALITY = WARRANTY

Our quality management system is the foundation supporting our main promise: a lifetime warranty on the boiler's primary components.

We cannot offer such a warranty unless we are confident in every stage of production. Boilte's quality management system is not a formality, but a working tool. That is why we continually tighten standards, develop suppliers and learn from feedback.

A lifetime warranty is not a marketing claim. It is the result of a system that does not allow compromises to enter our product.

BOILTE WORLDWIDE

| WHEREVER WE ARE NEEDED

Where reliable heat or steam is required, Boilte boilers appear. This reflects our approach: responsible, professional and uncompromising.

We are represented in different countries around the world. Our offices operate across different time zones and continents, providing prompt communication and support wherever needed.

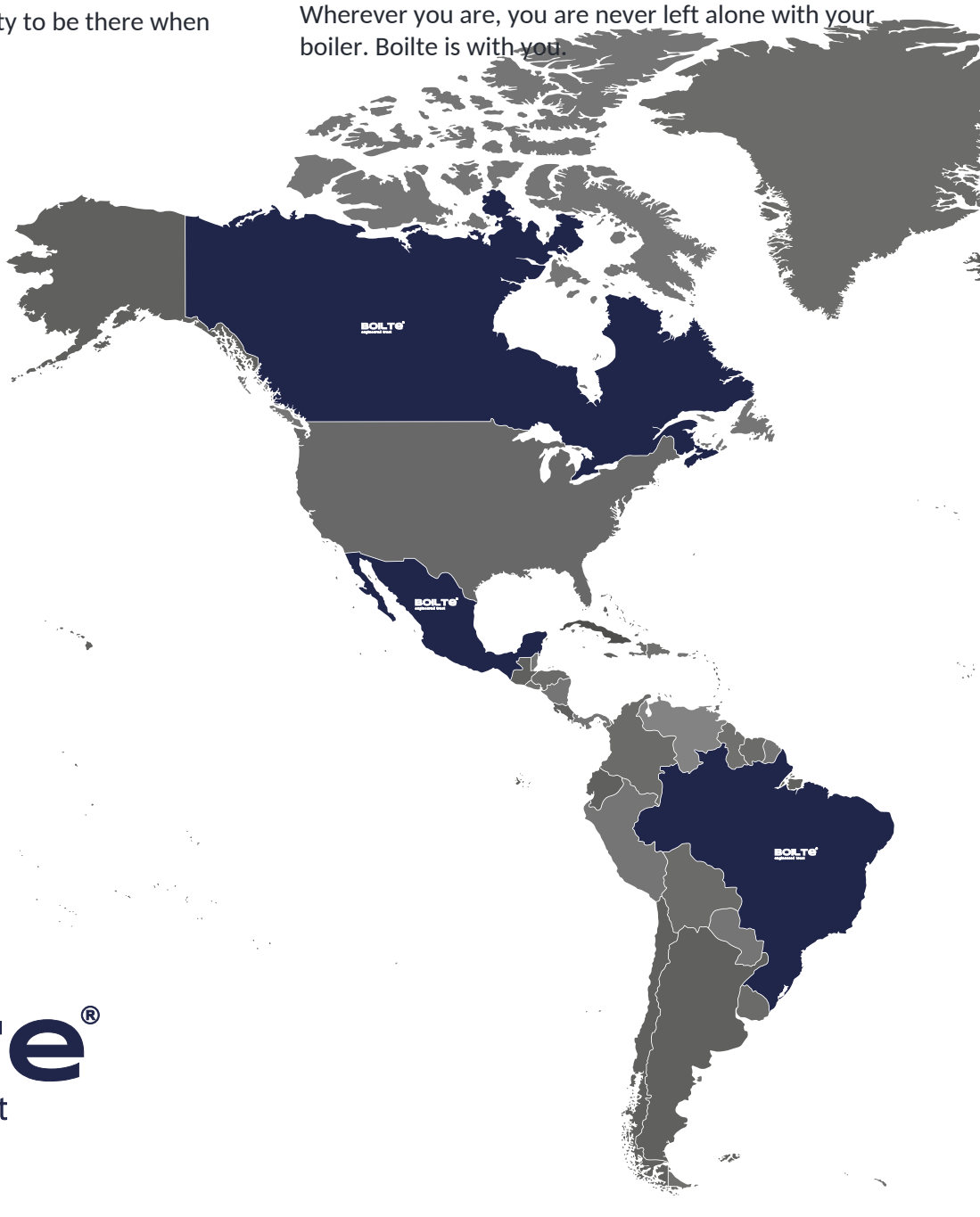
For Boilte, global presence is not about the number of flags on a map. It is the ability to be there when you need help.

| WHEREVER WE ARE NEEDED (CONTINUED)

What you receive:

- A dedicated engineer for your project, available 24/7.
- Service centers in key regions.
- Spare-parts stock for rapid delivery.
- Remote diagnostics with on-site specialist support when required.

Wherever you are, you are never left alone with your boiler. Boilte is with you.



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| WE CONNECT THE WORLD

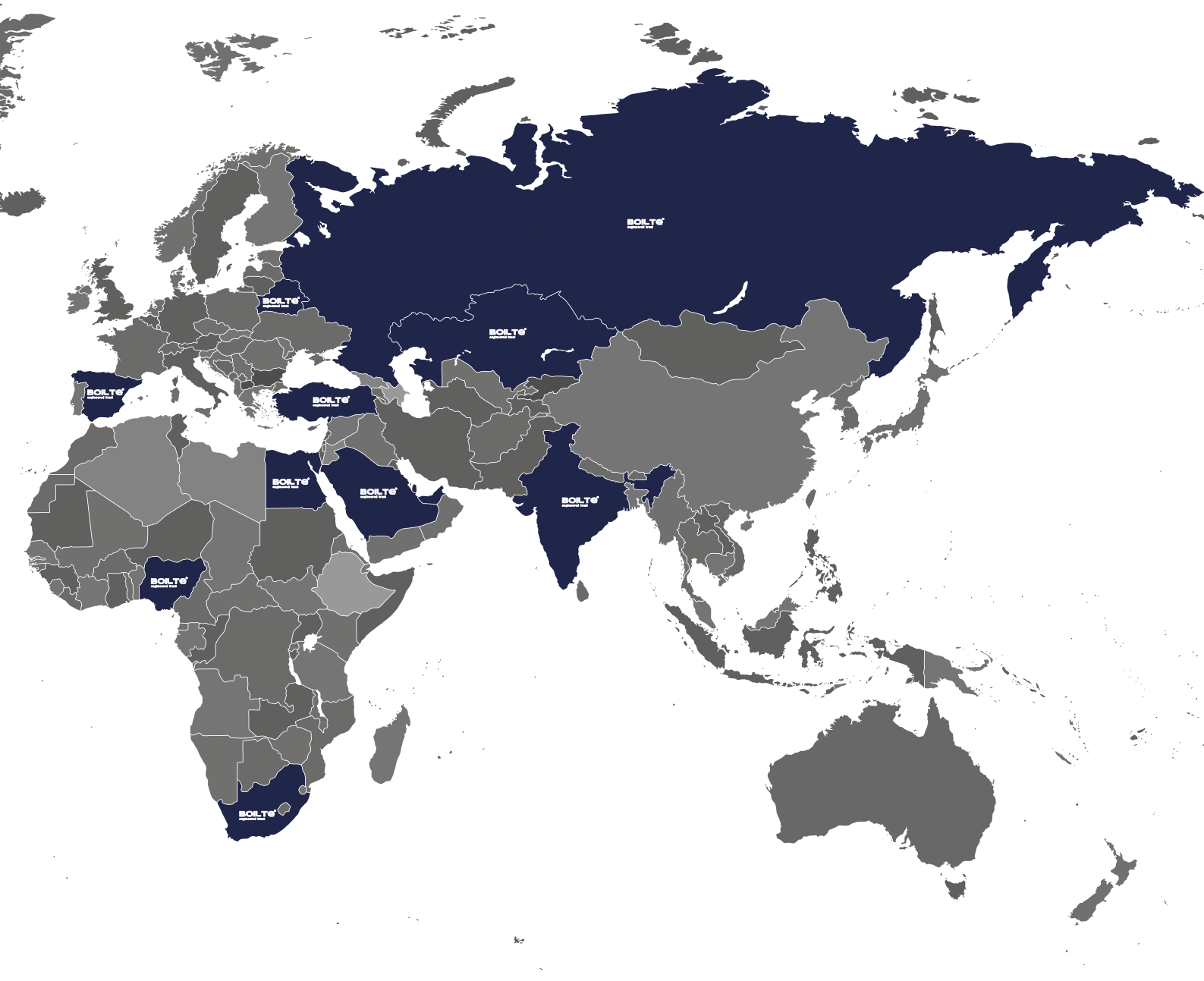
We believe reliability has no borders. Wherever engineering precision and uncompromising quality are required, there will always be a place for Boilte.

We do not simply sell boilers. We build long-term partnerships with customers around the world. We share expertise, train local personnel and adapt solutions to local conditions. Most importantly, we accept responsibility backed by a lifetime warranty.

| WHERE WE ARE HEADING

Boilte never stands still. We continually expand our geographic presence, develop our product range and invest in technology. Our goal is to make reliable heat available anywhere in the world while maintaining one consistent standard of quality and service.

We openly share our plans because we believe transparency strengthens trust. This is where Boilte is heading in the coming years.



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STEAM BOILERS

| RELIABLE STEAM FOR YOUR PROCESS

Boilte manufactures a broad range of steam boilers designed to provide industrial facilities with reliable and efficient steam. Our equipment combines time-proven design solutions with modern engineering calculations, ensuring durability and stable operation under any conditions.

Supply your process line, heating system or production cycle with stable, high-quality steam. Boilte industrial steam boilers and steam generators are the energy core for food, chemical and pharmaceutical plants, light and heavy industry, utilities and many other sectors. We offer a broad product range with steam capacities from 100 to 220000 kg/h, able to cover any requirement - from a small laundry complex to a major industrial facility.

| MAIN TYPES OF BOILTE STEAM BOILERS

Fire-tube boilers - a classic solution with smoke tubes, providing high reliability and easy maintenance.

Water-tube boilers - a design with water circulating inside the tubes, ideal for high pressures and high capacities.

Depending on heat-transfer efficiency requirements, we offer boilers with two and three flue-gas passes, allowing efficiency to be optimized and fuel consumption reduced.

| TECHNOLOGIES FOR EVERY APPLICATION

Under one brand, Boilte combines several steam-generation engineering schools, enabling the optimum solution to be selected for specific process requirements:

Pillar series - vertical steam boilers with capacities of 100-500 kg/h. Used in light industry, food production, laundries and agriculture.

| TECHNOLOGIES FOR EVERY APPLICATION (CONTINUED)

Tor series - low-pressure boilers with capacities of 100-3,000 kg/h. Ideal for facilities where simplified commissioning without registration with Rostechnadzor is important.

Hero series - high-pressure boilers with capacities of 300-5,000 kg/h. Intended for processing, petrochemical and woodworking industries.

Tripass series - industrial three-pass boilers with capacities of 1,000-16,000 kg/h. Used in heavy industry, metallurgy, pulp and paper production, and power generation.

Rapid series - once-through steam boilers with capacities of 120-8,000 kg/h. In demand in chemical and pharmaceutical industries and laboratory complexes (start-up from 90 seconds).

Pulse series - vertical coil-type steam generators with capacities of 120-8,000 kg/h. Ideal for food and pharmaceutical industries where steam purity and rapid start-up are important.

| KEY FEATURES AND ADVANTAGES

Wide capacity range

From compact 100 kg/h solutions for local needs to powerful 220000 kg/h units for large plants. The broad selection makes it possible to match equipment precisely without paying for excess capacity.

Fuel flexibility

Operation on natural gas, LPG, diesel fuel and fuel oil. Dual-fuel burners can be fitted for rapid switching between energy sources.

High efficiency and economy

Modern designs (fire-tube, water-tube and coil-type configurations) and an intelligent control system optimize fuel consumption and reduce operating costs. Efficiency reaches 95% depending on the model and operating mode.

Full factory readiness

Boilers are supplied in maximum configuration: integrated automation, valves, pumps and control cabinet. Ready-to-connect design reduces commissioning time to just a few days.

Standards compliance

The equipment has all required certificates (GOST, TR CU and Rostechnadzor permits) for legal use in the Russian Federation and EAEU. The Tor series is additionally exempt from mandatory registration due to operation at pressures up to 0.7 bar.

| QUALITY CONTROL AND RELIABILITY

Every Boilte boiler passes a multi-stage quality-control system: Incoming inspection of metal and components.

- Robotic welding with non-destructive weld testing (UT, radiography).
- Hydrostatic pressure testing at 1.5 times the working pressure.
- Functional bench tests of automation and operating parameters.

| LIFETIME WARRANTY AND DURABILITY

We are so confident in the quality of our materials and the accuracy of our engineering calculations that we provide a lifetime warranty on the main steam-boiler heat exchanger - the key component operating under maximum load. This is our responsibility to you and confirmation of Boilte's highest reliability standard.

The design service life of Boilte steam boilers and steam generators, subject to prescribed maintenance, is more than 15 years.

PILLAR



Parameter	Value
Capacity	≤ 500 kg/h
Pressure	≤ 8 bar
Temperature	≤ 165 °C
Efficiency	> 90.0%

| DESCRIPTION

Vertical steam boilers of the Pillar series are a ready-to-use solution for light industry, food processing, laundries and agricultural facilities. Steam capacity: 100 to 500 kg/h. Working pressure: 5-6 and 8 bar. Service life: more than 15 years.

| SCOPE OF SUPPLY

The boilers can be supplied as fully assembled modules, minimizing commissioning time and costs. The standard scope of supply includes:

- **Core components:** vertical boiler-steel shell, supporting frame, sight tube and lifting points.

  Safety and control: safety valve, water-level safety probes, pressure control switches, main steam valve and check valve, pressure gauge, water-level sight glass.

  Feedwater and control systems: electric feedwater pump, Boilte Control panel, burner mounting plate.

  Auxiliary equipment: water filter, condensate drain connection, flue, data sheet and operating manual in Russian.

| DESIGN FEATURES

Vertical arrangement: occupies 40-50% less floor space than horizontal counterparts and provides intensive heat transfer within a compact footprint.

| DESIGN FEATURES (CONTINUED)

Furnace with vertical convection tube bank: made of heat-resistant steel using automatic welding in a shielding-gas environment.

Vertical turbulators: create controlled turbulence in the flue-gas flow, increasing contact time with the heating surface and improving efficiency.

| QUALITY CONTROL

- **Incoming material inspection:** verification of chemical composition and mechanical properties.

  Manufacturing: micron-precision laser cutting; robotic welding; ultrasonic testing (UT) or radiographic testing (RT) of welds.

- **Assembly:** hydrostatic pressure test at 1.5 times the working pressure.

  Final inspection: verification of geometry, assembly, manways and connections; issue of the factory test certificate.

| ADVANTAGES

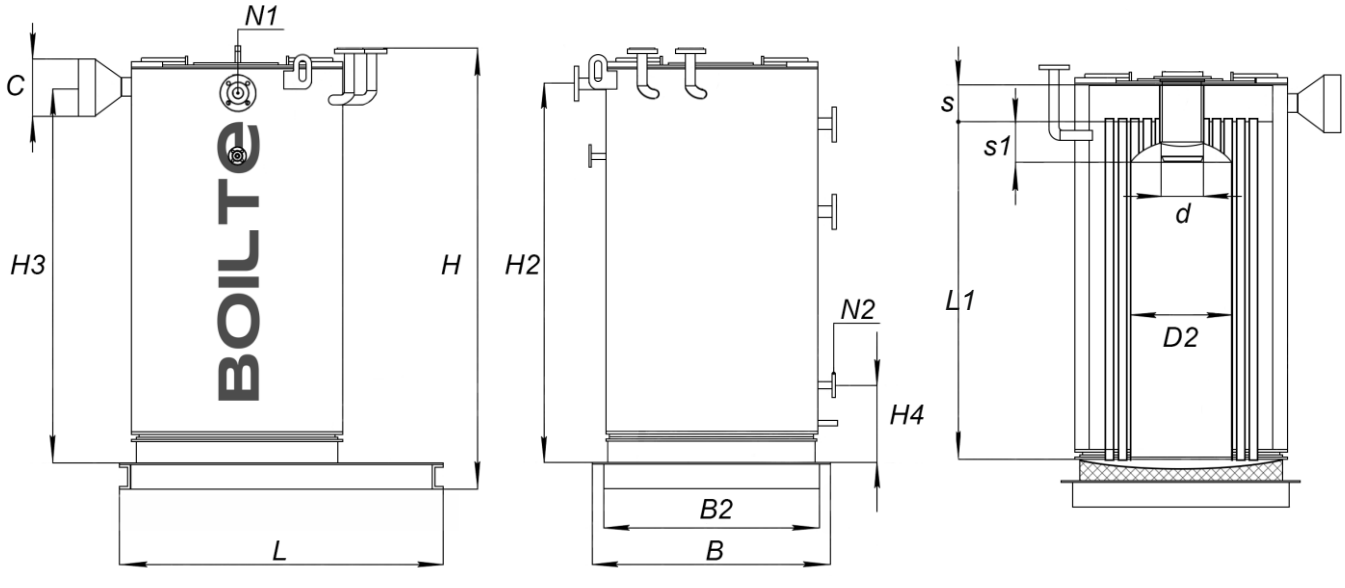
1. Compact footprint and space savings
2. Rapid start-up and high efficiency
3. Reliability and long service life
4. Full factory readiness
5. Intelligent control

TECHNICAL DATA

Model Pillar	Power, kW	Steam output, kg/h	Efficiency, %	Pressure, bar	Steam outlet temperature, °C	Boiler resistance, mbar	Steam space volume, L	Boiler water volume, L	Flue-gas flow, m³/h	Dry boiler mass, t
100	77	100	92,1	6	161	1,1	83	380	90	630
150	115	150	92,4	6	161	1,8	95	440	134	740
200	155	200	91,8	6	161	2,5	111	480	180	860
300	233	300	92,1	6	161	2,9	133	550	271	980
400	332	400	92,3	6	161	1,6	141	620	386	1201
500	389	500	92,1	6	161	1,9	163	691	451	1310

OVERALL DIMENSIONS

Model Pillar	H, mm	H2, mm	H3, mm	H4, mm	L, mm	B, mm	B2, mm	C, mm	N1, DN	N2, DN
100	1650	1480	1480	200	1100	900	630	200	25	20
150	1750	1520	1510	200	1200	1000	700	200	25	25
200	1850	1590	1510	250	1200	1000	700	250	25	32
300	1950	1660	1660	300	1400	1200	900	250	25	32
400	2002	1740	1740	350	1500	1400	1100	300	25	50
500	2280	1860	1860	350	1500	1400	1100	300	25	50



BURNER SELECTION DIMENSIONS

Model	Burner opening diameter d, mm	Front cover thickness s, mm	Burner mounting dimension s1, mm	Furnace tube diameter D2, mm	Furnace tube length L1, mm	Reversal chamber length L2, mm
100	140	200	20–60	410	650	—
150	140	200	20–60	410	720	—
200	160	250	20–60	410	835	—
300	160	250	20–60	410	1200	—
400	210	300	20–60	514	1300	—
500	250	300	20–60	514	1400	—

TOR



Parameter	Value
Capacity	≤ 3000 kg/h
Pressure	≤ 0.7 bar
Temperature	≤ 115 °C
Efficiency	> 91.0%

| DESCRIPTION

Boilte Tor low-pressure steam boilers combine technical reliability with regulatory simplicity. The equipment operates at gauge pressure up to 0.7 bar and falls into a non-supervised category, substantially simplifying installation and commissioning without lengthy approvals from Rostechnadzor. Steam capacity is up to 3 tonnes per hour. A high steam dryness fraction (close to 1.0) ensures efficient process operation. Service life is more than 20 years.

| SCOPE OF SUPPLY

Main shell and heat-transfer system

- Modular thermally insulated casing - high-density mineral-wool insulation with steel panels.
- Combustion chamber - made of heat-resistant steel.
- Second-pass fire tubes - additional heat recovery.

  Smoke box - sealed assembly for collecting and discharging combustion products, with access for cleaning.
- Steam collector - separation and collection of saturated steam.

Functional valves, instrumentation and safety systems

- Safety valve - automatic pressure relief.

| SCOPE OF SUPPLY (CONTINUED)

- Shut-off and control valves - steam valve, check valve and drain valves.
- Instrumentation - pressure gauges, temperature sensor, emergency level sensor and sight tube.
- Feedwater pump - automatic water supply.

Installation, access and control assemblies

- Front door - access to the combustion chamber; opens to either side.
- Removable rear flue-gas chamber - quick access to gas passages for inspection and cleaning.

  Electrical control cabinet - controller, operator panel, automatic start, operation, shutdown and multi-level protection.
- Data sheet and operating manual, equipment certificates.

| DESIGN FEATURES

- Fire-tube technology - an advanced design for low-pressure operation with maximum efficiency.

  Gas-tight casing - pressurized burner operation for complete and controlled combustion of gas or diesel fuel.

  Shell material - 09G2S boiler steel (high strength, impact toughness, corrosion resistance and excellent weldability).
- Thermal insulation - reduced heat loss and improved personnel safety.

| QUALITY CONTROL

Multi-level production quality-control system:

- Incoming inspection of raw materials and components.
- In-process inspection of geometry and welded joints.

  Final tests - hydrostatic and functional tests simulating real operating conditions. Verification of tightness, automation and safety systems.

| ADVANTAGES

Non-supervised status (legal freedom from unnecessary regulation)

- No mandatory registration with Rostechnadzor.

  Savings on permitting documentation, annual expert examinations and hazardous-facility insurance.
- Commissioning within several days after installation.

Fundamental reliability and durability

- 09G2S steel shell, resistant to corrosion and cyclic thermal loads.
- Design service life - decades.
- Automatic welding of all joints, ensuring leak-tightness.

Preventive safety and intelligent control

- Continuous flue-gas temperature monitoring system.
- Timely detection of combustion irregularities.
- Automatic burner shutdown in the event of deviations.

Engineering ergonomics for easy maintenance

- Front door can open to the left or right, allowing installation in confined spaces.
- Removable rear flue-gas chamber - rapid cleaning of gas passages without dismantling assemblies.
- Minimum maintenance downtime

TECHNICAL DATA

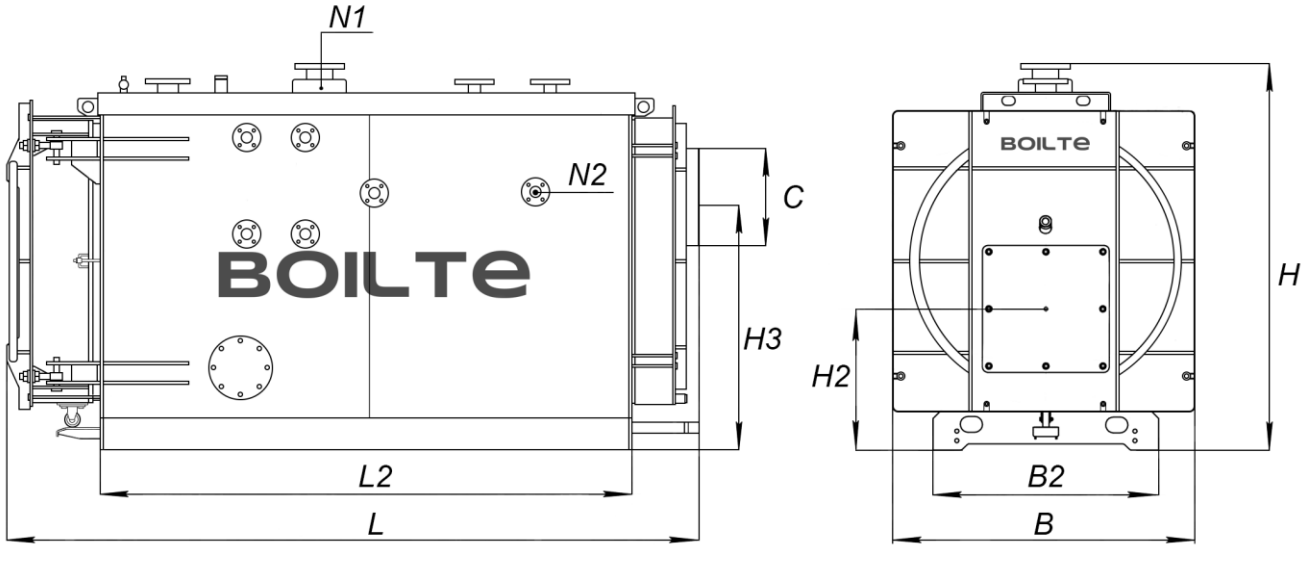
Model for	Power, kW	Steam output, kg/h	Efficiency, %	Pressure, bar	Steam outlet temperature, °C	Boiler resistance, mbar	Steam space volume, L	Boiler water volume, L	Flue-gas flow, m³/h	Dry boiler mass, kg
300	210	300	91,3	0,7	115	3,5	133	246	278	510
400	280	400	91,3	0,7	115	1,1	153	306	435	680
500	350	500	91,7	0,7	115	4,6	166	333	465	730
600	420	600	91,7	0,7	115	5,6	179	358	532	760
800	600	800	91,2	0,7	115	6,9	443	886	798	1220
1000	700	1000	90,2	0,7	115	5,7	493	986	931	1360
1250	905	1250	92,1	0,7	115	5,1	543	1086	1197	1560
1500	1100	1500	92,2	0,7	115	4	633	1266	1452	1780
1750	1300	1750	91,3	0,7	115	6,3	733	1466	1718	1970
2000	1400	2000	91,3	0,7	115	7,6	763	1496	1875	2040
2250	1600	2250	91,3	0,7	115	6	810	1620	2129	2380
2500	1800	2500	91,7	0,7	115	8,1	880	1760	2395	2600
2750	2000	2750	91,7	0,7	115	8	976	1953	2662	2900
3000	2200	3000	91,2	0,7	115	10,1	1000	2000	2916	3100

**Power: The stated values correspond to operation on methane (natural gas). When using diesel fuel or fuel oil, output may be adjusted (reduced) in accordance with calculation standards.
*Weight: given for a model with a working pressure of 8 bar.
We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.

OVERALL DIMENSIONS

Model Tor	H, mm	H2, mm	H3, mm	L, mm	L2, mm	B, mm	B2, mm	C, mm	N1, DN	N2, DN
300	1112	406	535	1601	1140	989	641	250	50	25
400	1214	465	595	1786	1320	1108	712	300	65	25
500	1214	465	595	1878	1410	1108	712	300	65	25
600	1214	465	595	1978	1510	1108	712	300	65	25
800	1580	599	773	2321	1812	1388	926	300	80	25
1000	1580	599	773	2509	2012	1388	926	350	100	25
1250	1754	656	863	2359	1812	1537	1032	350	100	25
1500	1754	656	863	2681	2122	1537	1032	350	100	25
1750	1754	656	863	2960	2412	1537	1032	350	125	25
2000	1754	656	863	2996	2312	1537	1032	350	125	25
2250	2021	804	1011	2961	2322	1787	1210	450	150	25
2500	2021	804	1011	3195	2512	1787	1210	450	150	25
2750	2149	869	1076	3195	2512	1787	1288	450	150	25
3000	2149	869	1076	3295	2612	1787	1288	450	150	25

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



INSTALLATION PLANNING

Selection guidance

Installation envelope

Use the selected model row together with the drawing. Check overall height, length and width against the delivery route, installation position and available access for service.

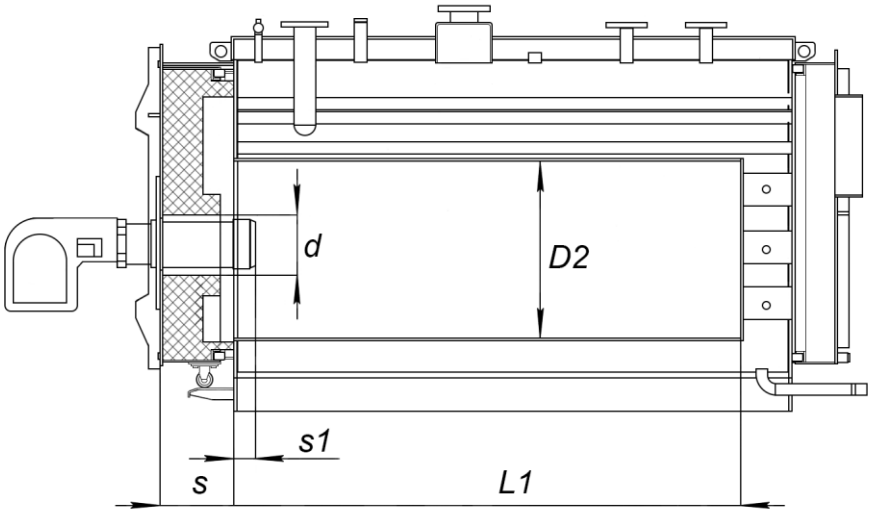
Connection schedule

Confirm connection sizes and locations for the ordered configuration. Coordinate supports and adjacent equipment with project drawings; overall dimensions alone do not define service clearances.

BURNER SELECTION DIMENSIONS

Model Tor	Burner opening diameter d, mm	Front cover thickness s, mm	Burner mounting dimension s1, mm	Furnace tube diameter D2, mm	Furnace tube length L1, mm	Reversal chamber length L2, mm
300	250	185	20–60	410	953	—
400	250	185	20–60	510	1203	—
500	250	185	20–60	510	1303	—
600	250	185	20–60	510	1403	—
800	250	216	20–60	610	1703	—
1000	300	216	20–60	610	1903	—
1250	320	216	20–60	700	1703	—
1500	320	216	20–60	700	2003	—
1750	320	216	20–60	700	2303	—
2000	320	216	20–60	700	2403	—
2250	380	271	20–60	800	2201	—
2500	380	271	20–60	800	2401	—
2750	380	271	20–60	900	2401	—
3000	380	271	20–60	900	2501	—

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



BURNER MATCHING

Selection guidance

Burner interface

Match the selected burner to the opening diameter, mounting dimension and furnace dimensions shown in this section. Use the exact model row rather than the dimensions of a neighbouring size.

Selection information

Provide the fuel type, required operating range and boiler gas-side resistance with the enquiry. Confirm the flame-head arrangement and maintenance access with the boiler and burner documentation before manufacture.

HERO



Parameter	Value
Capacity	≤ 5000 kg/h
Pressure	≤ 15 bar
Temperature	≤ 201 °C
Efficiency	> 91.0%

| DESCRIPTION

Boilte Hero industrial high-pressure steam boilers are designed for major process duties in processing, petrochemical, woodworking, food and chemical industries. Working pressure is 6, 8, 12 and 15 bar; steam capacity ranges from 300 to 5000 kg/h. The equipment is supplied with a complete set of certificates for legal use. Service life is more than 20 years.

| SCOPE OF SUPPLY

Steam feed and take-off system

Feedwater pumps (1 duty + 1 standby) - duplicated arrangement with automatic changeover to standby.

- Main steam valve - controls steam delivery to the main steam header.

Safety and parameter-control system

- Safety valves (2 pcs.) - dual-circuit protection against overpressure.
- Pressure-control package - pressure switches, electronic sensor and indicating pressure gauge.
- Level-control system - two water-level columns, operating and emergency level sensors.

Intelligent automation

- Control cabinet - PLC, operator panel, automatic start, capacity control and emergency shutdown.

| SCOPE OF SUPPLY (CONTINUED)

Flue-gas temperature sensor - combustion-efficiency monitoring and overtemperature prevention.

Heat-transfer efficiency

- Turbulator set - swirl devices installed in smoke tubes to increase efficiency.

Valves and documentation

- Complete set of shut-off and control valves.
- Data sheet, manual, certificates and factory test records.

| DESIGN FEATURES

Two-pass fire-tube design with flame reversal:

Cylindrical furnace with water-cooled reversal chamber - primary heat transfer, reversal of the gas flow and improved combustion completeness.

Smoke-tube bundle with turbulators - swirling flow and maximum heat transfer from gas to water.

- Operating conditions reached in less than 10 minutes - high efficiency and rapid start-up.

| QUALITY CONTROL

- Incoming inspection - verification of every batch of 09G2S steel and all purchased components.

Manufacturing inspection - micron-precision laser cutting, robotic welding and non-destructive testing of every weld (UT or radiography).

Assembly inspection - in-process geometry checks and hydrostatic testing at 1.5 times the working pressure.

Final testing - comprehensive functional tests simulating real operation; acceptance certificate signed by the chief engineer.

| ADVANTAGES

Guaranteed joint quality

- Welding in accordance with requirements for hazardous industrial facilities.
- Qualified welding procedures, welder approvals and documentation of every stage.
- Absolute leak-tightness and mechanical strength.

Efficiency and maintainability

Quick-removal insulated rear flue-gas chamber - rapid removal of soot from gas passages and inspection of the tube bundle without dismantling assemblies.

- Minimum maintenance downtime.

Intelligent safety system

- Continuous monitoring of flue-gas temperature.
- Timely detection of fouling on heating surfaces (scale, soot).
- Automatic operating-mode correction or preventive shutdown.

Components from leading global manufacturers

- Siemens, Schneider Electric, ABB, Danfoss, etc.
- High accuracy, long service life and ready availability of spare parts.

TECHNICAL DATA

Model Hero	Power, kW**	Steam output, kg/h	Efficiency, %	Pressure, bar	Steam outlet temperature, °C	Boiler resistance, mbar	Steam space volume, L	Boiler water volume, L	Flue-gas flow, m^3/h	Dry boiler mass, kg*
300	210	300	91,3	6/8/12	161/172/194	3,5	133	246	278	612
400	280	400	91,3	6/8/12	161/172/194	1,1	153	306	435	830
500	350	500	91,7	6/8/12	161/172/194	4,6	166	333	465	880
600	420	600	91,7	6/8/12	161/172/194	5,6	179	358	532	920
800	600	800	91,2	6/8/12	161/172/194	6,9	443	886	798	1590
1000	700	1000	90,2	6/8/12	161/172/194	5,7	493	986	931	1760
1250	905	1250	92,1	6/8/12	161/172/194	5,1	543	1086	1197	1930
1500	1100	1500	92,2	6/8/12	161/172/194	4	633	1266	1452	2100
1750	1300	1750	91,3	6/8/12	161/172/194	6,3	733	1466	1718	2400
2000	1400	2000	91,3	6/8/12	161/172/194	7,6	763	1496	1875	2420
2250	1600	2250	91,3	6/8/12	161/172/194	6	810	1620	2129	3110
2500	1800	2500	91,7	6/8/12	161/172/194	8,1	880	1760	2395	3250
2750	2000	2750	91,7	6/8/12	161/172/194	8	976	1953	2662	3850
3000	2200	3000	91,2	6/8/12	161/172/194	10,1	1000	2000	2916	3990
3500	2500	3500	91,2	6/8/12	161/172/194	6,8	1266	2533	3303	4750
4000	2800	4000	91,1	6/8/12	161/172/194	9,1	1320	2640	3714	4977
4500	3300	4500	91,2	6/8/12	161/172/194	14	1433	2866	4380	5210
5000	3500	5000	91,5	6/8/12	161/172/194	16,5	1566	3133	4658	5670

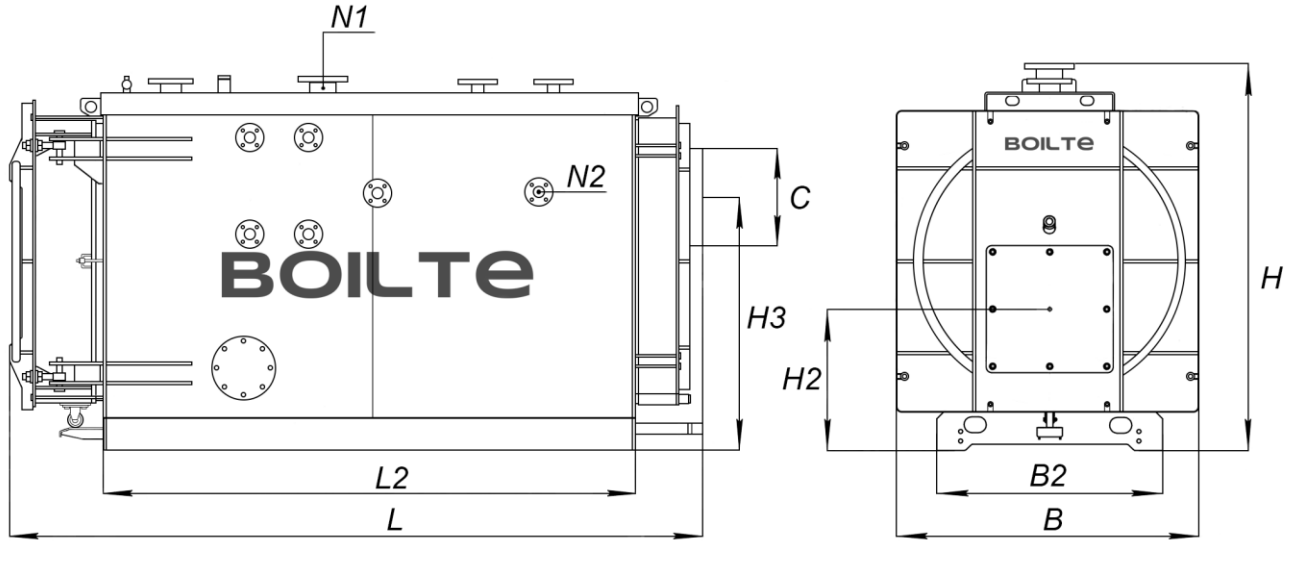
Power: The stated values correspond to operation on methane (natural gas). When using diesel fuel or fuel oil, output may be adjusted (reduced) in accordance with calculation standards.

*Weight: Given for a model with a working pressure of 8 bar.

OVERALL DIMENSIONS

Model Hero	H, mm	H2, mm	H3, mm	L, mm	L2, mm	B, mm	B2, mm	C, mm	N1, DN*	N2, DN
300	1112	406	535	1601	1140	989	641	250	32/25/25	25
400	1214	465	595	1786	1320	1108	712	300	50/32/32	25
500	1214	465	595	1886	1420	1108	712	300	50/32/32	25
600	1214	465	595	1986	1520	1108	712	300	50/32/32	25
800	1532	599	773	2333	1824	1388	926	300	50/50/40	25
1000	1532	599	773	2533	2024	1388	926	350	65/50/50	25
1250	1696	656	863	2381	1822	1537	1032	350	65/65/50	25
1500	1696	656	863	2681	2122	1537	1032	350	80/65/50	25
1750	1696	656	863	2981	2422	1537	1032	350	80/65/65	25
2000	1696	656	863	3081	2522	1537	1032	350	100/80/65	25
2250	2021	804	1011	2961	2322	1787	1210	450	100/80/65	25
2500	2021	804	1011	3161	2522	1787	1210	450	100/80/65	25
2750	2130	869	1076	3161	2524	1787	1288	450	125/100/80	25
3000	2130	869	1076	3261	2624	1787	1288	450	125/100/80	25
3500	2360	918	1196	3169	2526	2064	1431	450	125/100/80	32
4000	2360	918	1196	3269	2626	2064	1431	600	150/125/125	32
4500	2360	918	1196	3519	2876	2064	1431	600	150/150/125	32
5000	2360	918	1196	3769	3126	2064	1431	600	150/150/125	32

*Steam outlet diameters are shown for boiler models with working pressures of 6/8/12 bar
We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



INSTALLATION PLANNING

Selection guidance

Installation envelope

Use the selected model row together with the drawing. Check overall height, length and width against the delivery route, installation position and available access for service.

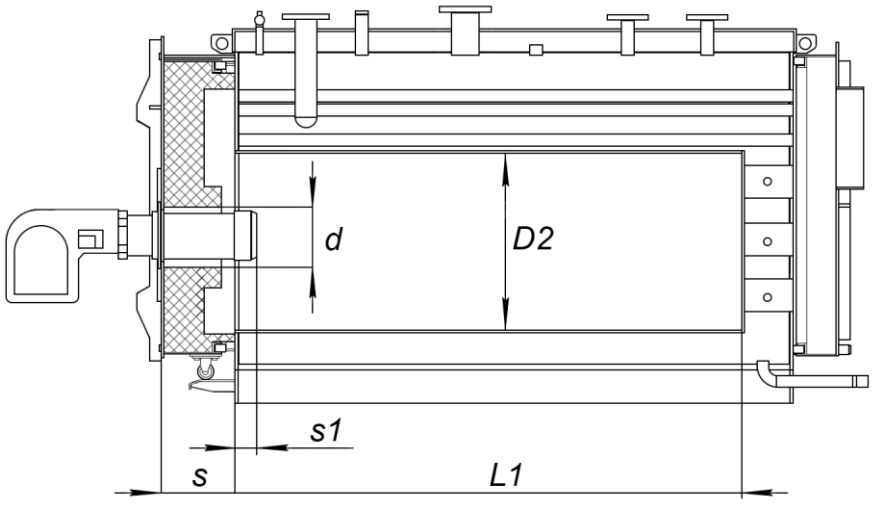
Connection schedule

Confirm connection sizes and locations for the ordered configuration. Coordinate supports and adjacent equipment with project drawings; overall dimensions alone do not define service clearances.

BURNER SELECTION DIMENSIONS

Model Hero	Burner opening diameter d, mm	Front cover thickness s, mm	Burner mounting dimension s1, mm	Furnace tube diameter D2, mm	Furnace tube length L1, mm	Reversal chamber length L2, mm
300	250	185	20–60	410	953	—
400	250	185	20–60	510	1203	—
500	250	185	20–60	510	1303	—
600	250	185	20–60	510	1403	—
800	250	216	20–60	610	1703	—
1000	300	216	20–60	610	1903	—
1250	320	216	20–60	700	1703	—
1500	320	216	20–60	700	2003	—
1750	320	216	20–60	700	2303	—
2000	320	216	20–60	700	2403	—
2250	380	271	20–60	800	2201	—
2500	380	271	20–60	800	2401	—
2750	380	271	20–60	900	2401	—
3000	380	271	20–60	900	2501	—
3500	380	286	20–60	996	2401	—
4000	450	286	20–60	996	2501	—
4500	450	286	20–60	996	2751	—
5000	450	286	20–60	996	3001	—

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BURNER MATCHING

Selection guidance

Burner interface

Match the selected burner to the opening diameter, mounting dimension and furnace dimensions shown in this section. Use the exact model row rather than the dimensions of a neighbouring size.

Selection information

Provide the fuel type, required operating range and boiler gas-side resistance with the enquiry. Confirm the flame-head arrangement and maintenance access with the boiler and burner documentation before manufacture.

TRIPASS



Parameter	Value
Capacity	≤ 16000 kg/h
Pressure	≤ 15 bar
Temperature	≤ 202 °C
Efficiency	> 90.0%

| DESCRIPTION

Boilte Tripass industrial steam boilers are an engineering solution for heavy industry. Steam capacity ranges from 1000 to 16000 kg/h, working pressure is 8, 12 and 15 bar, and temperature is up to 202°C. At the customer's request, this model can be manufactured with capacity up to 30000 kg/h and pressure up to 25 bar. Service life is more than 20 years.

| SCOPE OF SUPPLY

Main structural components

Thermally insulated casing - load-bearing frame, gas-tight shell and non-combustible basalt-wool insulation.

- Cylindrical combustion chamber - made of heat-resistant boiler steel.
- Second-and third-pass smoke tubes - convective heating surface.
- Double reinforcing loops - compensation for thermal expansion.
- Thermally insulated front doors - sealed access to the combustion chamber.

Flue-gas chamber (smoke box) - collection and discharge of combustion products and easier cleaning.

Safety and control system

- Redundant safety group - safety valves.
- Level-control system - water-level columns and electrode-type emergency level sensors.

| SCOPE OF SUPPLY (CONTINUED)

Pressure and temperature monitoring - pressure gauges, temperature sensors and pressure switches.

- Emergency fittings - connections for blowdown and sampling.

Functional piping and feedwater system

- Steam valve - main shut-off device.
- Feedwater assembly - feedwater pump, check valve and water connection.
- Burner flange - for mounting the burner unit.

Intelligent control system

Electrical control cabinet - PLC, operator panel, automatic operating cycle, diagnostics and integration into the plant control system.

| DESIGN FEATURES

Three-pass fire-tube design with flame reversal. Flue gases pass through three heat-transfer stages (radiation and two convective passes), increasing the gas-flow path length. The result is a low flue-gas outlet temperature.

Monolithic welded construction with compensation of thermal stresses. A corrugated or smooth furnace tube and reinforcing stiffening rings prevent shell deformation during rapid starts and stops, ensuring the specified design life.

Gas-tight construction and pressurized operation prevent air infiltration. A furnace with low heat-release intensity naturally reduces NOx emissions without additional systems.

| QUALITY CONTROL

- Incoming inspection - verification of metal and components.
- Manufacturing - laser cutting, robotic welding and non-destructive weld testing (UT/RT).
- Assembly - in-process geometry inspection.
- Hydrostatic testing - at a pressure 1.5 times the working pressure.
- Final testing - functional tests, automation checks and gas-tightness verification.

| APPLICATIONS

Heavy and processing industries - oil and gas sector, refineries, metallurgy, chemical and petrochemical industries.

Power generation and major utility infrastructure - industrial CHP plants, boiler houses and heat supply to large facilities.

- Pulp-and-paper and woodworking industries - pulp and paper production and wood processing.

Large-scale food and agro-industrial facilities - processing plants, meat and fish plants, feed mills, sugar plants and oil-and-fat processing plants.

- Other industries - building-material production and textile industry.

TECHNICAL DATA

Model Tripass	Power, kW	Steam output, kg/h	Efficiency, %	Pressure, bar	Steam outlet temperature, °C	Boiler resistance, mbar	Steam space volume, L	Boiler water volume, L	Flue-gas flow, m³/h	Dry boiler mass, kg
1000	700	1000	90,8	8/12/15	175/192/202	3,7	1260	2530	992	4900
1250	875	1250	90,8	8/12/15	175/192/202	3,6	1460	2930	1234	5200
1500	1050	1500	90,1	8/12/15	175/192/202	5,7	1530	3060	1488	5400
1750	1200	1750	90,8	8/12/15	175/192/202	4,5	1700	3400	1730	5800
2000	1400	2000	90,1	8/12/15	175/192/202	6,3	1760	3530	1984	6000
2500	1750	2500	90,5	8/12/15	175/192/202	4,2	1830	3740	2532	7700
3000	2100	3000	90,8	8/12/15	175/192/202	6,6	2010	4030	3038	8000
3500	2450	3500	90,7	8/12/15	175/192/202	9,5	2160	4330	3534	8600
4000	2800	4000	90,8	8/12/15	175/192/202	8,5	2640	5280	3968	10300
4500	3150	4500	90,1	8/12/15	175/192/202	8,5	2760	5530	4468	10600
5000	3500	5000	90,8	8/12/15	175/192/202	6,4	2880	5760	4967	10900
5500	3800	5500	90,1	8/12/15	175/192/202	8,1	3100	6200	5423	11600
6000	4200	6000	90,3	8/12/15	175/192/202	5,8	3330	6670	5880	12200
7000	4900	7000	90,3	8/12/15	175/192/202	8,4	4200	8400	6850	18100
8000	5600	8000	90,8	8/12/15	175/192/202	11,8	4430	8860	7816	20000
9000	6300	9000	90,8	8/12/15	175/192/202	10,2	4280	8400	8796	20700
10000	7000	10000	90,3	8/12/15	175/192/202	13,3	4400	8800	9752	21800
12000	8400	12000	90,4	8/12/15	175/192/202	13,3	5900	11800	11664	27200
14000	9800	14000	90,9	8/12/15	175/192/202	13,7	6430	12870	13690	28600
15000	10500	15000	90,9	8/12/15	175/192/202	18,9	6640	13207	15635	29100
16000	11200	16000	90,7	8/12/15	175/192/202	18,9	6870	13750	15640	29900

**Power: The stated values correspond to operation on methane (natural gas). When using diesel fuel or fuel oil, output may be adjusted (reduced) in accordance with calculation standards.

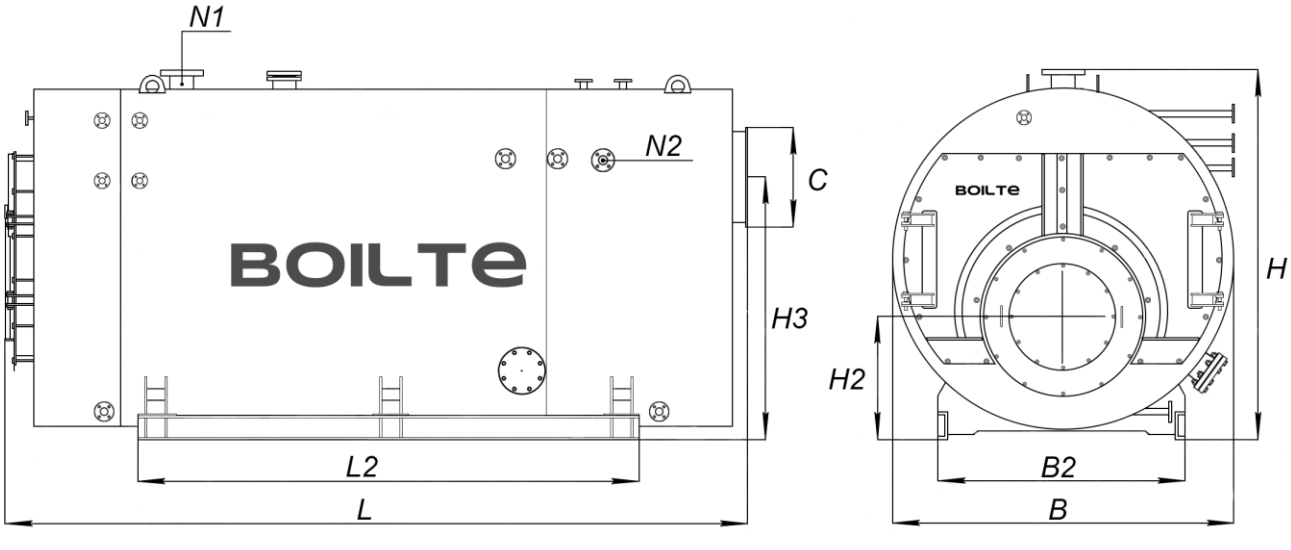
*Weight: Given for a model with a working pressure of 12 bar.

OVERALL DIMENSIONS

Model Tripass	H, mm	H2, mm	H3, mm	L, mm	L2, mm	B, mm	B2, mm	C, mm	N1, DN*	N2, DN
1000	2178	720	1496	3537	1875	2000	1550	400	50/50/40	25
1250	2178	720	1496	3781	2127	2000	1550	400	65/50/50	25
1500	2178	720	1496	3931	2277	2000	1550	400	65/50/50	25
1750	2178	720	1496	4229	2377	2000	1550	400	65/65/65	25
2000	2178	720	1496	4327	2479	2000	1550	400	80/65/65	25
2500	2306	774	1625	4446	2577	2138	1600	450	80/65/65	25
3000	2306	774	1625	4633	2777	2138	1600	450	100/80/65	25
3500	2306	774	1625	4929	3077	2138	1600	450	100/80/80	32
4000	2466	836	1741	4993	2927	2317	1600	500	125/125/125	32
4500	2466	836	1741	5131	3082	2317	1600	500	150/125/125	32
5000	2466	836	1741	5291	3237	2317	1600	500	150/125/125	32
5500	2466	836	1741	5611	3642	2317	1600	600	150/125/125	40
6000	2466	836	1741	5916	3847	2317	1600	600	150/125/125	40
7000	2796	948	2075	6546	4277	2600	1900	650	200/150/150	40
8000	2796	948	2075	6831	4577	2600	1900	650	200/200/200	40
9000	2796	948	2075	6831	4577	2600	1900	700	200/200/200	40
10000	2796	948	2075	7129	4877	2600	1900	700	200/200/200	40
12000	3296	1198	2413	7533	5277	3110	2200	800	250/200/200	50
14000	3296	1198	2413	7726	5627	3110	2200	900	250/200/200	50
15000	3296	1198	2413	7901	5802	3110	2200	900	250/200/200	50
16000	3296	1198	2413	8246	5977	3110	2200	900	250/200/200	50

*Steam outlet diameters are shown for boiler models with working pressures of 6/8/12 bar

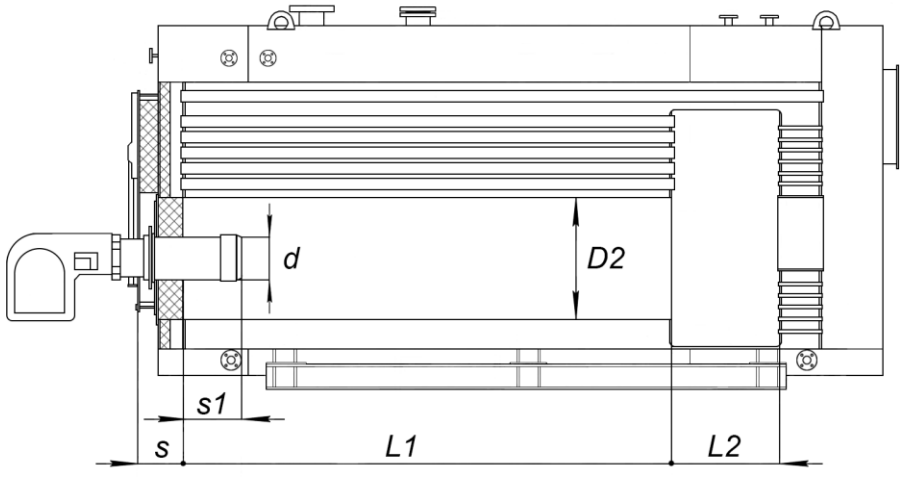
We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



BURNER SELECTION DIMENSIONS

Model Tripass	Burner opening diameter d, mm	Front cover thickness s, mm	Burner mounting dimension s1, mm	Furnace tube diameter D2, mm	Furnace tube length L1, mm	Reversal chamber length L2, mm
1000	320	285	20–60	610	1567	412
1250	320	285	20–60	610	1815	412
1500	320	285	20–60	610	1965	412
1750	320	285	20–60	700	2265	412
2000	320	285	20–60	700	2365	412
2500	350	285	20–60	790	2600	440
3000	350	285	20–60	790	2800	440
3500	350	285	20–60	790	2900	640
4000	350	285	20–60	890	2900	640
4500	350	285	20–60	890	3030	640
5000	350	285	20–60	1092	3400	640
5500	450	285	20–60	1092	3600	640
6000	450	285	20–60	1092	4100	640
7000	450	285	20–60	1092	4300	640
8000	500	285	20–60	1092	4600	640
9000	500	285	20–60	1188	4600	640
10000	530	285	20–60	1188	4900	640
12000	600	285	20–60	1386	5300	640
14000	700	285	20–60	1550	5650	640
15000	700	285	20–60	1550	5800	640
16000	700	285	20–60	1550	6000	640

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



RAPID



Parameter	Value
Capacity	≤ 8000 kg/h
Pressure	≤ 12 bar
Temperature	≤ 194 °C
Efficiency	> 90.0%

| DESCRIPTION

Boilte Rapid is a range of once-through steam boilers created for production facilities where time to operating conditions determines the efficiency of the entire cycle. Unlike inertial fire-tube boilers, Rapid delivers stable steam at specified parameters just 90 seconds after start-up. The standard version is rated for 12 bar, while custom models with working pressures up to 25 bar are available for the most demanding process duties. Steam capacity ranges from 120 to 8,000 kg/h. Service life is more than 20 years.

| SCOPE OF SUPPLY

Main steam-generation module

Modular casing - refractory-lined combustion chamber, thermal insulation and protective enclosure.

- Once-through coil heat exchanger - multi-pass spiral made of heat-resistant steel.

Automation and safety system

- Local control cabinet - PLC with basic control algorithm, operator panel and emergency stop.
- Emergency protection group - quick-acting safety valve, pressure gauge and pressure switch.
- Monitoring sensors - thermocouple at the steam outlet, pressure sensor and water-flow sensor.

Water-treatment and feedwater system

- Multistage high-pressure feedwater pump.

| SCOPE OF SUPPLY (CONTINUED)

- Inhibitor dosing system - prevents salt deposits in the coil.
- Shut-off and control valves - ball valves and check valve.

Documentation

- Data sheet, installation and operating manual, and schematic diagrams.

| DESIGN FEATURES

Minimum working-fluid inventory - the amount of pressurized water at any moment is many times lower than in conventional boilers, reducing risk in emergency situations.

Heat-resistant steel coil - the material withstands extreme temperature gradients and high pressure without deformation.

Multi-stage protection system - quick-acting safety valves and redundant pressure and temperature sensors.

- Thermally insulated casing - reduced heat loss and improved personnel safety.

Gas-tight combustion chamber - prevents air infiltration, ensures stable combustion and reduces emissions.

| QUALITY CONTROL

- Hydrostatic testing - at 1.5-2 times the working pressure.

Cyclic thermal-shock testing - repeated rapid heating and cooling of the coil to verify resistance to fatigue stresses.

Full-capacity bench starts - verification of capacity, pressure, steam temperature and automation operation.

| APPLICATIONS

- Chemical and petrochemical industry - process catalyst service and reactor heating.
- Pharmaceutical and biopharmaceutical production - sterility on demand.
- Research and pilot-industrial installations - flexibility and precision.
- Metallurgy and materials processing - pulsed energy.

| APPLICATIONS (CONTINUED)

- High-technology food processing - precise operating conditions.
- Power generation and mechanical engineering - special operating modes.

| ADVANTAGES

- Fundamental speed
- Compactness
- Highest quality and stability of steam parameters
- Enhanced safety and environmental performance
- Ease of maintenance
- Fuel flexibility
- Full factory readiness
- Flexibility and scalability

TECHNICAL DATA

Model Rapid	Power, kW	Steam output, kg/h	Efficiency, %	Pressure, bar	Steam outlet temperature, °C	Boiler resistance, mbar	Furnace volume, m³	Boiler water volume, L	Flue-gas flow, m³/h	Dry boiler mass, kg
120	84	120	90,1	12	194	1,9	0,1	20	110,4	750
200	140	200	90,2	12	194	1,9	0,11	30	183,6	750
300	209	300	89,2	12	194	2,9	0,11	30	274,8	750
400	279	400	88,4	12	194	3,4	0,14	40	304,8	850
500	349	500	90,1	12	194	3,4	0,14	40	453,6	850
600	419	600	89,5	12	194	3,9	0,26	80	554,4	1250
800	558	800	90,3	12	194	3,9	0,29	80	697,2	1250
1000	698	1000	90,4	12	194	6,8	0,32	120	920,4	1270
1200	837	1200	90,3	12	194	8,8	0,32	120	1104,7	1380
1500	1047	1500	90,1	12	194	8,8	0,67	190	1380,4	1550
1800	1256	1800	90,3	12	194	8,9	0,82	250	1657,2	2170
2000	1396	2000	90,5	12	194	8,9	0,82	310	1836,1	2220
2500	1745	2500	90,1	12	194	9,1	1,42	390	2292,2	2890
3000	2093	3000	90,3	12	194	9,2	1,42	450	2762,7	2970
3500	2345	3500	90,1	12	194	9,2	2,21	490	3084,7	3550
4000	2791	4000	90,3	12	194	9,8	2,21	570	3684,5	4090
4500	3021	4500	90,1	12	194	9,8	4,15	690	3984,4	5020
5000	3489	5000	90,3	12	194	10,7	4,15	900	4595,5	6680
6000	4187	6000	90,5	12	194	11,2	5,24	1100	5520,9	7120
7000	4885	7000	90,1	12	194	11,8	6,51	1250	6444,1	7890
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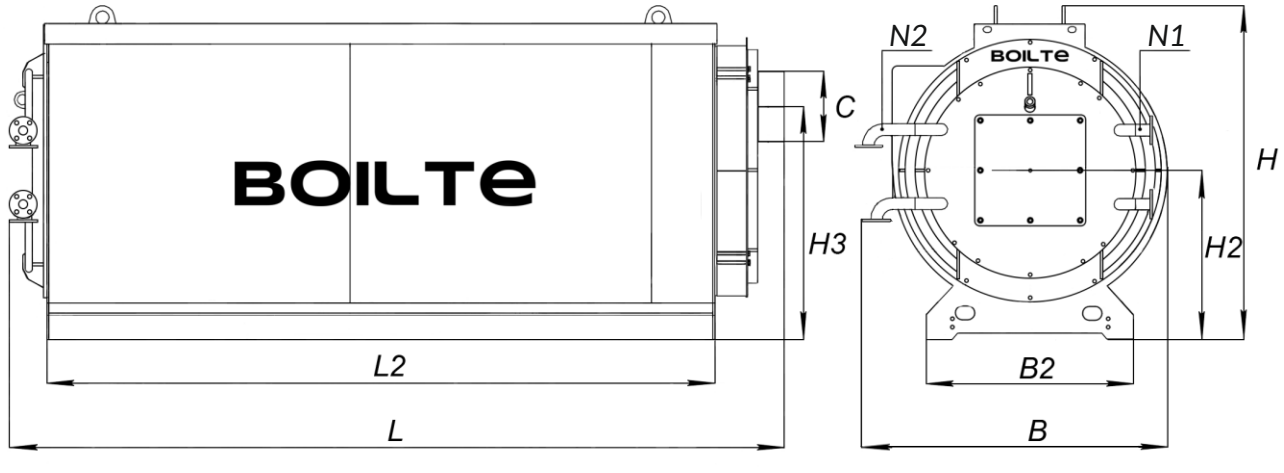
**Power: The stated values correspond to operation on methane (natural gas). When using diesel fuel or fuel oil, output may be adjusted (reduced) in accordance with calculation standards.

*Weight: Given for the model in a configuration with one pump and a working pressure of 12 bar.

OVERALL DIMENSIONS

Model Rapid	H, mm	H2, mm	H3, mm	L, mm	L2, mm	B, mm	B2, mm	C, mm	N1, DN	N2, DN
120	1575	830	965	1665	1277	1380	1000	280	32	40
200	1575	830	965	1665	1277	1380	1000	280	32	40
300	1575	830	965	1665	1277	1380	1000	280	32	40
400	1675	830	965	1700	1277	1380	1000	280	32	40
500	1675	830	965	1700	1277	1380	1000	280	32	40
600	1675	760	965	2280	1910	1380	1000	320	40	40
800	1675	760	965	2280	1910	1380	1000	320	40	40
1000	1440	760	925	2280	1910	1380	1000	320	50	40
1200	1440	760	925	2280	1910	1380	1000	320	50	40
1500	1900	930	1130	3290	2905	1600	1250	420	65	50
1800	2030	930	1130	3350	2905	1600	1250	420	65	50
2000	2030	930	1130	3375	2905	1600	1250	420	65	50
2500	2115	950	1205	3680	3300	1600	1250	450	80	65
3000	2115	950	1370	4120	3660	1685	1250	450	80	65
3500	2115	950	1370	4220	3660	1685	1250	450	80	65
4000	2080	1100	1370	4350	3950	1870	1500	650	100	65
4500	2080	1100	1370	4550	4050	1870	1500	650	100	65
5000	2650	1370	1930	4750	3320	2400	1600	700	100	65
6000	2650	1370	1930	5150	3700	2610	1600	700	100	65
7000	2650	1370	1930	5400	3800	2610	1600	700	100	65
8000	2980	1570	2130	5700	4100	2810	1800	750	100	65

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



INSTALLATION PLANNING

Selection guidance

Installation envelope

Use the selected model row together with the drawing. Check overall height, length and width against the delivery route, installation position and available access for service.

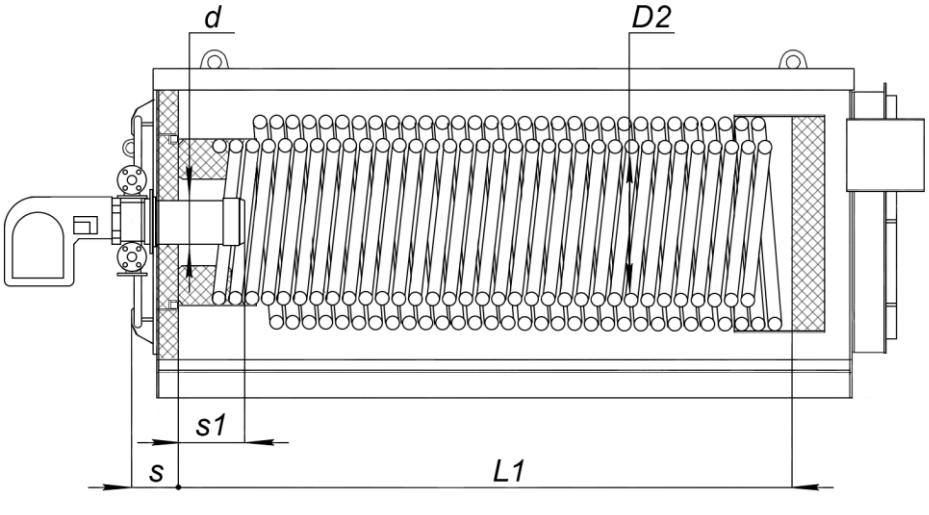
Connection schedule

Confirm connection sizes and locations for the ordered configuration. Coordinate supports and adjacent equipment with project drawings; overall dimensions alone do not define service clearances.

BURNER SELECTION DIMENSIONS

Model Rapid	Burner opening diameter d, mm	Front cover thickness s, mm	Burner mounting dimension s1, mm	Furnace tube diameter D2, mm	Furnace tube length L1, mm	Reversal chamber length L2, mm
120	200	185	20–60	390	806	—
200	200	185	20–60	390	806	—
300	230	185	20–60	390	806	—
400	230	185	20–60	390	1157	—
500	230	200	20–60	390	1157	—
600	280	200	20–60	500	1342	—
800	280	200	20–60	500	1477	—
1000	280	200	20–60	480	1779	—
1200	280	200	20–60	480	1779	—
1500	330	200	20–60	620	2700	—
1800	330	200	20–60	620	2700	—
2000	330	200	20–60	620	2700	—
2500	330	250	20–60	770	3052	—
3000	330	250	20–60	770	3152	—
3500	330	250	20–60	770	3152	—
4000	450	250	20–60	910	3390	—
4500	450	250	20–60	910	3390	—
5000	450	250	20–60	1245	3408	—
6000	450	250	20–60	1245	4302	—
7000	450	250	20–60	1245	5350	—
8000	470	250	20–60	1490	5463	—

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Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



PULSE



Parameter	Value
Capacity	≤ 8000 kg/h
Pressure	≤ 12 bar
Temperature	≤ 194 °C
Efficiency	> 90.0%

| DESCRIPTION

Boilte Pulse vertical coil steam generators are a specialized solution for the food, pharmaceutical and chemical industries, where steam comes into direct contact with the product. The product range covers requirements from 120 to 8,000 kg/h with the option of cascade capacity expansion. Standard Pulse models operate efficiently at 12 bar, covering more than 90% of food and pharmaceutical industry requirements. Start-up time is 3-5 minutes. Service life is more than 20 years.

| SCOPE OF SUPPLY

Main steam-generation module

Casing with combustion chamber - vertical cylindrical body with thermal insulation and protective enclosure.

- Coil heat exchanger - made from seamless tube resistant to high temperatures.

Control and safety system

- Local control cabinet (LCC) - PLC, operator panel and light indication.
- Minimum protection package - safety valve, pressure gauge and pressure switch.
- Level and feedwater control - water-level sensor and pump control unit.
- Electrical diagrams.

Preparation and piping system

- Feedwater pump - 1 duty + 1 standby (depending on capacity).

| SCOPE OF SUPPLY (CONTINUED)

- Steam separator - built in, for a high dryness fraction.
- Shut-off valves - ball valves on the main lines.

| DESIGN FEATURES

The heart of the unit is a vertical coil heat exchanger made of high-alloy steel inside a cylindrical combustion chamber.

- 'Tube-in-tube' principle - water flows through a long coiled tube.
- Instant heating - flame and hot gases surround the coil on all sides.
- Immediate steam generation - water is converted to steam while passing through the coil.

Water inventory is 8-10 times lower than in a fire-tube boiler of comparable capacity.

| QUALITY CONTROL

- Incoming inspection - verification of every batch of tubing used for the coil.

  Manufacturing - automatic argon-shielded welding and liquid-penetrant testing of every weld.
- Hydrostatic testing - at 1.5 times the working pressure.

  Functional run - test start on the bench, measurement of parameters and an individual test report.

| APPLICATIONS

- Food industry (sterilization, pasteurization, cooking)
- Pharmaceutical production (sterile processes)
- Chemical industry (pressurized synthesis)
- Industrial laundries
- Microelectronics (clean steam)

| ADVANTAGES

Compactness

- Water volume is 8-10 times lower than in an equivalent fire-tube unit.
- Installation directly in the process area minimizes steam-line losses.

Steam purity

- Single-pass water flow through the coil - no stagnation or secondary contamination.
- Ideal for food, pharmaceutical and microelectronics industries.

Safety and durability

- Minimum pressurized water volume - a major reduction in accident risk.
- High-alloy steel coil - service life exceeds that of conventional tube systems.

High efficiency across the entire load range

- Efficiency maintained at 92-95% even at 20% load.
- Use of fully modulating burners.

Ideal automation platform

- Instant response to process-control commands.
- Operation in 'steam on demand' mode.

TECHNICAL DATA

Model Pulse	Power, kW	Steam output, kg/h	Efficiency, %	Pressure, bar	Steam outlet temperature, °C	Boiler resistance, mbar	Furnace volume, m³	Boiler water volume, L	Flue-gas flow, m³/h	Dry boiler mass, kg
120	84	120	90,1	12	194	1,9	0,1	20	110,4	750
200	140	200	90,2	12	194	1,9	0,11	30	183,6	750
300	209	300	89,2	12	194	2,9	0,11	30	274,8	750
400	279	400	88,4	12	194	3,4	0,14	40	304,8	850
500	349	500	90,1	12	194	3,4	0,14	40	453,6	850
600	419	600	89,5	12	194	3,9	0,26	80	554,4	1250
800	558	800	90,3	12	194	3,9	0,29	80	697,2	1250
1000	698	1000	90,4	12	194	6,8	0,32	120	920,4	1270
1200	837	1200	90,3	12	194	8,8	0,32	120	1104,7	1380
1500	1047	1500	90,1	12	194	8,8	0,67	190	1380,4	1550
1800	1256	1800	90,3	12	194	8,9	0,82	250	1657,2	2170
2000	1396	2000	90,5	12	194	8,9	0,82	310	1836,1	2220
2500	1745	2500	90,1	12	194	9,1	1,42	390	2292,2	2890
3000	2093	3000	90,3	12	194	9,2	1,42	450	2762,7	2970
3500	2345	3500	90,1	12	194	9,2	2,21	490	3084,7	3550
4000	2791	4000	90,3	12	194	9,8	2,21	570	3684,5	4090
4500	3021	4500	90,1	12	194	9,8	4,15	690	3984,4	5020
5000	3489	5000	90,3	12	194	10,7	4,15	900	4595,5	6680
6000	4187	6000	90,5	12	194	11,2	5,24	1100	5520,9	7120
7000	4885	7000	90,1	12	194	11,8	6,51	1250	6444,1	7890
8000	5582	8000	90,3	12	194	12,2	7,78	1470	7368,2	9350

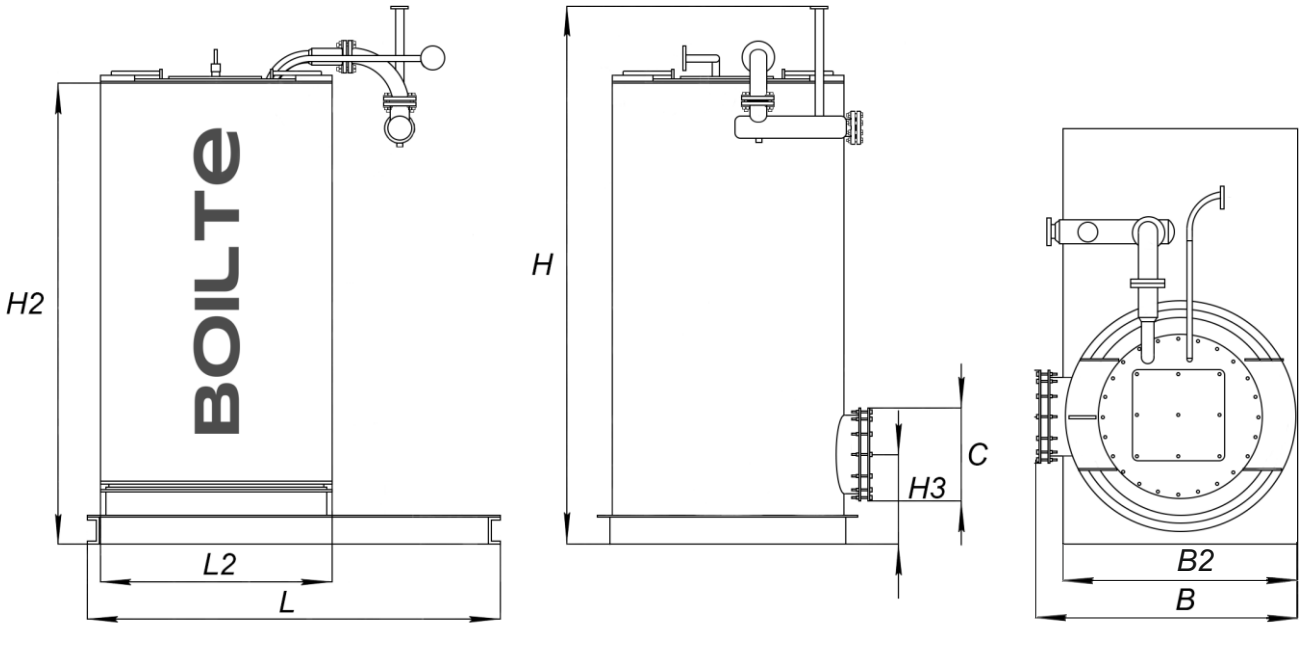
**Power: The stated values correspond to operation on methane (natural gas). When using diesel fuel or fuel oil, output may be adjusted (reduced) in accordance with calculation standards.

*Weight: Given for the model in a configuration with one pump and a working pressure of 12 bar.

OVERALL DIMENSIONS

Model Pulse	H, mm	H2, mm	H3, mm	L, mm	L2, mm	B, mm	B2, mm	C, mm	N1, DN	N2, DN
120	1900	1550	280	1250	850	1365	1185	280	32	40
200	1900	1550	280	1250	850	1365	1185	280	32	40
300	1995	1550	280	1250	850	1365	1185	280	32	40
400	1995	1550	280	1250	850	1365	1185	280	32	40
500	1995	1550	280	1250	850	1365	1185	280	32	40
600	2045	1880	325	1350	1000	1490	1290	320	40	40
800	2145	2030	325	1350	1000	1490	1290	320	40	40
1000	2565	2280	315	1350	1000	1530	1300	320	50	40
1200	2565	2280	315	1350	1000	1530	1300	320	50	40
1500	3080	2785	365	1500	1250	1610	1380	420	65	50
1800	3580	3285	365	1500	1250	1610	1380	420	65	50
2000	3580	3285	365	1500	1250	1610	1380	420	65	50
2500	3840	3310	435	1650	1300	1705	1410	450	80	65
3000	4140	3825	435	1650	1300	2050	1650	450	80	65
3500	4140	3825	435	1650	1300	2050	1650	450	80	65
4000	4540	4110	540	2000	1600	2050	1650	650	100	65
4500	4690	4450	540	2940	1600	2050	1650	650	100	65
5000	4910	4650	540	2940	2000	2940	2000	700	100	65
6000	5210	4650	540	2940	2000	2940	2000	700	100	65
7000	5310	4750	540	2940	2000	2940	2000	700	100	65
8000	5510	4950	540	3140	2200	3140	2200	750	100	65

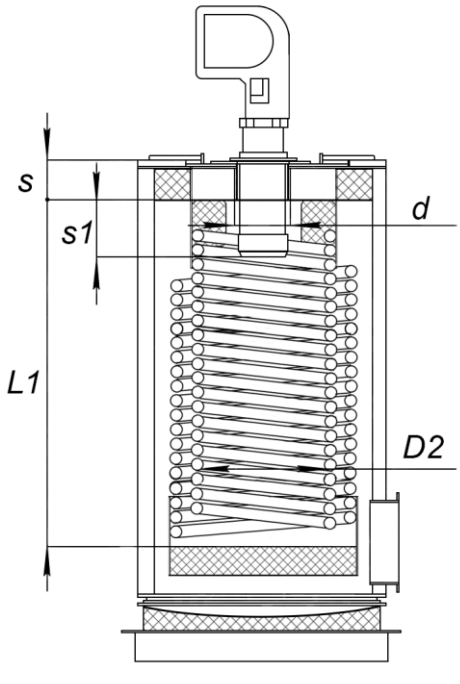
We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



BURNER SELECTION DIMENSIONS

Model Pulse	Burner opening diameter d, mm	Front cover thickness s, mm	Burner mounting dimension s1, mm	Furnace tube diameter D2, mm	Furnace tube length L1, mm	Reversal chamber length L2, mm
120	200	185	20–60	390	806	—
200	200	185	20–60	390	806	—
300	230	185	20–60	390	806	—
400	230	185	20–60	390	1157	—
500	230	200	20–60	390	1157	—
600	280	200	20–60	500	1342	—
800	280	200	20–60	500	1477	—
1000	280	200	20–60	480	1779	—
1200	280	200	20–60	480	1779	—
1500	330	200	20–60	620	2700	—
1800	330	200	20–60	620	2700	—
2000	330	200	20–60	620	2700	—
2500	330	250	20–60	770	3052	—
3000	330	250	20–60	770	3152	—
3500	330	250	20–60	770	3152	—
4000	450	250	20–60	910	3390	—
4500	450	250	20–60	910	3390	—
5000	450	250	20–60	1245	3408	—
6000	450	250	20–60	1245	4302	—
7000	450	250	20–60	1245	5350	—
8000	470	250	20–60	1490	5463	—

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



MIRA X



Parameter	Value
Capacity	≤ 220000 kg/h
Pressure	≤ 45 bar
Temperature	≤ 450 °C
Efficiency	> 90.0%

| DESCRIPTION

Boilte Mira X water-tube drum steam boilers are designed for long-term continuous operation in industrial CHP plants and large boiler houses. Steam capacity ranges from 10 to 220 t/h, working pressure from 1.2 to 4.5 MPa (12-45 bar), and superheated steam temperature up to 450°C. The design is gas-tight, with the furnace screened by membrane panels. Modular delivery (tunnel arrangement: 1-4 modules; tower arrangement: 4-8 modules) ensures high assembly quality and minimizes site installation work. Fuels: natural gas, diesel fuel and fuel oil. Service life is more than 20 years.

| SCOPE OF SUPPLY

Furnace waterwalls with downcomer and steam-outlet systems, external cyclones, hangers and seals.

Enclosing heating surfaces of the horizontal and downflow gas passes with headers and connecting elements.

Superheater with heating surfaces, crossover pipes, intermediate headers and spray attemperator.

- Drum with separation devices.
- Boiler supporting structure, service platforms and ladders.

| SCOPE OF SUPPLY (CONTINUED)

- Boiler unit process-control system.

  Internal piping (recirculation, concentration-control, spray, drain, blowdown and emergency-drain lines).
- Boiler fittings (inspection doors and manholes for access to heating surfaces).
- Instrumentation
- Refractory and thermal-insulation package.

| DESIGN FEATURES

Modular delivery. Mira X boilers are supplied as separate high-factory-readiness modules. Depending on size and arrangement, the boiler consists of 1 to 8 modules. Factory fabrication significantly improves welding and assembly quality, minimizes site installation and commissioning costs, and allows the equipment to be transported by road, rail or sea.

Two arrangement types. Tunnel (horizontal) arrangement for steam capacities from 10 to 60 t/h. Tower (vertical) arrangement for steam capacities from 50 to 220 t/h.

Gas-tight membrane panels. The furnace and gas passes are screened by gas-tight panels manufactured on a fully automatic welding line. This provides increased reliability by reducing metal mass

under pressurized operation, preventing air infiltration into the furnace and gas passes, reducing excess air, increasing efficiency and lowering NOx emissions, while also allowing the use of modern lightweight thermal-insulation materials with removable cladding for rapid access to heating surfaces.

| QUALITY CONTROL

Material selection for pressure-part manufacture is substantiated by strength calculations for boiler components operating under pressure. The calculations are performed in accordance with RD 10-249-98 (Strength Calculation Standards for Stationary Boilers and Steam and Hot-Water Pipelines), approved by Rostechnadzor.

Every boiler undergoes multi-stage quality control: incoming material inspection with certificate and chemical-composition verification, automated welding with non-destructive weld testing (ultrasonic testing and radiography), hydrostatic testing above working pressure, and final functional bench tests.

| APPLICATIONS

Industrial CHP plants and high-capacity boiler houses - primary steam source for power generation and district heat supply to residential and industrial areas.

Oil refineries and petrochemical plants - steam supply to process units (crude distillation, reforming, cracking), pumping of viscous petroleum products and pipeline heating.

Metallurgical plants - turbine drive, fuel-oil heating, steam quenching of slag and concentrate drying at mining and processing plants.

- Pulp and paper mills - pulp cooking, paper-web drying and operation on bark waste.

Large food and processing plants - sterilization, pasteurization, evaporation and drying. Backup fuel maintains continuity during gas-supply interruptions.

Energy centers for industrial clusters - centralized steam supply to plants, warehouses and technology-park infrastructure. Phased capacity expansion.

CONTROL S31



Parameter	Value
Type	Relay
Protection rating	IP 55
Power supply	380 V, 50 Hz
Control circuits	220 V / 24 V

| DESCRIPTION

The Control S31 system is designed for automatic steam-boiler control and for boiler protection when critical pressure, level or conductivity values occur. The automation controls feedwater, upper (continuous) blowdown and lower (intermittent) blowdown.

The system provides safety and control functions for all required systems of small-and medium-capacity steam boilers (up to and including 5 t/h). It is based on relay hardware using electromechanical components, ensuring high reliability and simple operation.

| DESIGN FEATURES

Hardware - relay-based, using electromechanical controllers. Provides high reliability, resistance to electromagnetic interference and easy maintenance without complex programming.

Blowdown - automatic control of upper (continuous) blowdown for dissolved-solids control and lower (intermittent) blowdown for sludge removal, maintaining stable boiler-water chemistry.

Manual control - switches on the control cabinet allow the operator to change to manual boiler operation when required.

| DESIGN FEATURES (CONTINUED)

Application - low-capacity steam boilers (up to and including 5 t/h) operating at pressures from 0.7 to 12 bar.

Supervisory monitoring - dry-contact output for transmitting alarm signals to a supervisory system or operator console.

Expansion capability - optional packages allow connection of a high-level sensor and control of two feedwater pumps.

Electrical protection rating - IP55; the control cabinet is protected against dust and water jets, allowing installation in boiler rooms with elevated humidity and dust levels.

| FUNCTIONAL CAPABILITIES

Actuator control:

- Remote control of the main steam valve (MSV) with steam outlet-pressure monitoring

Control of feedwater pumps / feedwater valve according to boiler water level, with working pressure maintained within specified limits

Control of the boiler continuous (upper) blowdown system (dissolved-solids control), taking current boiler pressure and load into account

Control of the boiler lower (intermittent) blowdown system (sludge removal), with pressure monitoring before and after blowdown

Minimum boiler water-level monitoring - SIL-2 low-level safety sensor (2 pcs.) for reliable protection against exposure of heating surfaces.

Maximum boiler water-level monitoring - prevents drum overfilling and moisture carryover with steam.

Maximum boiler-pressure monitoring - protection against exceeding working pressure on both fuel and steam sides.

Burner interlock - fuel supply is immediately shut off in the event of any emergency deviation (level, pressure, overheating).

Indication and supervisory monitoring:

- Visual alarm indication - visual notification of personnel in the event of a malfunction.

Generation of interlock signals for higher-level automation - transmission of emergency signals to upper-level control systems (process control system).

Generation of alarm signals for the supervisory system - dry-contact output to the operator console when pressure deviates below or above permissible limits.

Burner control:

- Control of single-and two-stage burners.
- **Level control:** ON/OFF (discrete).

Operating modes:

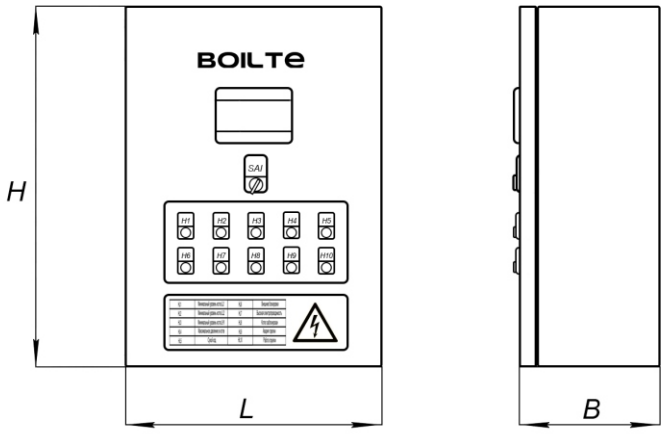
Automatic mode - the system independently controls boiler operation while maintaining specified parameters.

Manual mode - components in the control cabinet allow the boiler to be operated manually by switches when required

TECHNICAL DATA

Model	Emergency shutdown	Alarm indication	Operating temperature, °C	Dry mass, kg	H, mm	L, mm	B, mm
Control S31	Yes	Yes	+5....+40	22	600	600	220

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



CONTROL S51



Parameter	Value
Type	PLC
Protection rating	IP 55
Power supply	380 V, 50 Hz
Control circuits	220 V / 24 V

| DESCRIPTION

The Control S51 system is a software-and-hardware package based on relay logic (safety circuit) and a programmable logic controller (PLC). The PLC contains all Boilte-developed application software, which collects and processes all data connected to the PLC and forms the basis for the steam boiler unit control algorithms.

The software functionality is based on generating control actions in response to events that change the state of the process.

| DESIGN FEATURES

Combined hardware architecture - the system is based on relay logic (hardwired safety circuit) and a programmable logic controller (PLC). This combination provides high reliability in protecting critical parameters and flexibility in control algorithms.

Boilte proprietary software - all application software installed in the PLC is developed specifically for steam boiler units and takes their operating characteristics into account.

Event-driven operating logic - control actions are generated in response to changes in process status, increasing system adaptability to variable boiler operating modes.

| DESIGN FEATURES (CONTINUED)

Modularity and configurability - the system supports different burner types (two-stage, three-stage and burners modulated by discrete signals) and different level-control methods (two-position valve, modulating valve, variable-frequency pumps).

- LCD process visualization - displays process parameters, equipment status and alarm events.
- Supervisory-system support - Modbus RTU protocol for integration into higher-level systems.

Event logging - maintains a process-information log for boiler performance analysis and fault diagnostics.

| FUNCTIONAL CAPABILITIES

Water-level control:

- Two-position water-level control with maximum-level function
- Modulating water-level control with maximum-level function

Burner control (configurable):

- Two-stage burner control

- Three-stage burner control
- Modulating burner control

Feedwater-pump control:

- Control of two feedwater pumps based on feedwater-valve opening (parallel mode)
- Discrete control of two feedwater pumps according to boiler water level
- Variable-frequency control of two feedwater pumps

Other functions:

- Boiler steam shut-off valve with integral protection function
- Economizer control

| ADVANTAGES

Flexibility - support for different burner types (two-stage, three-stage and modulating) and water-level control methods (two-position, modulating and variable-frequency)

| ADVANTAGES (CONTINUED)

Reliability - the combination of relay logic (hardwired safety circuit) and a programmable logic controller provides high fault tolerance and protection of critical parameters

Information display - the LCD visualization of process operation allows the operator to monitor boiler-unit status in real time

Pump control - two feedwater pumps with variable-frequency control for accurate water-level maintenance and reduced electricity consumption

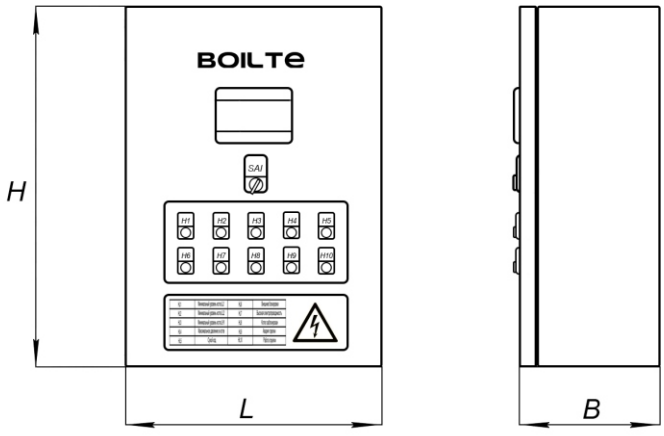
Integration - supervisory monitoring via Modbus RTU for data transfer to higher-level systems (process control system, SCADA)

Logging - processing, systematization and logging of process information for boiler performance analysis and fault diagnostics

TECHNICAL DATA

Model	Emergency shutdown	Alarm indication	Operating temperature, °C	Dry mass, kg	H, mm	L, mm	B, mm
Control S51	Yes	Yes	+5....+40	22	600	600	220

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



CONTROL S71



Parameter	Value
Type	PLC (extended)
Protection rating	IP 55
Power supply	380 V, 50 Hz
Control circuits	220 V / 24 V

| DESCRIPTION

The Control S71 system is designed for boiler control and protection when critical values of pressure, temperature (when operating with a superheater) or boiler water level occur. Control S71 is a local automated control system based on relay logic (safety circuit) and a programmable logic controller (PLC), using CPU 1214C as the processor module.

The PLC contains application software that collects and processes all data connected to the PLC and controls actuators in accordance with the boiler operating algorithms.

Control S71 is designed to connect various boiler-level monitoring systems and emergency level switches (ebc-hl-relay) using universal connection terminals. The system can control an economizer and can also operate as part of a cascade-control package.

| DESIGN FEATURES

Combined architecture - relay logic (safety circuit) + PLC with CPU 1214C processor module, providing high fault tolerance

Boilte proprietary software - steam boiler unit operating algorithms adapted to actual operating conditions

| DESIGN FEATURES (CONTINUED)

Universal connection terminals - for fast connection of different level-monitoring systems and emergency level switches

Cascade control - ability to operate as part of a package using a control system to coordinate several boilers

Auxiliary-equipment control - economizer and superheater with superheated-steam temperature monitoring

| FUNCTIONAL CAPABILITIES

Steam control:

Control of the boiler steam shut-off valve according to control algorithms and operator-set parameters

- Maintenance of boiler steam pressure using a modulating burner under the control program

Feedwater and level control:

- Control of boiler feedwater pumps in accordance with the algorithm
- Maintenance of the specified steam-boiler water level (feedwater control)

Blowdown control:

- Control of the intermittent (lower) blowdown valve

- Control of the continuous (upper) blowdown valve (dissolved-solids control)

Auxiliary-equipment control:

- Maintaining the specified steam temperature in the superheater
- Economizer damper control

Visualization and logging:

Visualization and display of control processes, with parameters shown on the operator panel and at supervisory-control level

- Visualization of the message system and logging of all events

| ADVANTAGES

- Multifunctionality - boiler, superheater and economizer control in one system

  Configuration flexibility - configurable burner types, level-control methods and equipment composition
- Reliability - hardwired safety circuit + programmable logic

| ADVANTAGES (CONTINUED)

- Visualization - 4-inch HMI panel for parameter display and event log
- Supervisory monitoring - data transfer via Modbus TCP/IP
- Scalability - ability to operate in cascade with other control systems
- Logging - recording of all events and messages for analysis and diagnostics

| APPLICATIONS

Medium-and high-capacity steam boilers - the system provides a complete boiler control and protection cycle

Boilers with superheaters - monitoring and maintenance of the specified superheated-steam temperature

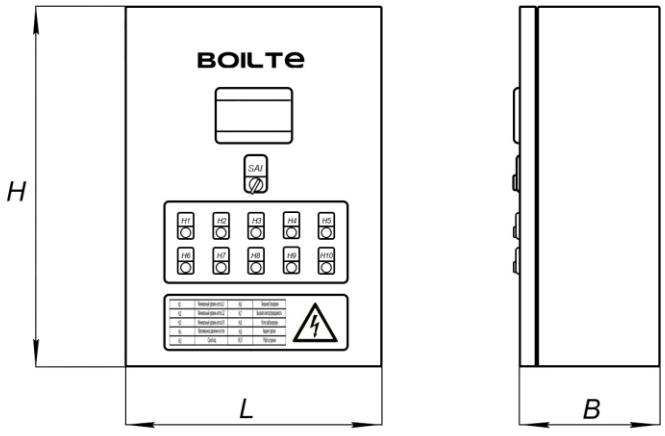
Facilities with advanced automation - supervisory monitoring via Modbus TCP/IP (process control system, SCADA)

- Cascade boiler plants - operation as part of a cascade-control package

TECHNICAL DATA

Model	Emergency shutdown	Alarm indication	Operating temperature, °C	Dry mass, kg	H, mm	L, mm	B, mm
Control S71	Yes	Yes	+5....+40	22	600	600	220

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



CONTROL S55



Parameter	Value
Protection rating	IP 55
Humidity	Up to 80%
Power supply	380 V, 50 Hz
Control circuits	220 V / 24 V

| DESCRIPTION

The control cabinet is designed for automatic monitoring and regulation of the deaerator's main parameters: water level, pressure and temperature. It controls water-and steam-supply valves and pumps and provides alarm indication when parameters deviate. IP55 protection allows installation in rooms with elevated humidity and dust levels.

| SCOPE OF SUPPLY

- Complete control cabinet (IP55 enclosure)
- Pneumatic modulating pressure-control valve
- Pneumatic shut-off valve (emergency steam isolation)
- Steam-injection control valve (temperature)
- Automatic drain valve
- Level sensors (electrode or float type)
- Pressure sensor
- Thermometric system
- Interposing relays and contactors
- LED indicators (alarm panel)
- Mode selector switches (AUTO/MANUAL)
- Fuses and circuit breakers
- Terminal blocks for external circuits

| FUNCTIONAL CAPABILITIES

Tank water-level control (ON/OFF). Automatic maintenance of the specified water level in the deaerator. When the level falls, the system starts the water-supply pump or opens the make-up valve. At the upper limit, it switches off.

Automatic drain-valve activation at high water level. If the maximum permissible level is exceeded, the system automatically opens the drain valve to discharge excess water.

Tank pressure regulation by a pneumatic modulating valve at the deaerator inlet. Smooth maintenance of the specified steam pressure in the deaerator. The valve opens or closes according to the deviation of actual pressure.

Tank water-temperature regulation using the thermometric system and steam-injection control valve. Water temperature is maintained at 95-98°C for effective deaeration. The steam-injection valve is controlled by a signal from the thermometric system.

Steam supply is shut off by a pneumatic valve at high tank pressure. Emergency protection - if the permissible deaerator pressure is exceeded, the pneumatic steam-inlet valve closes fully and stops the steam supply.

| INDICATION AND ALARMS

- Water-supply indication - indicates operation of the water-supply valve or pump.
- Steam-supply indication to the deaerator - indicates opening of the steam-injection valve
- Automatic drain-valve activation indication - indicates drain operation at high water level.

  Water-supply pump operation / fault indication - indicates normal operation and emergency shutdown of the pump.

  Water-recirculation pump operation / fault indication - indicates normal operation and emergency shutdown of the pump.

  Low-water-level alarm - emergency indication when the level falls below the minimum permissible value.

| ADVANTAGES

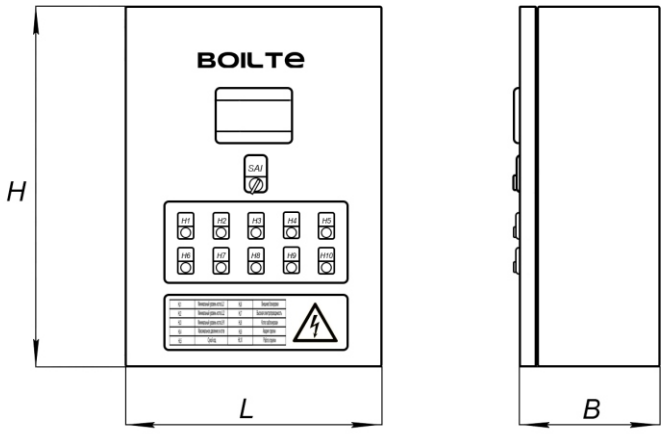
- Full automation - level, pressure and temperature are maintained without operator intervention

  Modulating control - smooth pressure and temperature regulation, preventing hydraulic shock
- Emergency protection - automatic drainage at high level and steam isolation at overpressure
- Manual backup - AUTO/MANUAL switches for each actuator
- Clear indication - LED status and alarm indicators for all assemblies
- Reliability - simple ON/OFF control arrangement with level redundancy
- Protection against external influences - IP55 enclosure

TECHNICAL DATA

Model	Emergency shutdown	Alarm indication	Operating temperature, °C	Dry mass, kg	H, mm	L, mm	B, mm
Control S55	Yes	Yes	+5....+40	18	500	400	220

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



BOOST



Parameter	Value
Capacity	≤ 16000 kg/h
Pressure	≤ 16 bar
Temperature	≤ 130 °C
Efficiency	> +2.0%

| DESCRIPTION

The economizer is designed to heat feedwater using thermal energy from outgoing flue gases. Recovery of flue-gas heat increases boiler efficiency by 2% and reduces fuel consumption. The unit is installed downstream of the boiler in the flue-gas flow - mounted on the smoke box (top-mounted) or separately on a foundation (floor-mounted).

| SCOPE OF SUPPLY

The economizer is a fully factory-completed product supplied as one assembled transportable module.

The scope of supply includes:

- Complete economizer (finned heat exchanger in carbon steel; stainless steel on request)
- Connection pipes
- Thermometer
- Operating manual
- Data sheet (included in the boiler data sheet)

The economizer is supplied unpacked or wrapped in protective film to ensure protection during transport and storage. All openings are closed with plugs against moisture and dirt. For normal operation, the economizer is equipped with valves, safety devices and instrumentation.

| ADVANTAGES

- Boiler efficiency increase by 5% - reduced fuel consumption and operating costs.
- Recovery of waste flue-gas heat - use of energy that was previously lost.
- Two installation versions - floor-mounted (on a foundation) or top-mounted (on the smoke box).
- Choice of heat-exchanger material - carbon steel (standard) or stainless steel (on request).
- Bypass duct with damper - allows the economizer to be isolated without stopping the boiler.
- Full factory readiness - supplied as a single module ready for installation.
- Fuel flexibility - works with all fuel types.

| VERSIONS

By installation method:

Floor-mounted - installed downstream of the boiler on a foundation. Used for large boilers or where mounting on the smoke box is not possible. Provides convenient access for maintenance and cleaning of heat-transfer surfaces.

Top-mounted - installed directly on the boiler smoke box. A more compact solution requiring no additional floor area. Eliminates heat loss between the boiler and economizer.

By material:

- Carbon steel - standard for gas and diesel fuel.
- Stainless steel - for aggressive environments (fuel oil, high humidity, low-temperature corrosion).

By heat-transfer surface type:

- Plain-tube coils - easier to clean and resistant to fouling.
- Finned tubes - larger heat-transfer area, more compact and more efficient.

| OPERATING PRINCIPLE

Flue gases leaving the boiler smoke box enter the economizer and are directed along the operating gas path into the heat-exchange chamber. Bundles of plain-tube or finned coils are located in the heat-exchange chamber. As the flue gases pass over the coils, heat is transferred to the tube walls and to the feedwater flowing through them.

The heat-transfer medium (feedwater) flows in the same direction as the flue gases, from the inlet header to the outlet header. The flow rate corresponds to the feedwater demand of the specific steam boiler.

The economizer includes a flue-gas bypass duct that directs the gas flow around the heat-exchange chamber. Switching between the channels is performed by a damper.

TECHNICAL DATA

Model Boost	Power, kW**	Efficiency, %	Gas-side resistance, mbar	Flue-gas outlet temperature, °C	Dry economizer mass, kg	H, mm	L, mm	B, mm	C, mm	N1, DN
1000	32	+2,5	0,06	130	320	1400	710	520	400	25
1500	48	+2,6	0,06	130	420	1500	795	520	400	25
2000	80	+2,9	0,11	130	620	1600	880	520	400	25
2500	100	+2,8	0,14	130	620	1600	965	520	450	25
3000	120	+2,5	0,18	130	620	1600	1050	520	450	25
3500	140	+2,6	0,21	130	780	1700	1135	520	450	32
4000	160	+2,5	0,24	130	830	1700	1220	520	500	32
4500	180	+2,6	0,27	130	1000	1700	1305	520	500	32
5000	200	+2,5	0,3	130	1020	1700	1390	520	500	32
5500	217	+2,5	0,32	130	1130	1800	1475	520	600	40
6000	240	+2	0,35	130	1250	1800	1560	520	600	40
7000	280	+2,7	0,41	130	1310	1900	1730	520	650	40
8000	320	+2,6	0,47	130	1250	1900	1900	520	650	40
9000	360	+2,6	0,52	130	1430	2000	2070	520	700	40
10000	400	+2,1	0,58	130	1880	2100	1730	700	700	40
11000	440	+2,9	0,64	130	1880	2100	1900	700	800	50
12000	480	+2	0,7	130	1880	2200	2070	700	800	50
14000	560	+2,9	0,81	130	2100	2300	2070	880	900	50
15000	600	+2,6	0,87	130	1880	2300	2240	880	900	50
16000	640	+2,3	0,93	130	2870	2400	2410	880	900	50

**Power: The stated values correspond to operation on methane (natural gas). When using diesel fuel or fuel oil, output may be adjusted (reduced) in accordance with calculation standards.
Economizer overall dimensions are specified for the tube bundle only (excluding piping, insulation and supporting structures).

DEGAS



Parameter	Value
Capacity	≤ 15000 kg/h
Temperature	≤ 104 °C
Efficiency	> 89.0%
Type	Atmospheric

| DESCRIPTION

Degas atmospheric deaerators with submerged bubbling devices are designed for thermal removal of corrosion-aggressive gases (oxygen and free carbon dioxide) from steam-boiler feedwater and heating-system make-up water. The deaerator is used as the final stage in steam-boiler water-treatment systems.

Feedwater capacity ranges from 500 to 15,000 kg/h. Internal deaerator pressure at a water temperature of 98°C is less than 0.2 kg/cm² (0.02 MPa).

| SCOPE OF SUPPLY

- Main condensate-collection tank
- Automatic steam-injection system - distributed steam supply for heating water
- Magnetic level indicator - visual water-level monitoring
- Water-level sensors - high-and low-level indication
- Water inlet line with valve and filter - controlled supply of incoming water
- Condensate-return connection - condensate discharge
- Vent pipe - discharge of released gases to atmosphere
- Overflow - emergency water discharge if the level is exceeded
- Drain - deaerator emptying

| SCOPE OF SUPPLY (CONTINUED)

- Thermometer - water-temperature monitoring
- Deaerated-water supply to boiler - treated water to the feedwater pump
- Control cabinet - automatic control and protection

Deaerators are equipped with: Electronic water-level control - with high-and low-level indication

- Pressure gauge - monitoring of pressure inside the deaerator
- Thermometer - water-temperature monitoring
- Magnetic (visual) water-level indicator - clear level monitoring

| DESIGN FEATURES

Shape and installation. The deaerator has a horizontal cylindrical configuration. It is fitted with steel supports for installation at the required elevation to prevent cavitation of the boiler feedwater pumps.

Thermal insulation. High-density mineral wool clad with corrugated aluminum foil. Minimizes heat loss and improves personnel safety.

Safety and control automation monitors water temperature inside the deaerator and smoothly controls the actuator of the steam-supply valve to the nozzle. Water level is controlled by the water-supply valve based on the level-sensor signal.

| ADVANTAGES

Effective deaeration - removal of oxygen and carbon dioxide to specified limits, extending equipment life

Two-stage design - higher-quality water preparation compared with single-stage equivalents

Equipment protection - prevents corrosion of the boiler, piping and valves, extending their service life

| ADVANTAGES (CONTINUED)

- Automatic control - maintains temperature and level without constant operator attendance

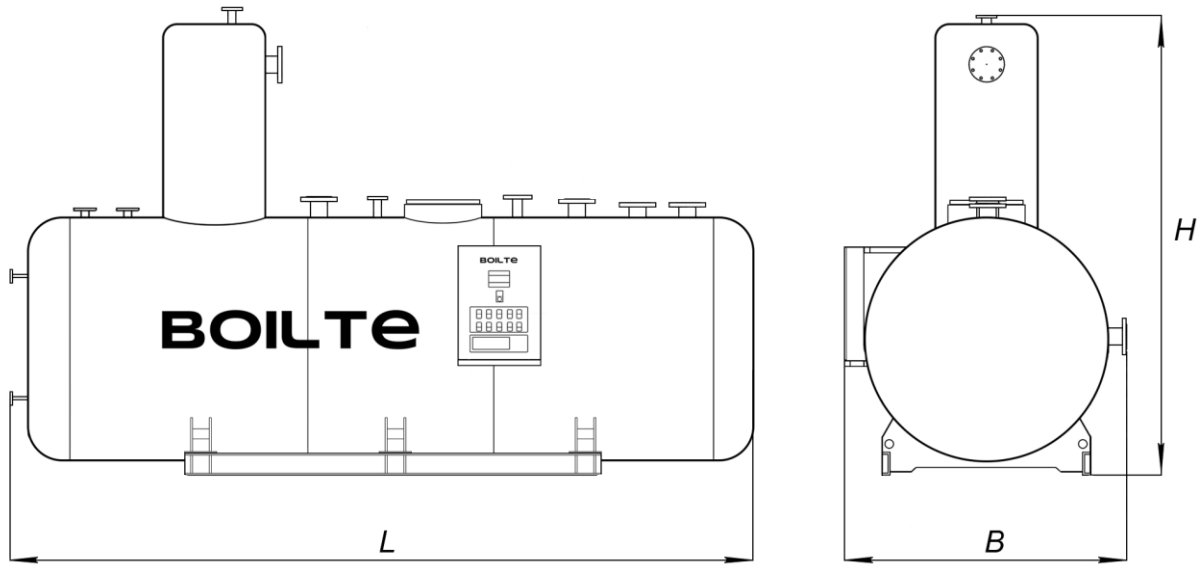
  Thermal insulation - reduces heat loss and improves personnel safety through low external-surface temperature

  Visual monitoring - magnetic level indicator, thermometer and pressure gauge for rapid parameter checks
- Alarm indication - minimum water-level monitoring with automatic personnel notification

TECHNICAL DATA

Model Degas	Tank volume, L	Water volume at level, L	Design temperature, °C	Dry mass, kg	H, mm	L, mm	B, mm
500	500	335	104	140	2100	1800	830
1000	1000	700	104	330	2500	2140	1030
1500	1500	975	104	415	2500	2540	1030
2000	2000	1450	104	550	2850	2380	1300
2500	2500	1625	104	650	2850	2780	1300
3000	3000	1950	104	700	3300	2860	1480
4000	4000	2800	104	1050	3300	2940	1630
5000	5000	3750	104	1250	3350	4380	1830
8000	8000	5600	104	1800	3750	4530	1830
10000	10000	7500	104	2100	4150	5050	1830
12000	12000	9800	104	2600	4171	5128	2130
15000	15000	12500	104	3000	4373	5480	2230

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Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



BUFFER



Parameter	Value
Volume	≤ 5000 L
Pressure	≤ 0.2 bar
Temperature	≤ 90 °C
Material	Steel / AISI 304

| DESCRIPTION

The tanks are designed to store chemically treated feedwater for steam boilers and to collect returned condensate from steam-consuming process equipment. The range covers capacities from 500 to 5,000 liters.

The tanks can be used both to store water downstream of chemical water-treatment plants and to mix condensate with chemically treated water, automatically or as it becomes available.

| SCOPE OF SUPPLY

Steel shell - carbon-steel tank (standard) or stainless-steel tank (on request) for water and condensate storage

- Magnetic level indicator - visual monitoring of water level without opening the tank

  Level sensor (electrode or float type) - automatic level maintenance and high/low-level alarm indication

- Water inlet line with pneumatic valve - automatic tank filling after water draw-off or draining

  Water supply to boiler - piping with shut-off valves for supplying treated water to the feedwater pumps

  Air vent - discharge of dissolved gases to atmosphere and maintenance of atmospheric pressure

| SCOPE OF SUPPLY (CONTINUED)

- Overflow - emergency water discharge at maximum level to prevent overfilling
- Drain - connection for complete tank emptying during maintenance
- Thermometer - tank water-temperature monitoring (dial type or remote sensor)
- Pressure gauge - tank-pressure monitoring (timely detection of a blocked vent)

  Electronic level control - automatic maintenance of the specified level plus visual and audible alarm indication

| DESIGN FEATURES

- **Shape:** horizontal or vertical, cylindrical
- **Installation:** on steel supports at ground level or elevated (to prevent feedwater-pump cavitation)
- **Material:** carbon steel (standard); stainless steel (on request)
- **Thermal insulation:** high-density mineral wool clad with corrugated aluminum foil
- **Inspection manway:** at the top of the tank
- **Air vent:** for discharge of released gases to atmosphere
- **Connections:** drain, overflow, fill and supply connections with shut-off ball valves

| ADVANTAGES

- Reliable storage - reserve of treated water for uninterrupted boiler-house operation.
- Condensate collection - returns heat and water to the cycle, reducing water-treatment costs.
- Automatic mixing - condensate and chemically treated water without operator involvement.

  Cavitation protection - elevated installation can provide positive suction head for feedwater pumps.

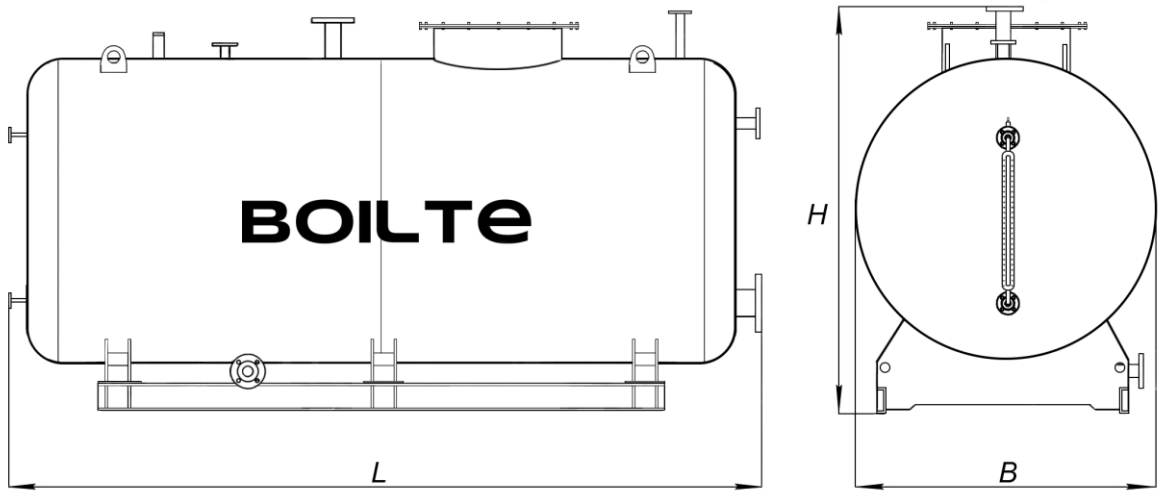
| ADVANTAGES (CONTINUED)

- Visual monitoring - magnetic level indicator, thermometer and pressure gauge.
- Alarm indication - monitoring of high and low water levels.
- Thermal insulation - reduced heat loss and improved personnel safety.
- Material choice - carbon steel or stainless steel to customer requirements.
- Versatility - horizontal or vertical version.

TECHNICAL DATA

Model Buffer	Tank volume, L	Nominal pressure, bar	Operating temperature, °C	Dry mass, kg	H, mm	L, mm	B, mm
500	500	0,2	90	140	1100	1800	830
1000	1000	0,2	90	330	1250	2140	1030
1500	1500	0,2	90	415	1250	3040	1030
2000	2000	0,2	90	550	1550	2380	1300
2500	2500	0,2	90	650	1550	2980	1300
3000	3000	0,2	90	700	1800	3060	1480
4000	4000	0,2	90	1050	1950	2940	1630
5000	5000	0,2	90	1250	2150	2880	1830

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Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



TECHNICAL SELECTION NOTES

Selection guidance

Model selection

Use the project operating point - capacity, pressure and temperature - and verify it against the selected model row. Do not substitute data from a neighbouring model size.

Project data

Confirm fuel, utilities, control requirements and installation conditions with the enquiry. Final equipment scope and interfaces are defined by the approved technical documentation.

DRY



Parameter	Value
Volume	≤ 1200 L
Pressure	≤ 0.2 bar
Temperature	≤ 170 °C
Steam dryness	≤ 99.5 %

| DESCRIPTION

The separator is designed to separate a steam-water mixture into steam and water. The resulting steam and water can be used as heating media in heat exchangers. Its main application is installation on continuous and intermittent steam-boiler blowdown lines. It can also be connected to condensate-discharge lines from steam users, steam-line drains, etc.

| DESIGN FEATURES

The separator shell is a welded cylindrical metal vessel consisting of two torispherical heads and a shell course. A flanged joint at the top allows the separator to be dismantled for maintenance, inspection and repair of internal components.

Internal arrangement:

Steam-water mixture inlet device - directs the incoming mixture tangentially along the inner shell wall, creating centrifugal action for primary phase separation.

Two-stage steam dryer - provides a high steam-dryness fraction. Remaining moisture droplets are captured as steam passes through the dryer and drain downward by gravity.

| DESIGN FEATURES (CONTINUED)

Steam outlet connection - discharges dried steam from the upper part of the separator to the steam line or heat exchanger.

- Water outlet connection - discharges condensate collected in the lower part of the separator.

Drain connection - used to completely empty the separator during maintenance or an extended shutdown.

Level-indicator connections - intended for installation of a visual water-level indicator (sight glass or magnetic indicator) to monitor the amount of condensate in the lower part of the separator.

Instrumentation connections - for installing a pressure gauge (pressure monitoring), thermometer (temperature monitoring) and other instrumentation sensors.

Equipment:

Lifting lugs - intended for slinging and safe crane handling of the separator during installation and removal. They distribute the load evenly and prevent shell damage during lifting.

Steel supports - provide stable installation of the separator on a foundation and accommodate vibration and thermal loads. Designed with height adjustment capability.

| OPERATING PRINCIPLE

Steam-water mixture inlet. The mixture enters through the inlet connection and is directed by the inlet device into a swirling flow along the shell walls. Tangential entry creates a centrifugal effect.

Centrifugal separation. Under centrifugal forces, the lighter steam moves toward the center while the denser condensate is thrown toward the periphery and flows down the walls.

Steam drying. Steam passes through a two-stage dryer where the smallest droplets are captured. The droplets drain downward under gravity.

Steam and condensate discharge. Dried steam leaves through the upper connection to the consumer. Condensate is discharged through the lower connection.

- **Process monitoring.** Condensate level is monitored by the level indicator.

| APPLICATIONS

Steam-boiler blowdown - separation of the blowdown mixture: steam to the deaerator or heating system (heat recovery), water to drain or back into the cycle. Reduced heat losses.

Condensate discharge from steam receivers - separation of flash steam, prevention of steam locking and pump cavitation.

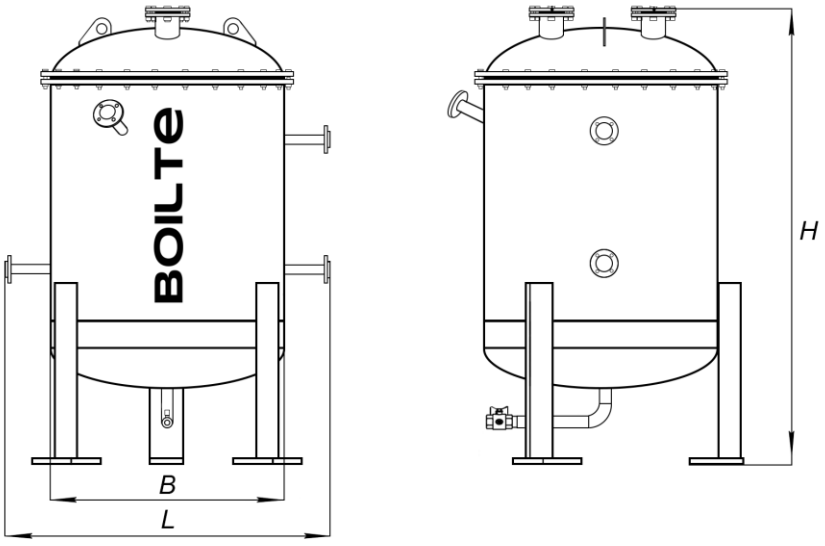
Steam-line drainage - separation of steam from water, prevention of steam discharge and reduction of heat losses, especially in long steam lines.

Heat exchangers - use of dried steam and condensate as heating media. Clean steam improves heat-transfer efficiency and prevents water hammer. Heat transfer and prevents water hammer.

TECHNICAL DATA

Model Dry	Tank volume, L	Working pressure, bar	Dry mass, kg	H, mm	H2, mm	L, mm	B, mm
100	100	0,2	140	1105	1010	990	750
300	300	0,2	230	1505	1410	1190	970
500	500	0,2	315	1895	1800	1290	1050
800	800	0,2	450	2245	2100	1430	1250
1200	1200	0,2	550	2475	2330	1650	1420

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



SCRUB



Parameter	Value
Volume	≤ 5000 L
Pressure	≤ 0.2 bar
Temperature	≤ 104 °C
Type	Atmospheric

| DESCRIPTION

Blowdown coolers are designed to cool water before discharge to sewer to the required limits. They are used in boiler houses and industrial systems to cool steam-boiler blowdown water, condensate and other hot effluents. Range capacity: 0.3 to 5 t/h. Working temperature: up to 104°C. Working pressure: gravity-fed (atmospheric).

| DESIGN FEATURES

The blowdown-cooler shell is a vertical welded cylindrical vessel. The upper and lower heads are flat. The upper head is attached to the shell by a flanged joint, allowing internal servicing of the cooler. Lifting lugs are located on the shell. Supports at the bottom are provided for installation on a foundation.

Internal arrangement:

- Hot-water inlet connection
- Cooling-water inlet and bubbling device (cold water)
- Cooled-water outlet device
- Drain line
- Vent-steam connection
- Connections for instrumentation (thermostat)

| OPERATING PRINCIPLE

Water cooling. Hot water enters the blowdown-cooler mixing chamber through a connection. Cold water is supplied to the mixing chamber through a separate connection. Cooling takes place by intensive mixing of the incoming hot water with cold cooling water. Once the cooled water reaches the required temperature, it is discharged to sewer.

Vent-steam cooling. If cooling of flash steam released from the hot water and discharged through the upper connection is required, the upper cooling line is connected. In this case cold water is additionally sprayed into the vent steam, reducing its temperature and preventing hot-steam discharge to atmosphere, improving personnel safety and environmental compliance.

Automatic control. To regulate the flow of cooling water entering the blowdown cooler, an electrically actuated valve is installed on the lower line and, if required, on the upper line. The valve opens and closes automatically in response to a thermostat installed in a dedicated connection. This arrangement automatically maintains the discharged-water temperature within specified limits without continuous operator involvement and prevents overheating of effluent.

| ADVANTAGES

Effluent temperature reduction - cooling of blowdown water to required values before sewer discharge

- Environmental safety - prevention of thermal pollution of the environment

Automatic regulation - maintains discharged-water temperature from the thermostat signal

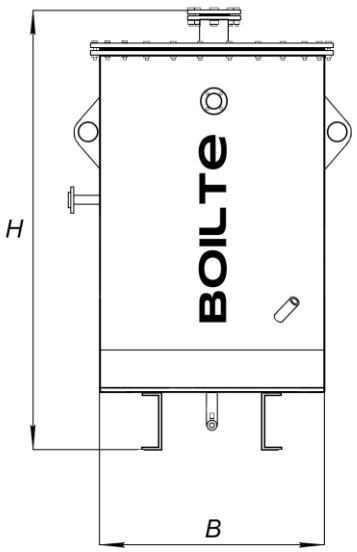
| ADVANTAGES (CONTINUED)

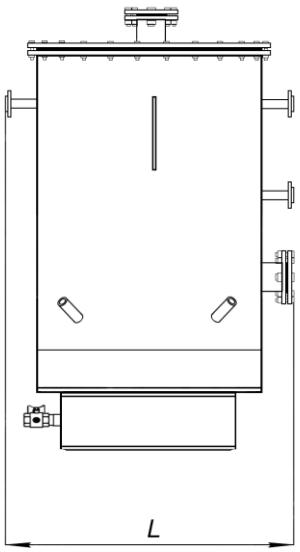
- Easy maintenance - flanged upper head provides internal access
- Easy installation - lifting lugs and supporting elements
- Wide model range - capacity from 0.3 to 5 t/h for boiler houses of different ratings
- Vent-steam cooling option - additional upper cooling line to reduce steam temperature

TECHNICAL DATA

Model Scrub	Tank volume, L	Working pressure, bar	Dry mass, kg	H, mm	H2, mm	L, mm	B, mm
300	300	0,2	72	1105	1010	625	561
600	600	0,2	98	1505	1410	726	662
1500	1500	0,2	185	1895	1800	930	866
3000	3000	0,2	252	2245	2100	930	866
5000	5000	0,2	433	2475	2330	1120	1056

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.





TECHNICAL SELECTION NOTES

Selection guidance

Model selection

Use the project operating point - capacity, pressure and temperature - and verify it against the selected model row. Do not substitute data from a neighbouring model size.

Project data

Confirm fuel, utilities, control requirements and installation conditions with the enquiry. Final equipment scope and interfaces are defined by the approved technical documentation.

MANUAL BLOWDOWN



Parameter	Value
Type	Intermittent
Control	Manual
DN	15–50 mm
Frequency	Once per shift

| DESCRIPTION

Manual (intermittent, sludge) blowdown is intended to remove sludge, scale, corrosion products and other insoluble impurities that accumulate in the lower part of the drum, headers and waterwall tubes of a steam boiler. Unlike continuous blowdown, which removes dissolved salts from the steam-water circuit, manual blowdown removes dense deposits from the bottom.

Blowdown objectives: Prevent sludge from baking onto heating surfaces (eliminates metal overheating and tube rupture).

- Protection against slagging and header blockage.
- Maintain effective heat transfer.
- Maintain normal natural water circulation.

| DESIGN FEATURES

Manual blowdown valves are installed at the boiler's lowest points: lower waterwall headers, the drum on the water-space side and drain connections. Safety rules require two shut-off devices in series on the blowdown line:

- Blowdown valve - quick-acting (lever or pneumatic type).
- Second shut-off valve - for redundancy.

Safety requirements:

| DESIGN FEATURES (CONTINUED)

- Two valves are mandatory on the manual blowdown line.
- Reduction of the discharge-line diameter is not permitted.

  Discharge is routed to a blowdown expansion vessel or to a cooled drain of external circuits (burner, pumps, sensors).

| OPERATING PROCEDURE

Blowdown frequency - 1-3 times per shift depending on raw-water hardness, availability of chemical water treatment and boiler load.

Brief procedure:

1. Make sure the boiler water level is above the minimum permissible level.
2. Open the second shut-off device (the one farther from the boiler).
3. Quickly and fully open the blowdown valve.
4. Maintain blowdown for 5-10 seconds (a water-sludge mixture with steam is discharged).
5. Close the blowdown valve, then the second shut-off valve.

Blowdown quality is checked by observing the water through the sight glass until turbidity disappears.

AUTOMATIC BLOWDOWN



Parameter	Value
Type	Continuous / intermittent
Control	Automatic
DN	15–50 mm
Flow rate	1–5%

| DESCRIPTION

The automatic blowdown system performs two different functions:

Upper (continuous) blowdown - removes dissolved salts from the upper water layer (the zone of maximum impurity concentration).

Lower (automatic intermittent) blowdown - removes sludge, scale and corrosion products from the boiler's lowest points (drum, headers and waterwall tubes).

Both systems operate automatically without continuous operator involvement and complement one another. They do not replace each other; together they improve the effectiveness of boiler-water chemistry control.

Blowdown objectives: Prevent sludge from baking onto heating surfaces (eliminates metal overheating and tube rupture).

- Protection against slagging and header blockage.
- Maintain effective heat transfer.
- Maintain normal natural water circulation.

| DESIGN FEATURES

Automatic upper (continuous) blowdown is designed to maintain boiler-water dissolved-solids content within permissible limits (2000-3500 mg/L), preventing water foaming and moisture carryover with steam and salt deposition in the superheater. Water is taken from the upper part of the drum, 50-100 mm below normal level. The system operates continuously, either at a fixed flow rate (1-5% of steam capacity) or automatically according to dissolved-solids content (conductivity sensor + electrically actuated control valve). It is used for boilers operating more than 8 hours per day, where feedwater dissolved-solids content is high, steam-purity requirements are stringent (food, pharmaceutical, chemical industries), and a superheater is installed.

Automatic lower (intermittent) blowdown removes sludge, scale and corrosion products settling at the boiler's lowest points (waterwall headers, drum bottom and drain connections). Unlike upper blowdown, it operates cyclically according to a preset schedule, for example once every 2-4 hours. A controller or timer opens a quick-acting pneumatic or electric valve for 5-15 seconds and then closes it; the cycle repeats automatically. Human error is eliminated (forgotten operation, excessive duration or incorrect timing). It is used for large boilers (from 1 t/h), facilities with minimal staffing and poor feedwater quality. Automatic lower blowdown does not eliminate periodic visual checks; once per shift it is recommended to verify system operation through the test cock.

STANDBY PUMP



Parameter	Value
Type	Centrifugal
Capacity	100% of duty pump
Head	≤ 25 bar
Automatic standby	≤ 2 s

| DESCRIPTION

The standby feedwater pump is intended to ensure continuous steam-boiler operation and prevent production shutdown if the main feedwater pump fails. The pump is installed in parallel with the duty pump and starts automatically if the main unit trips.

| DESIGN FEATURES

The pump is installed in parallel with the duty pump. Control follows the duty-pump operating mode. Both pumps are hydraulically connected to one feedwater line and fitted with check and isolation valves to prevent water from entering the pump that is on standby.

| SCOPE OF SUPPLY

Standby feedwater pump - has the same technical characteristics as the duty pump (capacity, head, power)

- Strainer - installed on each pump for protection against mechanical impurities
- Check valve downstream of pump (1 pc.) - prevents reverse water flow when the pump stops

| SCOPE OF SUPPLY (CONTINUED)

Isolation valves downstream of pump (2 pcs.) - allow the pump to be isolated for maintenance without draining the entire system

- Check valve - additional protection

| ADVANTAGES

- Production continuity - automatic changeover to the standby pump prevents boiler shutdown
- Reliability - both pumps have identical characteristics, ensuring full redundancy
- Easy maintenance - isolation valves allow either pump to be repaired without stopping the boiler
- Status monitoring - operating and fault indication on the control cabinet
- Backflow protection - check valves prevent hydraulic shock and reverse pump rotation

| APPLICATION

A standby feedwater pump is installed on all steam boilers operating continuously and at facilities where a production shutdown due to loss of feedwater is unacceptable (food, chemical and pharmaceutical industries, power generation and heat supply).

PROJECT CHECKPOINT Selection guidance

Selection data

Coordination

LADDER



Parameter	Value
Material	Steel
Height	≤ 6 m
Inclination	45–60 °
Steps	Corrugated

| DESCRIPTION

The ladder and handrails provide safe access for service personnel to the inspection platform, instrumentation, valves and other steam-boiler components located at height. The design complies with safety rules for operation of pressure equipment.

| DESIGN FEATURES

The ladder and handrails form a welded structure made from steel sections. The upper guardrail is secured by support posts welded to the steam-boiler shell, providing stability and strength of the complete system.

The access ladder package for the inspection platform includes: Handrails - side guards along the ladder to prevent falls from height

- Toe boards - additional side guards preventing a foot from slipping off the side of a step
- Safety cage - fall-protection guard for platforms located more than 3 meters above ground

| DESIGN FEATURES (CONTINUED)

Anti-slip step inserts - chequered surface or pads preventing footwear from slipping on wet or icy steps

Fall-protection grating - installed in platform openings to prevent personnel from falling through

| ADVANTAGES

- Safety - full compliance with occupational-safety requirements for work at height
- Reliability - welded steel-section construction withstands long-term operating loads
- Stability - direct attachment to the boiler shell prevents loosening and vibration
- Slip protection - anti-slip inserts ensure safe ascent and descent in all weather conditions

| APPLICATION

Ladders and handrails are installed on medium-and high-capacity steam boilers where regular access at height is required for equipment maintenance, inspection and repair.

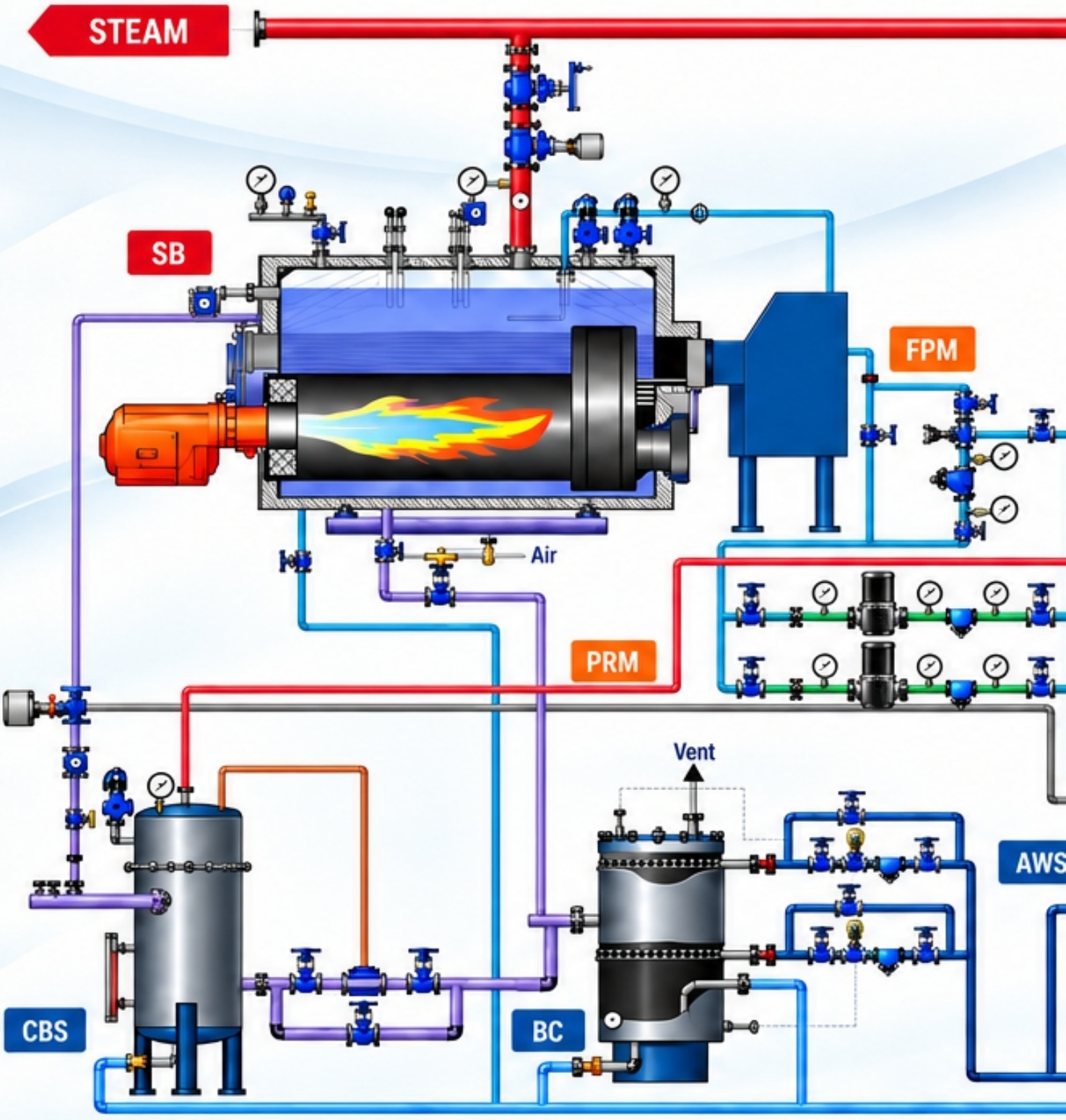
PROJECT CHECKPOINT Selection guidance

Selection data

Coordination

STEAM BOILER HOUSE THERMAL SCHEME

Industrial thermal engineering solutions



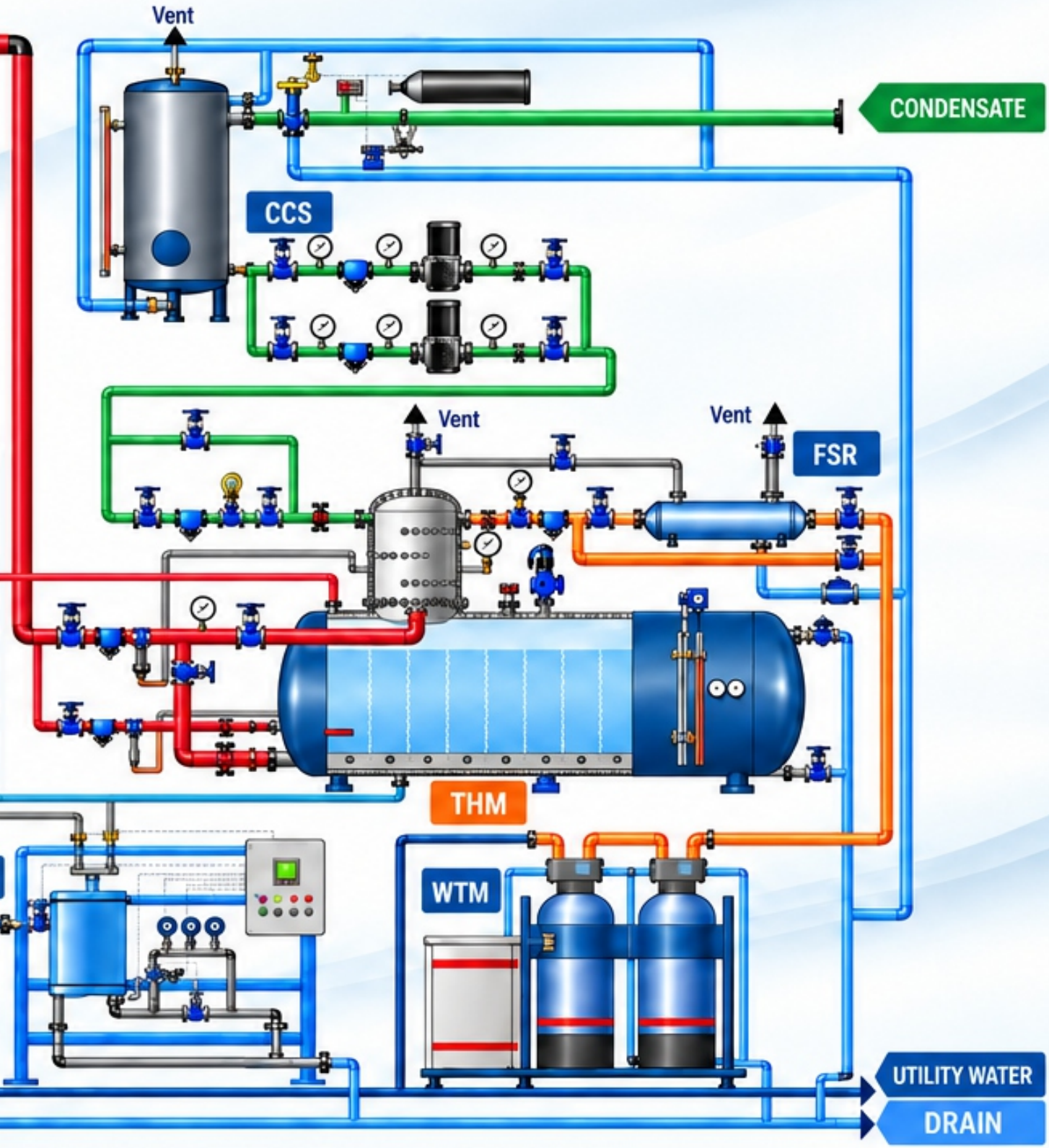
SB — Steam boiler with economizer

THM — Thermal treatment module

FPM — Feed pump module

PRM — Pressure reducing module

FSR — Flash steam recovery unit



CCS Condensate collection system

BC Barbotage cooler

AWS Automatic water sampling module

WTM Water treatment modules

CBS Continuous blowdown separator

HOT WATER BOILERS

| RELIABLE HEAT FOR YOUR FACILITY

Boilte manufactures a broad range of hot-water boilers designed to provide industrial facilities, residential complexes and social infrastructure with reliable and efficient heat. Our equipment combines time-proven design solutions with modern engineering calculations, ensuring durability and stable operation under any conditions.

Supply your process line, heating system or domestic hot-water system with a stable, high-quality heat-transfer medium. Boilte industrial hot-water boilers are the energy core for chemical, petrochemical and food plants, logistics centers, greenhouse facilities, administrative buildings, residential districts and many other facilities. We offer a broad product range with heat outputs from 50 to 50,000 kW, covering any requirement - from heating a small workshop to supplying heat to a major industrial cluster or residential district.

| MAIN TYPES OF BOILTE HOT-WATER BOILERS

Fire-tube boilers - a classic smoke-tube solution offering high reliability, easy maintenance and compact dimensions. Ideal for medium-capacity facilities.

Water-tube boilers - a design with water circulating inside the tubes, ideal for high outputs and pressures. Used in large boiler houses, CHP plants and industrial facilities.

Depending on heat-transfer efficiency requirements, we offer boilers with two and three flue-gas passes, allowing efficiency to be optimized and fuel consumption reduced.

| TECHNOLOGIES FOR EVERY APPLICATION

Under one brand, Boilte combines several engineering solutions for hot-water equipment, allowing selection of the optimum model for specific heat loads and operating conditions: Slim series - compact two-pass boilers with outputs of 400-2,500 kW. Ideal for confined spaces where maximum power density per unit area is important.

| TECHNOLOGIES FOR EVERY APPLICATION (CONTINUED)

Base series - low-temperature three-pass boilers with outputs of 350-1,250 kW. Distinguished by improved environmental performance and reduced NOx emissions; operate on 95/70 and 115/70 temperature schedules.

Core series - industrial two-pass boilers with outputs of 50-5,000 kW. A standard solution for heating workshops, warehouses and greenhouse facilities and for process duties.

Core Duo series - twin boilers with outputs of 140-2,000 kW. Two units in one module with common piping provide mutual redundancy and cascade control.

Trinity series - industrial three-pass gas-tube boilers with outputs of 1,000-20,000 kW (1-20 MW). The flagship series for large industrial sites, residential districts and CHP plants. Efficiency up to 96%, working pressure up to 10 bar, heat-transfer medium temperature up to 115°C. An optimum combination of high output, energy efficiency and reliability.

Mega series - water-tube boilers with outputs of 4,650-50,000 kW (up to 50 MW). Designed for large industrial facilities, district boiler houses and centralized district-heating systems.

| KEY FEATURES AND ADVANTAGES

Wide capacity range

From compact 50 kW solutions for local heating to powerful 50,000 kW units for large facilities and CHP plants. The broad selection allows equipment to be matched precisely without paying for excess capacity.

Standards compliance

The equipment has all required certificates (GOST, EAEU TR and Rostechnadzor permits) for legal use in the Russian Federation and EAEU, for rapid switching

Fuel flexibility

Operation on natural gas, LPG, diesel fuel, fuel oil, heating oil and waste oil. Dual-fuel burners can be fitted for rapid switching between energy sources depending on market conditions.

High efficiency and economy

Modern design (fire-tube and water-tube arrangements, turbulators and gas-tight construction) and an intelligent control system optimize fuel consumption and reduce operating costs. Efficiency reaches 96% depending on model and operating mode.

High operating parameters

Support for temperature schedules of 95/70, 115/70 and 150/70°C and working pressures up to 16 bar provides application flexibility - from conventional heating to processes requiring high-temperature water.

Full factory readiness

Boilers are supplied in maximum configuration: insulated and clad shell, internal boiler piping, valves and a connection nozzle block.
Ready-to-connect design reduces commissioning time.

| QUALITY CONTROL AND RELIABILITY

Every Boilte hot-water boiler passes a multi-stage quality-control system: Incoming inspection of metal and components with certificate verification.

- Automated welding with non-destructive weld testing (ultrasonic testing, radiography).

| QUALITY CONTROL AND RELIABILITY (CONTINUED)

- Hydrostatic pressure testing at 1.5 times the working pressure.
- Functional bench tests of automation, safety systems and thermal parameters.

| APPLICATIONS

- District and neighborhood boiler houses
- CHP plants and centralized district heating systems
- Industrial facilities (chemical, petrochemical, food and metallurgical plants)
- Logistics hubs and warehouse complexes
- Greenhouses and agricultural complexes
- Administrative buildings, sports and social facilities
- Domestic hot-water supply for industrial and residential facilities

| LIFETIME WARRANTY AND DURABILITY

We are so confident in the quality of our materials and the accuracy of our engineering calculations that we provide a lifetime warranty on the heat exchangers of hot-water boilers - key components operating under maximum load. This is our responsibility to you and confirmation of Boilte's highest reliability standard.

The design service life of Boilte hot-water boilers, subject to the prescribed operating procedures, is more than 20-25 years depending on the series.

CORE



Parameter	Value
Capacity	≤ 6000 kW
Pressure	≤ 6 bar
Temperature	≤ 115 °C
Efficiency	> 90.0%

| DESCRIPTION

Boilte Core industrial fire-tube hot-water boilers are created for customers seeking a reliable heat source without paying extra for a brand name or unnecessary engineering solutions. They offer an ideal balance of high performance and accessible price. The 50 to 6,000 kW range covers the needs of small production workshops, large industrial plants, greenhouse complexes and warehouse terminals. Service life is more than 25 years.

| SCOPE OF SUPPLY

Shell with combustion chamber - vertical. Boilers are supplied fully factory-completed and ready for integration into your system.

Shell and structural components

Modular thermally insulated casing with high-density mineral-wool insulation and protective steel cladding.

Removable front cover with adjustable hinges allowing opening to either side for convenient installation in confined spaces.

- Rear smoke chamber with bolted connection for easy removal and cleaning.
- Complete set of turbulators for smoke tubes to increase efficiency.
- Integrated lifting arrangement for safe crane handling.

| SCOPE OF SUPPLY (CONTINUED)

- Inspection port with heat-resistant glass for visual flame monitoring.

Hydraulic and flue-gas/air connections

Heating supply and return connections, system drain connection for complete boiler-circuit emptying, flue flange for stack connection, and condensate drain connection for low-temperature operation.

Documentation

Data sheet, installation and operating manual, certificates of conformity, schematic diagrams and warranty certificate.

| DESIGN FEATURES

Two-pass fire-tube arrangement with reverse flame travel and counterflow heat exchange. The smoke tubes are fitted with spiral turbulators that create swirl for maximum heat recovery. Cylindrical symmetry of the shell and tube plates provides uniform distribution of mechanical and thermal loads, increasing fatigue life. Gas-tight pressurized operation prevents air infiltration and ensures stable combustion. The optimized water volume provides high thermal inertia, acting as an integrated damper that smooths temperature and pressure fluctuations in the system. This architecture makes the boiler resistant to cyclic loading and ensures continuous operation even under intensive 24/7 service.

TECHNICAL DATA

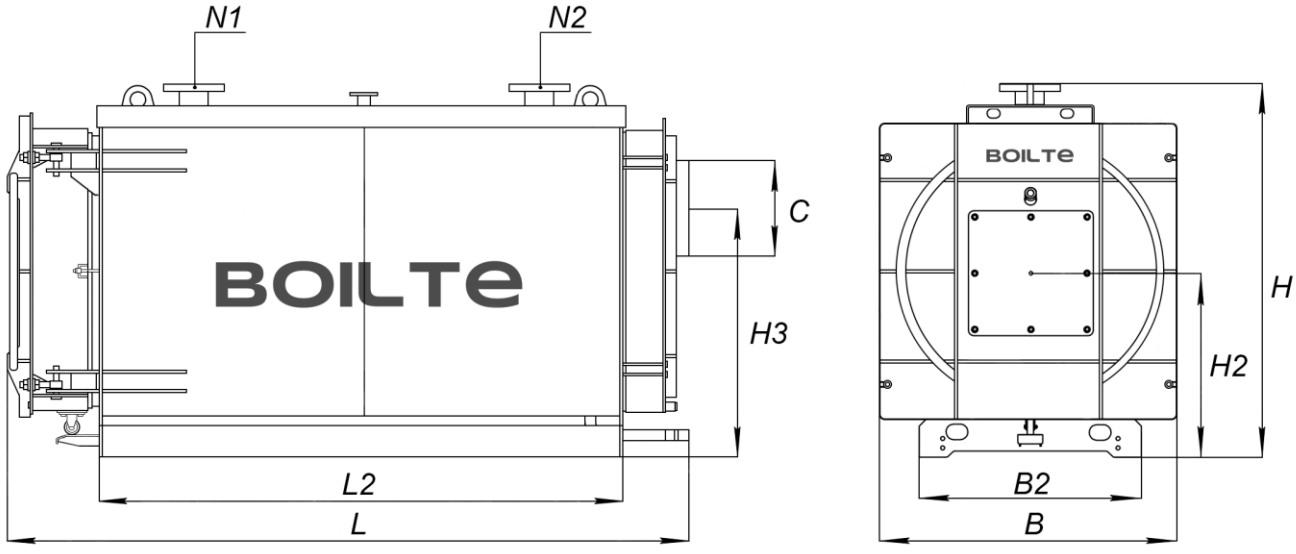
Model Core	Power, kW	Efficiency, %	Pressure, bar	Max. fluid temperature, °C	Min. fluid temperature, °C	Boiler resistance, mbar	Boiler water volume, L	Flue-gas flow, m³/h	Gas consumption, m³/h	Dry boiler mass, kg*
50	50	92,11	6	115	60	0,4	60	92,40	6,81	200
70	70	92,11	6	115	60	0,3	120	151,41	8,33	308
100	100	92,12	6	115	60	0,4	140	171,55	11,55	326
150	150	92,02	6	115	60	1,2	107	257,03	16,56	355
200	200	92,14	6	115	60	2,5	200	340,67	21,95	383
250	250	92,11	6	115	60	4,6	320	427,33	27,34	444
300	300	92,13	6	115	60	3,1	360	512,78	32,81	619
350	350	92,11	6	115	60	4,6	450	597,35	38,51	652
400	400	92,11	6	115	60	5,6	490	716,84	43,90	686
500	500	92,12	6	115	60	4,8	530	854,70	54,69	821
600	600	92,12	6	115	60	6,9	640	1011,57	65,47	946
700	700	92,12	6	115	60	5,7	850	1203,33	77,03	1027
800	800	92,12	6	115	60	3,9	890	1411,72	88,58	1366
900	900	92,11	6	115	60	5,1	950	1588,66	98,59	1421
1000	1000	92,11	6	115	60	6,7	1200	1730,81	109,38	1534
1100	1100	92,12	6	115	60	4,0	1400	1917,25	120,55	1674
1200	1200	92,12	6	115	60	5,2	1500	2050,02	131,72	1793
1300	1300	92,09	6	115	60	6,3	1600	2221,12	142,50	1853
1400	1400	92,15	6	115	60	7,6	1610	2401,41	154,05	1914
1500	1500	92,11	6	115	60	5,1	1700	2597,32	164,45	2310
1600	1600	92,13	6	115	60	6,0	1750	2771,42	175,62	2387
1700	1700	92,11	6	115	60	7,0	1800	2991,34	186,41	2466
1800	1800	92,11	6	115	60	8,1	1850	3019,62	197,19	2547
2000	2000	92,12	6	115	60	8,0	2000	3457,16	219,53	3055
2200	2200	92,12	6	115	60	10,1	2220	3750,79	241,10	3147
2500	2500	92,14	6	115	60	6,8	2700	3921,14	273,45	4350
2800	2800	91,11	6	115	60	9,1	2910	4401,44	306,57	4534
3000	3000	92,11	6	115	60	11,0	3100	4597,43	328,91	4822
3300	3300	92,12	6	115	60	14,0	3350	5071,78	362,03	4976
3500	3500	92,11	6	115	60	16,5	3550	5891,15	385,14	5159
4000	4000	92,12	6	115	60	2,7	3750	6171,41	439,06	8425
4500	4500	91,12	6	115	60	3,7	3950	6890,97	492,99	8709
5000	5000	90,14	6	115	60	4,8	4170	7590,74	546,91	8978
5500	5500	90,11	6	115	60	6,0	4250	8290,38	602,37	9300
6000	6000	90,13	6	115	60	7,3	4550	8868,83	657,06	9692

**Power: The stated values correspond to operation on methane (natural gas). When using diesel fuel or fuel oil, output may be adjusted (reduced) in accordance with calculation standards.

OVERALL DIMENSIONS

Model Core	H, mm	H2, mm	H3, mm	L, mm	L2, mm	B, mm	B2, mm	C, mm	N1, DN	N2, DN
50	737	357	488	1067	660	600	427	150	2"	2"
70	968	476	651	1168	760	800	570	200	50	50
100	968	476	651	1238	830	800	570	200	50	50
150	968	476	651	1353	945	800	570	200	50	50
200	968	476	651	1468	1060	800	570	250	50	50
250	968	476	651	1718	1310	800	570	250	50	50
300	1093	536	711	1724	1316	900	641	250	65	65
350	1093	536	711	1824	1416	900	641	250	65	65
400	1093	536	711	1924	1516	900	641	250	65	65
500	1194	595	795	1974	1516	1000	712	300	80	80
600	1194	595	795	2274	1816	1000	712	300	80	80
700	1194	595	795	2474	2016	1000	712	300	100	100
800	1523	774	1093	2186	1720	1300	926	400	100	100
900	1523	774	1093	2286	1820	1300	926	400	100	100
1000	1523	774	1093	2486	2020	1300	926	400	125	125
1100	1523	774	1093	2656	2120	1300	926	400	125	125
1200	1523	774	1093	2856	2320	1300	926	400	125	125
1300	1523	774	1093	2956	2420	1300	926	400	125	125
1400	1523	774	1093	3056	2520	1300	926	400	150	150
1500	1702	863	1224	2778	2220	1450	1032	400	150	150
1600	1702	863	1224	2878	2320	1450	1032	400	150	150
1700	1702	863	1224	2978	2420	1450	1032	400	150	150
1800	1702	863	1224	3078	2520	1450	1032	400	150	150
2000	1842	927	1337	3182	2520	1550	1109	500	200	200
2200	1842	910	1337	3282	2620	1550	1109	500	200	200
2500	2126	1076	1566	3183	2520	1800	1288	550	200	200
2800	2126	1076	1566	3333	2670	1800	1288	550	200	200
3000	2126	1076	1566	3533	2870	1800	1288	550	200	200
3300	2126	1076	1566	3683	3026	1800	1288	550	200	200
3500	2126	1076	1566	3833	3150	1800	1288	550	200	200
4000	2565	1340	1955	4216	3450	2201	1574	600	200	200
4500	2565	1340	1955	4346	3580	2201	1574	600	200	200
5000	2565	1340	1955	4466	3700	2201	1574	650	250	250
5500	2565	1340	1955	4566	3800	2201	1574	650	250	250
6000	2565	1340	1955	4766	4000	2201	1574	650	250	250

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



| NOTES ON OVERALL DIMENSIONS

To ensure safe, uninterrupted boiler operation and convenient maintenance, the following requirements must be considered when planning the installation location.

Access zones and service clearances

At the front of the boiler, at least 1000 mm of free space from the burner is required for opening the front door. The door can open to either the left or right, allowing installation to be adapted to confined boiler-room conditions.

At the rear, a minimum of 300 mm must be provided for removal of the rear smoke chamber and cleaning of gas passages.

- A 400 mm clearance on each side is sufficient for ventilation and service-personnel access.

Foundation and base preparation

- A reinforced-concrete slab at least 150 mm thick is recommended.

  The boiler-room floor must be made of non-combustible materials, have a level surface and a slope for draining possible leaks.

Transport and logistics

- All boilers are supplied fully assembled on the factory steel frame.

  Integrated lifting lugs provide safe loading, unloading and crane handling without additional rigging devices.

| NOTES ON OVERALL DIMENSIONS (CONTINUED)

Road transport requires a platform whose length matches the boiler overall dimensions. Models up to 1000 kW can be delivered by standard freight vehicles.

Connections and utilities

Heat-transfer medium supply and return connections, drain connection and flue connection have standardized locations.

All hydraulic and flue-gas/air connections are concentrated at the top and rear of the boiler, simplifying installation in existing boiler rooms without rearrangement.

- Cable glands for the automation system and power supply are included in the package.

Boiler-room requirements

The boiler is intended for installation in non-combustible rooms with forced supply-and-exhaust ventilation.

- For the standard version, boiler-room air temperature must be within +5°C to +35°C.

  Ceiling height must exceed the boiler overall height by at least 500 mm to allow removal and maintenance of upper assemblies.

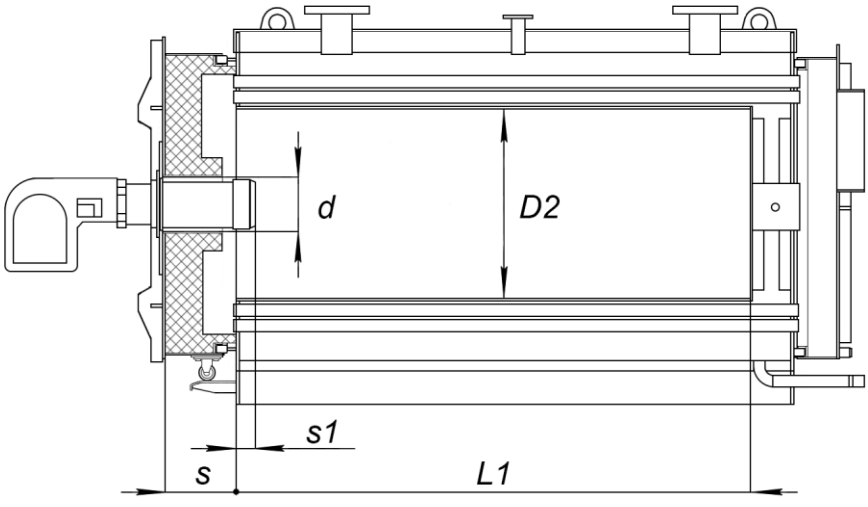
Custom solutions and adaptation

At the customer's request, connection positions can be adjusted and overall dimensions can be adapted, within permissible design limits, for installation in confined spaces without loss of service access.

BURNER SELECTION DIMENSIONS

Model Core	Burner opening diameter d, mm	Front cover thickness s, mm	Burner mounting dimension s1, mm	Furnace tube diameter D2, mm	Furnace tube length L1, mm	Reversal chamber length L2, mm
50	100	150	20–60	310	550	—
70	140	180	20–60	410	650	—
100	140	180	20–60	410	720	—
150	160	180	20–60	410	835	—
200	160	180	20–60	410	950	—
250	160	180	20–60	410	1200	—
300	190	180	20–60	514	1200	—
350	190	180	20–60	514	1300	—
400	190	180	20–60	514	1400	—
500	225	220	20–60	614	1400	—
600	225	220	20–60	614	1700	—
700	225	220	20–60	614	1900	—
800	280	220	20–60	704	1600	—
900	280	220	20–60	704	1700	—
1000	280	220	20–60	704	1900	—
1100	280	220	20–60	704	2000	—
1200	300	220	20–60	704	2200	—
1300	300	220	20–60	704	2300	—
1400	300	220	20–60	704	2400	—
1500	320	250	20–60	804	2130	—
1600	320	250	20–60	804	2230	—
1700	320	250	20–60	804	2330	—
1800	320	250	20–60	804	2430	—
2000	360	300	20–60	900	2430	—
2200	360	300	20–60	900	2530	—
2500	400	300	20–60	1000	2430	—
2800	400	300	20–60	1000	2580	—
3000	400	300	20–60	1000	2780	—
3300	400	300	20–60	1000	2930	—
3500	400	300	20–60	1000	3080	—
4000	460	330	20–60	1196	3000	—
4500	460	330	20–60	1196	3300	—
5000	500	330	20–60	1196	3500	—
5500	500	330	20–60	1296	3700	—
6000	500	330	20–60	1296	3900	—

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



| BURNER SELECTION AND INSTALLATION

Burner operating requirements

The burner installed on a Core boiler must ensure stable ignition and smooth fuel combustion without flame failure or flashback in all operating modes. Liquid-fuel droplets must also be prevented from reaching the internal surfaces of the combustion chamber.

Burner aerodynamics and its position on the boiler must ensure uniform filling of the furnace by the flame without contact with the walls or formation of stagnant, poorly swept zones. For the Core two-pass fire-tube design, the flame must fit completely within the furnace volume and must not reach the smoke-tube bundle.

Core boiler design considerations

Boilte Core boilers operate in a gas-tight configuration with positive pressure inside the combustion chamber. When selecting a burner, consider:

furnace geometry (diameter and length) - so that the flame does not overheat the rear smoke chamber;

boiler aerodynamic resistance, which increases because of the turbulators installed in the smoke tubes.

Burner installation

The burner must be installed by personnel from a specialized organization authorized for this type of work, strictly in accordance with the burner manufacturer's instructions.

Before installation:

- remove the transport packaging;

  make sure the burner complies with the design and technical specification for the specific Core boiler;
- check completeness and absence of damage.

Preparing the mounting position:

before installing the flame head, make sure a thermal-insulation gasket is fitted between the boiler front-door flange and the burner mounting plate;

- check flange flatness and the condition of sealing surfaces.

Installation and sealing:

after placing the flame head in the opening of the Core boiler front door, seal the annular gap between the head and the rigid thermal insulation (refractory lining) of the door. Use the flexible heat-resistant material supplied with the boiler.

Final steps:

- check alignment of the flame head and combustion chamber;
- make sure the burner is securely fastened to the door flange;
- check all connections for leak-tightness before the first start.

Commissioning

After mechanical installation is complete, the burner must be professionally adjusted using flue-gas analysis equipment.

SLIM



Parameter	Value
Capacity	≤ 2500 kW
Pressure	≤ 5 bar
Temperature	≤ 115 °C
Efficiency	> 92.0%

| DESCRIPTION

Boilte Slim compact two-pass boilers are designed for rational use of space without sacrificing performance. Output ranges from 400 to 2500 kW. Heating temperature is up to 115°C and efficiency up to 94%. They operate on gaseous fuels (natural gas, LPG) and liquid fuels. An ideal solution for facilities with limited boiler-room space. Service life is more than 25 years.

| SCOPE OF SUPPLY

Boilers are supplied fully factory-completed and ready for integration into your system.

Shell and structural components

Modular thermally insulated casing with high-density mineral-wool insulation and protective steel cladding.

- Removable front cover on adjustable hinges (opens to either side).
- Rear cover (smoke chamber) with bolted connection for easy removal.
- Complete set of turbulators for smoke tubes to increase efficiency.
- Integrated lifting arrangement for safe crane handling.
- Inspection port with heat-resistant glass for visual flame monitoring.

Hydraulic connections

- Heating supply and return connections, system drain connection.

Flue-gas/air connections

- Flue flange for stack connection and condensate drain connection for low-temperature operation.

Documentation

Data sheet, installation and operating manual in English, certificates of conformity and warranty certificate.

| DESIGN FEATURES

Two-pass fire-tube arrangement with an extended heating surface. The smoke tubes are fitted with spiral turbulators that create swirl for maximum heat recovery. Cylindrical symmetry of the shell and tube plates ensures uniform load distribution. Gas-tight pressurized operation. Significant thermal storage capacity smooths peak network loads.

| QUALITY CONTROL

Every critical assembly undergoes multi-stage non-destructive testing (radiographic and ultrasonic inspection). Weld quality and material structure are verified instrumentally and the results are recorded in reports. Manufacturing tolerances and inspection are 30% stricter than industry norms.

| APPLICATIONS

Heating and domestic hot-water supply for industrial workshops, warehouse complexes, greenhouses and administrative buildings. Processes requiring water heating up to 115°C. Modernization of existing boiler houses without expanding floor area. Cascade heat-supply systems for large facilities.

| ADVANTAGES

Compactness and power density. Output up to 2,500 kW in an exceptionally narrow casing. The boiler fits into an existing layout without costly reconstruction. Several units can be installed in a row to create a high-capacity cascade system. The cost of constructing a new boiler house is substantially reduced because its dimensions can be smaller.

Fuel flexibility and adaptability. The design allows immediate reconfiguration from one fuel type to another. Switching between gas and liquid fuel depending on market prices provides financial protection.

| ADVANTAGES (CONTINUED)

Technological reliability. Every critical weld is validated by radiographic and ultrasonic testing with a test report. Strength is not merely declared - it is documented. The cylindrical furnace and tube plates are designed to accommodate cyclic thermal loads.

Operating efficiency. Aerodynamically optimized gas passages and spiral turbulators increase efficiency up to 94%. Every percentage point of efficiency saves thousands of rubles per season. The modular rear smoke-chamber design and hinged door provide direct access to key components without removing cladding, reducing the time and cost of scheduled maintenance. The large heat-transfer-medium mass acts as a thermal accumulator, smoothing system fluctuations and extending the life of all boiler-house equipment.

Intelligent integration. A standard control interface allows seamless integration of the boiler into any supervisory system.

For model selection, state the heat duty, flow and return temperatures, working pressure, operating schedule and available fuel. Confirm the burner, water-circuit arrangement and control functions. Read the technical data with the dimensional drawing and record the agreed supply boundaries.

TECHNICAL DATA

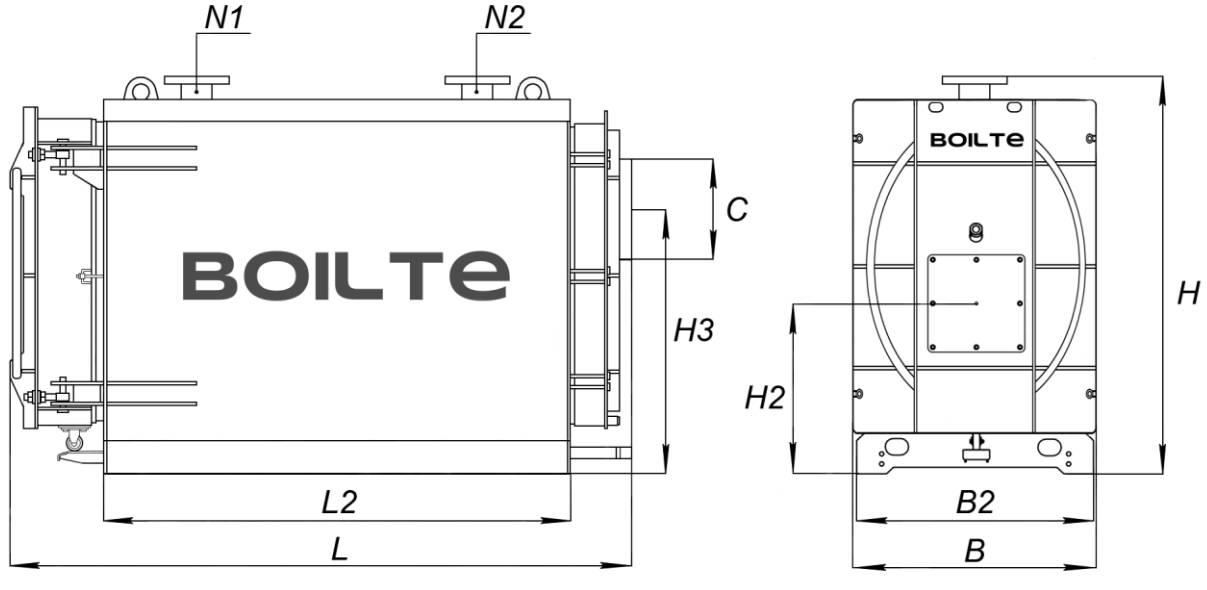
Model Slim	Power, kW**	Efficiency, %	Pressure, bar	Max. fluid temperature, °C	Min. fluid temperature, °C	Boiler resistance, mbar	Boiler water volume, L	Flue-gas flow, m³/h	Gas consumption, m³/h	Dry boiler mass, kg
400	400	92,31	5	115	60	5,6	490	716	43,9	883
500	500	92,41	5	115	60	4,8	560	854	54,69	1057
600	600	92,71	5	115	60	6,9	640	1011	65,47	1206
700	700	92,32	5	115	60	5,7	850	1203	77,03	1308
800	800	92,22	5	115	60	3,9	890	1411	88,58	1856
1000	1000	92,21	5	115	60	6,7	1200	1740	101,38	2120
1300	1300	92,11	5	115	60	6,3	1600	2221	112,38	2517
1500	1500	92,51	5	115	60	5,1	1700	2597	120,55	3029
1700	1700	92,71	5	115	60	7	1800	2991	131,72	3237
2000	2000	92,14	5	115	60	8	2000	3457	142,5	3791
2200	2200	92,11	5	115	60	10,1	2200	3750	154,05	3910
2500	2500	92,13	5	115	60	6,8	2700	3921	164,45	4352

**Power: The stated values correspond to operation on methane (natural gas). When using diesel fuel or fuel oil, output may be adjusted (reduced) in accordance with calculation standards.

OVERALL DIMENSIONS

Model Slim	H, mm	H2, mm	H3, mm	L, mm	L2, mm	B, mm	B2, mm	C, mm	N1, DN	N2, DN
400	1298	480	1025	1914	1520	740	720	250	65	65
500	1398	530	1075	1964	1520	840	820	300	80	80
600	1398	530	1075	2264	1820	840	820	300	80	80
700	1398	530	1075	2464	2020	840	820	300	100	100
800	1729	610	1345	2199	1724	1040	1000	400	100	100
1000	1729	610	1345	2499	2024	1040	1000	400	125	125
1300	1729	610	1345	2949	2424	1040	1000	400	125	125
1500	1988	655	1645	2744	2224	1210	1190	400	150	150
1700	1988	655	1645	2949	2424	1210	1190	400	150	150
2000	2135	705	1695	3139	2524	1310	1290	500	200	200
2200	2135	705	1695	3239	2624	1310	1290	500	200	200
2500	2288	755	1745	3239	2624	1410	1390	550	200	200

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



INSTALLATION PLANNING

Selection guidance

Installation envelope

Use the selected model row together with the drawing. Check overall height, length and width against the delivery route, installation position and available access for service.

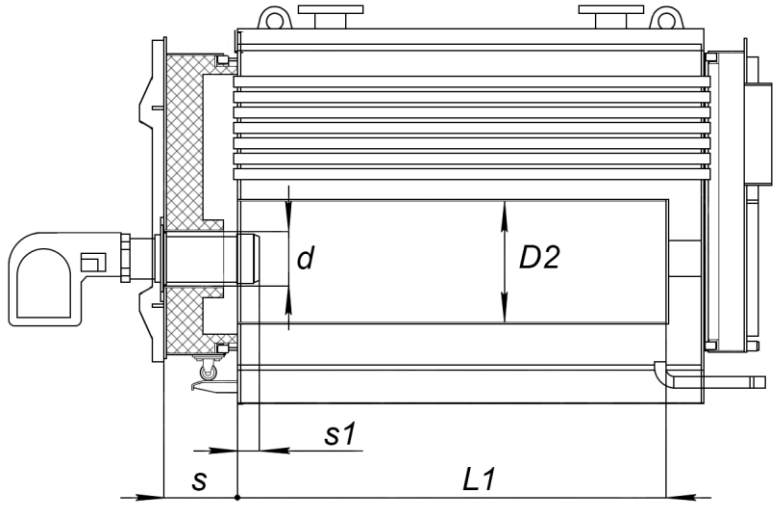
Connection schedule

Confirm connection sizes and locations for the ordered configuration. Coordinate supports and adjacent equipment with project drawings; overall dimensions alone do not define service clearances.

BURNER SELECTION DIMENSIONS

Model Slim	Burner opening diameter d, mm	Front cover thickness s, mm	Burner mounting dimension s1, mm	Furnace tube diameter D2, mm	Furnace tube length L1, mm	Reversal chamber length L2, mm
400	190	180	20–60	514	1400	—
500	225	220	20–60	614	1400	—
600	225	220	20–60	614	1700	—
700	225	220	20–60	614	1900	—
800	280	220	20–60	704	1600	—
1000	280	220	20–60	704	1900	—
1300	300	220	20–60	704	2300	—
1500	320	250	20–60	804	2130	—
1700	320	250	20–60	804	2330	—
2000	360	250	20–60	900	2430	—
2200	360	250	20–60	900	2530	—
2500	400	250	20–60	1000	2430	—

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Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



BURNER MATCHING

Selection guidance

Burner interface

Match the selected burner to the opening diameter, mounting dimension and furnace dimensions shown in this section. Use the exact model row rather than the dimensions of a neighbouring size.

Selection information

Provide the fuel type, required operating range and boiler gas-side resistance with the enquiry. Confirm the flame-head arrangement and maintenance access with the boiler and burner documentation before manufacture.

CORE DUO



Parameter	Value
Capacity	≤ 2000 kW
Pressure	≤ 6 bar
Temperature	≤ 115 °C
Efficiency	> 91.0%

| DESCRIPTION

Boilte Core Duo twin steel boilers are an integrated engineering solution in which two high-efficiency Core fire-tube boilers are combined in one vertical energy module. Total heat output ranges from 140 kW to 2 MW. Heat-transfer-medium temperature is 60-115°C, working pressure up to 6 bar and efficiency up to 94%. Suitable for industrial, power-generation and infrastructure facilities. Service life is more than 25 years.

| SCOPE OF SUPPLY

Core Duo boilers are supplied as one fully factory-completed module. Casing: modular thermally insulated casing on a frame with mineral-wool insulation and steel cladding.

Covers: removable front cover on adjustable hinges (opens to either side); rear smoke-chamber cover bolted for rapid cleaning.

- **Turbulators:** complete set for the smoke tubes to increase efficiency.
- **Connections:** hydraulic (supply, return, drain) and flue-gas/air (flue flange, condensate drain).
- **Monitoring:** inspection port with heat-resistant glass.

| SCOPE OF SUPPLY (CONTINUED)

- **Documentation:** data sheet, manual, certificates, warranty certificate and diagrams.
- **Rigging:** integrated lifting lugs.

| DESIGN FEATURES

Vertical binary arrangement - two independent thermodynamic circuits integrated into a common structural frame with unified piping and flue-gas system. This significantly increases specific output per unit floor area, which is critical when designing confined or expensive sites.

Fuel versatility - compatibility with dual-fuel and combination burners operating on gas and liquid fuel. Provides fuel flexibility and protection against energy-market volatility.

| QUALITY CONTROL

The design was developed using computer-aided engineering methods. Finite-element analysis evaluated the distribution of thermal and mechanical stresses in the shell, tube plates and attachment points. Thermohydraulic calculations optimized flow hydrodynamics. Critical welded joints undergo non-destructive testing (radiography and ultrasonic inspection) with results recorded in as-built documentation.

| APPLICATIONS

- **Industry:** chemical, metallurgical and food plants requiring stable process heat.
- **Power generation:** peak and standby heat sources in heat-supply schemes, mini-CHP plants.

Commercial and social infrastructure: large shopping centers, hospital complexes, educational clusters and swimming pools.

| ADVANTAGES

Fault tolerance and continuity. Two independent boilers form a mutual-redundancy system. Failure of one module does not stop heat supply. Scheduled maintenance of one boiler can be performed without reducing the system's total heat output.

| ADVANTAGES (CONTINUED)

Adaptive control and fuel savings. A PLC-based cascade weather-compensated control system provides dynamic load distribution between modules so that each unit operates in its maximum-efficiency zone; rotation of the lead module to equalize operating hours and service life; and flexible temperature schedules. Energy savings reach 20-30% by eliminating operation under suboptimal conditions.

Optimization of capital and operating costs. Factory preassembly reduces construction and installation work and floor-space requirements, lowering initial investment by 20-35%. High efficiency and minimized heat losses through multilayer insulation reduce the cost of thermal energy. Front access to all critical components reduces maintenance time and labor.

Scalability. The system can initially be installed with one boiler and a second added later as demand grows, without rebuilding the boiler house. The boilers can be configured to use different fuels for additional energy security.

TECHNICAL DATA

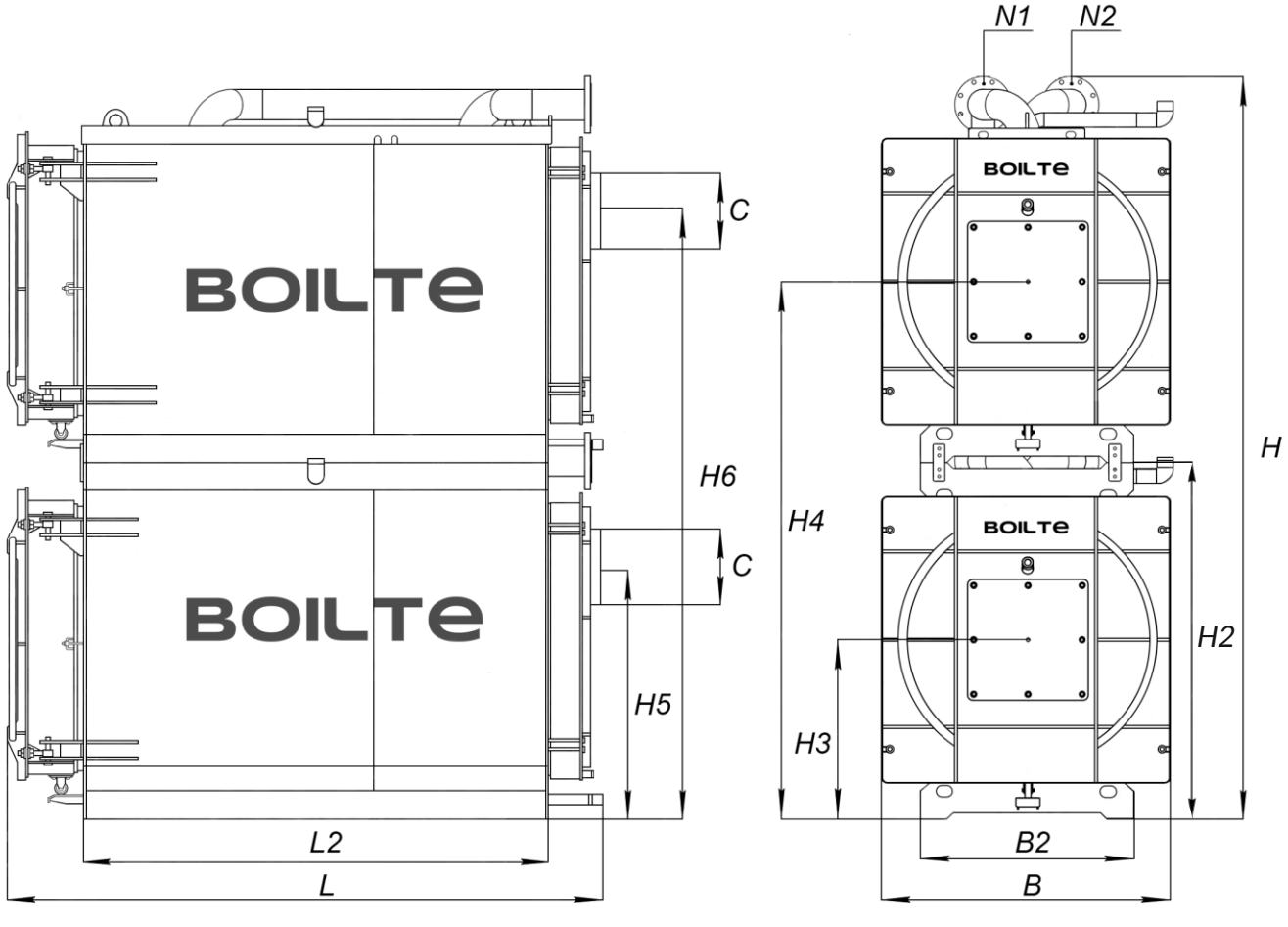
Model Core Duo	Power, kW	Efficiency, %	Pressure, bar	Max. fluid temperature, °C	Min. fluid temperature, °C	Boiler resistance, mbar	Boiler water volume, L	Flue-gas flow, m^3/h	Gas consumption, m^3/h	Dry boiler mass, kg*
70/70	140	92,11	6	115	60	0,3	240	302,82	16,33	632
100/100	200	92,12	6	115	60	0,4	280	343,10	22,55	664
150/150	300	92,02	6	115	60	1,2	340	514,06	36,56	725
200/200	400	92,14	6	115	60	2,5	400	681,34	42,95	781
250/250	500	92,11	6	115	60	4,6	640	854,66	54,34	906
300/300	600	92,13	6	115	60	3,1	720	1025,56	64,81	1271
350/350	700	92,11	6	115	60	4,6	870	1217,35	76,51	1338
400/400	800	92,11	6	115	60	5,6	980	1433,68	86,90	1406
500/500	1000	92,12	6	115	60	4,8	1060	1709,40	108,69	1692
600/600	1200	92,12	6	115	60	6,9	1240	2023,14	130,47	1934
700/700	1400	92,12	6	115	60	5,7	1700	2406,66	144,03	2107
800/800	1600	92,12	6	115	60	3,9	1810	2823,44	176,58	2791
900/900	1800	92,11	6	115	60	5,1	2010	3177,32	193,59	2905
1000/1000	2000	92,11	6	115	60	6,7	2430	3730,81	216,38	3145

**Power: The stated values correspond to operation on methane (natural gas). When using diesel fuel or fuel oil, output may be adjusted (reduced) in accordance with calculation standards.

OVERALL DIMENSIONS

Model Core Duo	H, mm	H2, mm	H3, mm	H4, mm	H5, mm	H6, mm	L, mm	L2, mm	B, mm	B2, mm	B3, mm	C, mm	N1, N2,
70/70	1984	952	476	1428	651	1603	1168	760	983	800	570	200/200	50/50
100/100	1984	952	476	1428	651	1603	1238	830	983	800	570	200/200	50/50
150/150	1984	952	476	1428	651	1603	1353	945	983	800	570	200/200	50/50
200/200	1984	952	476	1428	651	1603	1468	1060	983	800	570	250/250	50/50
250/250	1984	952	476	1428	651	1603	1718	1310	983	800	570	250/250	50/50
300/300	2232	1071	536	1607	711	1782	1724	1316	1158	900	641	250/250	65/65
350/350	2232	1071	536	1607	711	1782	1824	1416	1158	900	641	250/250	65/65
400/400	2232	1071	536	1607	711	1782	1924	1516	1158	900	641	250/250	65/65
500/500	2483	1185	595	1785	795	1985	2022	1516	1244	1000	712	300/300	80/80
600/600	2473	1185	595	1785	795	1985	2324	1816	1244	1000	712	300/300	80/80
700/700	2473	1185	595	1785	795	1985	2474	2016	1244	1000	712	300/300	100/100
800/800	3208	1544	774	2321	1093	2640	2186	1720	1494	1300	926	400/400	100/100
900/900	3208	1544	774	2321	1093	2640	2286	1820	1494	1300	926	400/400	100/100
1000/1000	3208	1544	774	2321	1093	2640	2486	2020	1494	1300	926	400/400	125/125

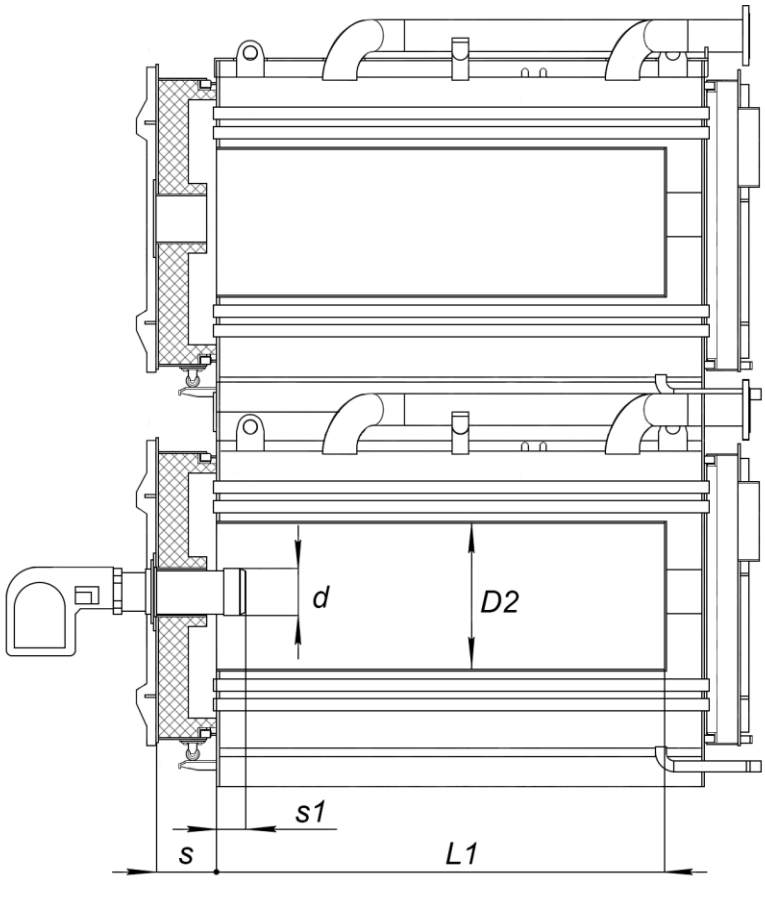
We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



BURNER SELECTION DIMENSIONS

Model Core Duo	Burner opening diameter d, mm	Front cover thickness s, mm	Burner mounting dimension s1, mm	Furnace tube diameter D2, mm	Furnace tube length L1, mm	Reversal chamber length L2, mm
70/70	140	180	20–60	410	650	—
100/100	140	180	20–60	410	720	—
150/150	160	180	20–60	410	835	—
200/200	160	180	20–60	410	950	—
250/250	160	180	20–60	410	1200	—
300/300	190	180	20–60	514	1200	—
350/350	190	180	20–60	514	1300	—
400/400	190	180	20–60	514	1400	—
500/500	225	220	20–60	614	1400	—
600/600	225	220	20–60	614	1700	—
700/700	225	220	20–60	614	1900	—
800/800	280	220	20–60	704	1600	—
900/900	280	220	20–60	704	1700	—
1000/1000	280	220	20–60	704	1900	—

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



TRINITY



Parameter	Value
Capacity	≤ 20000 kW
Pressure	≤ 10 bar
Temperature	≤ 115 °C
Efficiency	> 93.0%

| DESCRIPTION

Boilte Trinity industrial three-pass fire-tube boilers are the flagship series for heat supply to large production complexes, residential districts and strategic facilities. Output ranges from 1.0 to 20.0 MW. Working pressure is up to 10 bar. Heat-transfer-medium temperature is up to 115°C. Efficiency is up to 96%. Service life is more than 25 years.

| SCOPE OF SUPPLY

Each Trinity boiler is supplied as a ready-to-install module. Shell and structural components: modular thermally insulated casing with high-temperature insulation and protective cladding; removable front cover on adjustable hinges (opens to either side); rear cover forming the third gas pass and providing access to the convective section; inspection manways for maintenance.

Hydraulic and flue-gas/air connections: heating supply and return connections, system drain connection; flue flange and condensate drain connection.

Monitoring and control: PLC-based Boilte Control electrical cabinet (automatic start, parameter monitoring, diagnostics, protection and readiness for integration into supervisory systems); inspection port with heat-resistant quartz glass.

| SCOPE OF SUPPLY (CONTINUED)

4. **Documentation:** data sheet, certificates, warranty certificate and connection diagrams.

| DESIGN FEATURES

Three-pass fire-tube arrangement - three consecutive flue-gas passes provide almost complete transfer of thermal energy to the water. This increases efficiency up to 95% and minimizes thermal stresses, extending unit life. Cylindrical pressure components (drum, furnace) and properly distributed temperature loads provide exceptional reliability. Maintainability - direct access to key components through wide inspection manways and removable insulation panels.

| QUALITY CONTROL

Monolithic structural integrity - a fine-grained structure identical to the base metal is formed in the weld zone, ensuring isotropic mechanical properties and eliminating weak points.

- Zero defect tolerance - every critical weld is validated by radiographic and ultrasonic testing.

Metallurgical compatibility - precise selection of welding consumables provides identical expansion coefficients, eliminating local overstress during thermal cycling (starts/stops).

| ADVANTAGES

Maximum efficiency. Efficiency up to 95% - every percentage point saves tens of thousands of rubles per season.

Reliability and safety. 100% weld inspection by radiography and ultrasonic testing with reports issued. Designed for thermal loads. Redundant pressure, temperature and level protection circuits.

| ADVANTAGES (CONTINUED)

Maintainability. Wide inspection manways and removable panels provide rapid access for maintenance.

Flexibility. Output from 1 to 20 MW. Operation on gas, diesel and fuel oil - strategic adaptation to the energy market.

Intelligent control and environmental performance. Weather-compensated control, cascade operation and remote monitoring. Minimum NOx and CO emissions.

TECHNICAL DATA

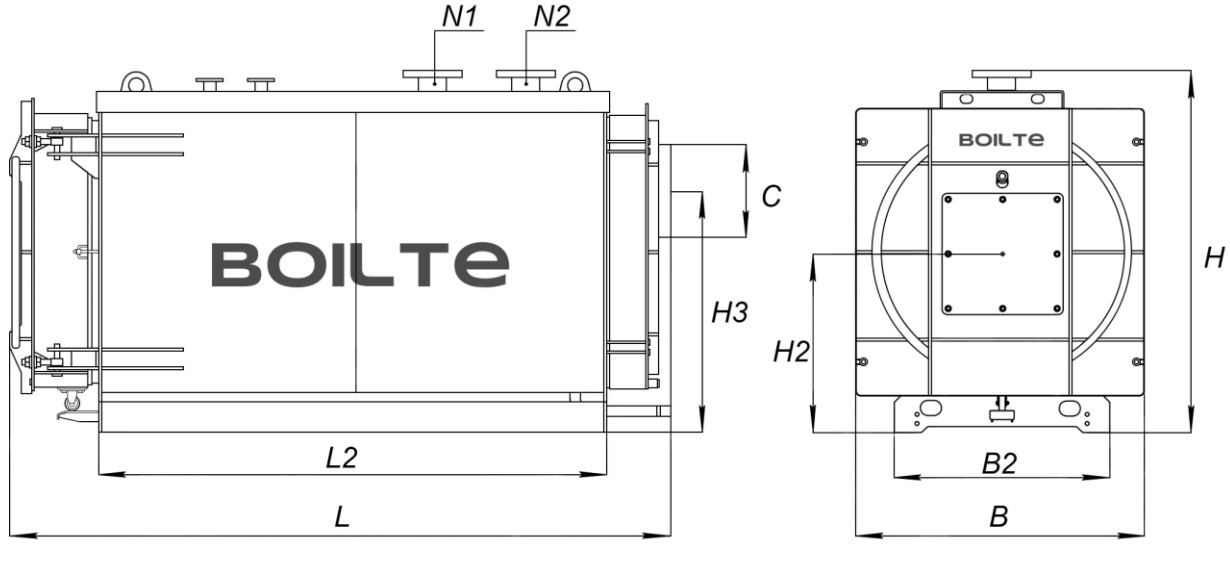
Model Trinity	Power, kW**	Efficiency, %	Pressure, bar	Max. fluid temperature, °C	Min. fluid temperature, °C	Boiler resistance, mbar	Boiler water volume, L	Flue-gas flow, m³/h	Gas consumption, m³/h	Dry boiler mass, kg*
1000	1000	93,4	6/10	115	60	5,4	2030	0,46	102	3204
1500	1500	93,1	6/10	115	60	5,1	2980	0,66	161	3605
2000	2000	93,1	6/10	115	60	4	2980	0,87	218	4860
2200	2200	92,9	6/10	115	60	5,1	3160	0,96	239	5060
2500	2500	93,6	6/10	115	60	7	3380	1,09	271	6350
3000	3000	94,0	6/10	115	60	6,4	4410	1,31	327	6720
3200	3200	94,4	6/10	115	60	7,6	4740	1,4	352	7030
3500	3500	94,8	6/10	115	60	9,8	5590	1,42	382	7220
4000	4000	94,4	6/10	115	60	7,6	6280	1,81	438	8870
4500	4500	94,1	6/10	115	60	10	6680	2,03	491	9845
5000	5000	92,2	6/10	115	60	5	6850	2,13	549	10515
5500	5500	93,2	6/10	115	60	9,5	7250	2,32	606	10847
6000	6000	92,8	6/10	115	60	7,7	7990	2,58	658	12515
6500	6500	92,4	6/10	115	60	4,8	8250	2,83	711	13573
7000	7000	92,5	6/10	115	60	5,8	8470	3,01	771	13580
7500	7500	92,4	6/10	115	60	7,9	8990	3,23	822	14302
8000	8000	92,4	6/10	115	60	7,4	9870	3,41	879	16443
8500	8500	92,9	6/10	115	60	8,1	10850	3,72	933	17302
9000	9000	92,5	6/10	115	60	9,8	11840	4,04	987	18031
10000	10000	94,4	6/10	115	60	12,1	12880	4,25	1112	20357
11000	11000	93,7	6/10	115	60	8,4	14120	4,99	1208	20843
12000	12000	93,8	6/10	115	60	10,3	16730	5,27	1321	21028
13000	13000	93,9	6/10	115	60	12,5	17940	5,73	1433	21989
14000	14000	93,8	6/10	115	60	10,8	18570	6,05	1544	22889
15000	15000	93,9	6/10	115	60	12,8	20890	6,52	1648	26751
16500	16500	95,1	6/10	115	60	16,1	21630	7,19	1811	28051
18000	18000	93,8	6/10	115	60	15,6	24790	7,59	1982	29398
20000	20000	94,5	6/10	115	60	14,8	25930	8,47	2211	31227

****Power:** The stated values correspond to operation on natural gas or diesel fuel. When using fuel oil, adjustment may be required (reduced) in accordance with calculation standards.

***Weight:** given for a model with a working pressure of 6 bar.

OVERALL DIMENSIONS

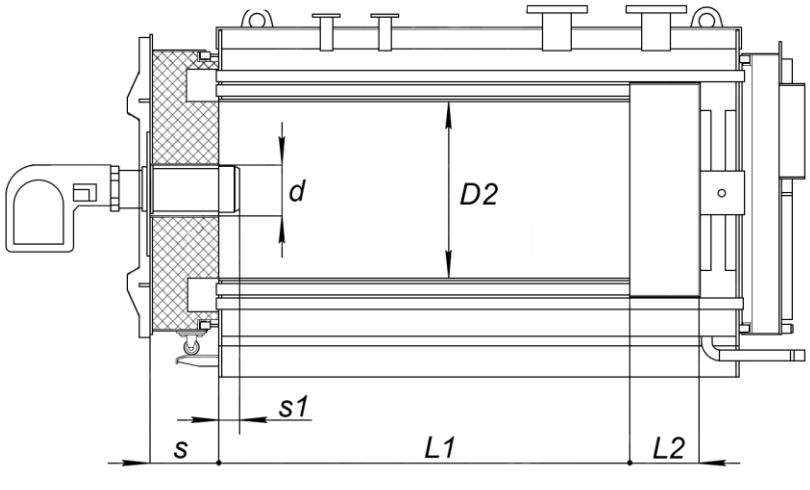
Model Trinity	H, mm	H2, mm	H3, mm	L, mm	L2, mm	B, mm	B2, mm	C, mm	N1, DN	N2, DN
1000	1842	927	1337	3091	2524	1550	1109	350	125	125
1500	1842	927	1337	3491	2924	1550	1109	350	125	125
2000	2126	1076	1566	3829	3124	1800	1288	500	150	150
2200	2126	1076	1566	3929	3224	1800	1288	500	150	150
2500	2126	1076	1566	4229	3524	1800	1288	500	150	150
3000	2346	1196	1806	4529	3724	2000	1431	550	200	200
3200	2346	1196	1806	4729	3924	2000	1431	550	200	200
3500	2346	1196	1806	4929	4124	2000	1431	550	200	200
4000	2610	1334	2007	5128	4420	2230	1595	650	200	200
4500	2610	1376	1805	5130	4330	2230	1595	650	200	200
5000	2690	1205	2065	5088	4420	2300	1645	650	200	200
5500	2690	1205	2065	5328	4660	2300	1645	650	250	250
6000	2690	1205	2065	5528	4860	2300	1645	650	250	250
6500	3073	1579	2394	5580	5160	2640	1789	650	250	250
7000	3073	1579	2394	5790	4420	2640	1789	650	250	250
7500	3073	1579	2394	5990	5750	2640	1789	650	250	250
8000	3140	1506	2459	6067	5228	2780	1800	800	300	300
8500	3140	1506	2459	6160	5830	2780	1800	800	300	300
9000	3200	1506	2459	6460	5928	2780	1821	800	300	300
10000	3200	1506	2459	6867	6028	2780	1821	800	300	300
11000	3565	1564	2664	6770	5470	3060	1910	800	300	300
12000	3565	1564	2664	6970	5670	3060	1910	1000	400	400
13000	3565	1564	2664	7170	5870	3060	1820	1000	400	400
14000	3600	1794	2724	7760	6620	3100	2021	1000	400	400
15000	3600	1794	2724	7960	6730	3100	2021	1000	400	400
16500	3600	1794	2724	8265	7426	3100	2021	1000	400	400
18000	3850	1985	2964	8570	7502	3320	2040	1000	400	400
20000	3850	1985	2964	8670	7702	3320	2040	1000	400	400



BURNER SELECTION DIMENSIONS

Model Trinity	Burner opening diameter d, mm	Front cover thickness s, mm	Burner mounting dimension s1, mm	Furnace tube diameter D2, mm	Furnace tube length L1, mm	Reversal chamber length L2, mm
1000	300	241	20–60	700	1950	400
1500	300	241	20–60	700	2350	400
2000	400	241	20–60	800	2500	400
2200	400	241	20–60	800	2500	500
2500	400	241	20–60	800	2800	500
3000	450	313	20–60	900	2900	600
3200	450	313	20–60	900	3100	600
3500	450	313	20–60	900	3300	600
4000	500	313	20–60	1000	3600	600
4500	500	313	20–60	1000	3600	600
5000	500	313	20–60	1000	3600	600
5500	500	313	20–60	1200	3900	600
6000	500	313	20–60	1200	4100	600
6500	550	313	20–60	1200	4200	600
7000	550	313	20–60	1300	4300	600
7500	550	313	20–60	1300	4400	600
8000	600	346	20–60	1300	4500	600
8500	600	346	20–60	1400	5000	600
9000	600	346	20–60	1400	5000	600
10000	600	346	20–60	1400	5200	600
11000	730	346	20–60	1500	5200	640
12000	730	346	20–60	1500	5400	640
13000	730	346	20–60	1500	5600	640
14000	730	346	20–60	1588	6100	600
15000	730	346	20–60	1588	6300	600
16500	730	346	20–60	1588	6600	600
18000	750	373	20–60	1700	7000	600
20000	750	373	20–60	1700	7000	600

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



BASE



Parameter	Value
Capacity	≤ 1250 kW
Pressure	≤ 5 bar
Temperature	≤ 115 °C
Efficiency	> 93.0%

| DESCRIPTION

Boilte Base low-temperature boilers are designed for customers who value not only economy but also environmental responsibility. The enlarged three-pass furnace inherently reduces formation of nitrogen oxides (NOx), enabling compliance with the strictest standards without expensive gas-cleaning systems. Output ranges from 0.35 to 1.25 MW, efficiency exceeds 92%, and service life is more than 25 years. Operation on gas and liquid fuel. An ideal solution for facilities in areas with stringent environmental requirements.

| SCOPE OF SUPPLY

Each Base boiler is supplied in a fully factory-assembled condition. Main heat-generation module: assembled and insulated body including the main and return drums; a three-pass flue-gas system (first-pass furnace, reversal chamber, third-pass tube bundle with turbulators); external steel-panel casing; high-density thermal insulation.

Connection nozzle block: nozzles for the supply and return heating-medium lines (top); safety-valve nozzle; drain and blowdown nozzles (rear); flue connection nozzle.

3. **Documentation:** passport, certificates.

| DESIGN FEATURES

Narrow layout for confined spaces. Base boilers are designed with minimum body width, allowing installation in rooms with restricted dimensions, including existing boiler houses.

Three-pass design with enlarged furnace. Three consecutive flue-gas passes provide complete heat transfer. The increased furnace volume reduces peak temperatures, minimizing formation of thermal NOx without complex and expensive gas-cleaning systems.

Third-pass turbulators. Special swirlers intensify heat transfer, reduce flue-gas outlet temperature, improve efficiency and further reduce harmful emissions.

| QUALITY CONTROL

Base boiler reliability is built in at the manufacturing stage and verified instrumentally. Welded joints are produced using a process that creates a structure identical to the parent metal, eliminating stress-concentration zones. Every critical weld undergoes 100% radiographic and ultrasonic testing, with test reports supplied to the customer. The design withstands thermal cycling, ensuring durability even under intensive start-stop operation.

PROJECT CHECKPOINT Selection guidance

Selection data **Coordination**

| APPLICATIONS

- **Industry:** vehicle service centers, production workshops, warehouses, logistics centers
- **Commercial real estate:** shopping centers, office and administrative buildings, hotels, restaurants
- **Social infrastructure:** sports facilities, schools, kindergartens, hospitals, outpatient clinics

Environmentally sensitive areas: facilities within populated areas and sites subject to stringent NOx emission limits

| ADVANTAGES

Environmental and regulatory safety: minimum NOx emissions as standard. Inherent suppression of harmful emissions is achieved by the enlarged furnace volume and three-pass design with turbulators, which specifically reduce formation of thermal nitrogen oxides (NOx). The boiler meets the strictest modern environmental requirements, minimizing the risk of penalties and supporting a 'green' image for your business.

| ADVANTAGES (CONTINUED)

Energy and financial efficiency: high efficiency and fuel flexibility. Three consecutive flue-gas passes provide near-complete heat transfer. Boiler efficiency exceeds 93%, directly reducing fuel costs. Operation on gas or liquid fuel (with the appropriate burner) lets you select the most economical energy source.

Investment reliability: durability proven by technology. Critical welded joints undergo 100% radiographic and ultrasonic testing with reports provided. You receive not merely a product, but an asset with a documented strength margin and minimal risk of emergency downtime. The design and materials withstand cyclic loads (frequent starts and stops), providing a 25-year service life.

Operational efficiency: reduced maintenance costs. All main connections are rationally routed to the top and rear of the boiler, speeding installation and scheduled maintenance. High thermal inertia smooths peak loads, extending the service life of both the boiler and the entire heating circuit.

TECHNICAL DATA

Model Base	Power, kW*	Efficiency, %	Pressure, bar	Max. fluid temperature, °C	Min. fluid temperature, °C	Boiler resistance, mbar	Boiler water volume, L	Flue-gas flow, m³/h	Gas consumption, m³/h	Dry boiler mass, kg*
350	350	93,31	5	110	60	3,9	670	512	43,9	1083
450	450	93,41	5	110	60	4,6	760	606	54,69	1269
600	600	93,71	5	110	60	2,4	910	834	65,47	1744
800	800	93,32	5	110	60	2,8	950	951	77,03	2056
1000	1000	93,22	5	110	60	4	1260	1396	88,58	2261
1250	1250	93,21	5	110	60	4,7	1510	1560	109,38	2624

**Power: The stated values correspond to operation on methane (natural gas). When using diesel fuel or fuel oil, output may be adjusted (reduced) in accordance with calculation standards.

TECHNICAL SELECTION NOTES

Selection guidance

Model selection

Use the project operating point - capacity, pressure and temperature - and verify it against the selected model row. Do not substitute data from a neighbouring model size.

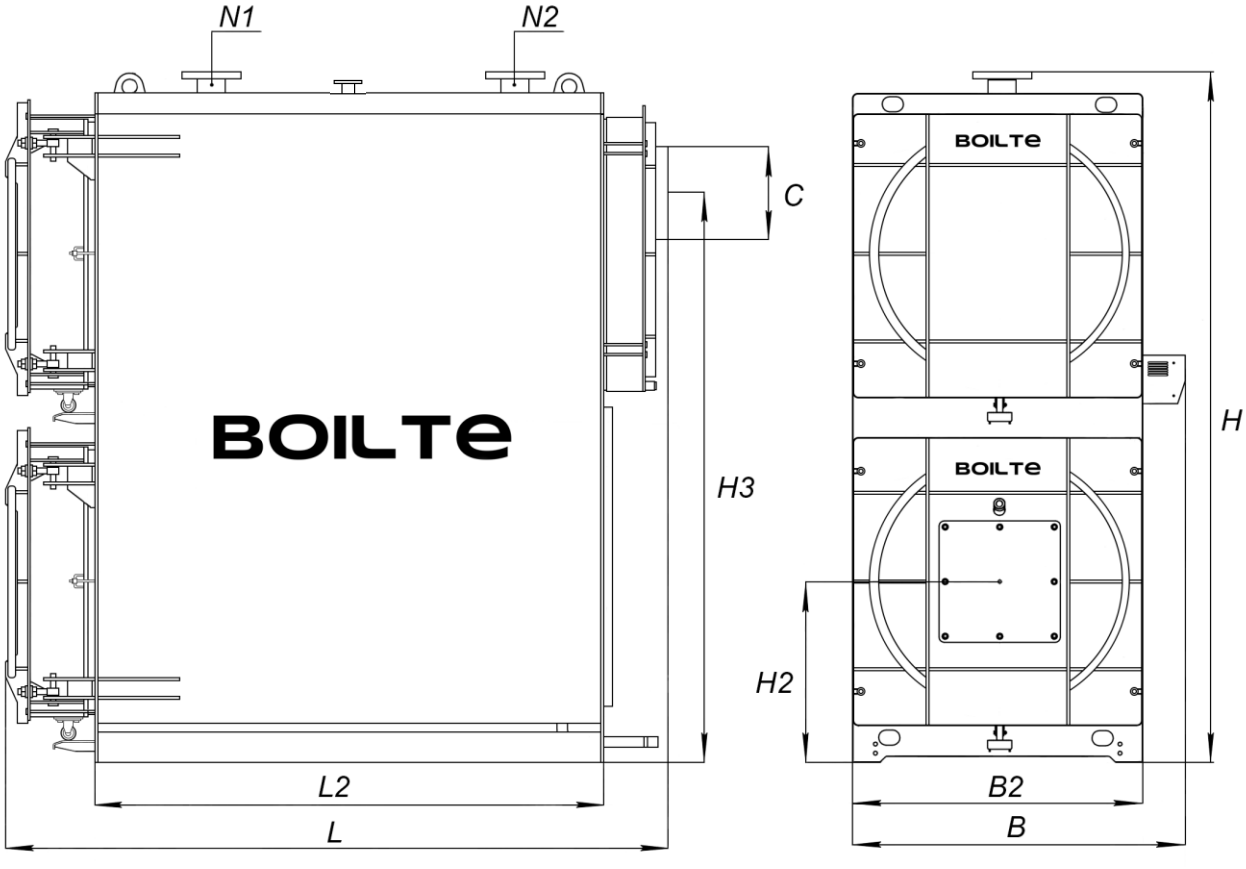
Project data

Confirm fuel, utilities, control requirements and installation conditions with the enquiry. Final equipment scope and interfaces are defined by the approved technical documentation.

OVERALL DIMENSIONS

Model Base	H, mm	H2, mm	H3, mm	L, mm	L2, mm	B, mm	B2, mm	C, mm	N1, DN	N2, DN
350	1654	475	1299	1794	1410	985	840	300	80	80
450	1654	475	1299	1914	1520	985	840	300	100	100
600	1854	525	1499	2084	1624	1085	940	300	100	100
800	1854	525	1499	2484	2024	1085	940	300	125	125
1000	2084	610	1679	2304	1844	1185	1040	400	125	125
1250	2084	610	1679	2704	2244	1185	1040	400	150	150

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



| NOTES ON OVERALL DIMENSIONS

To ensure safe, uninterrupted boiler operation and convenient maintenance, the following requirements must be considered when planning the installation location.

Access zones and service clearances

At the front of the boiler, at least 1000 mm of free space from the burner is required for opening the front door. The door can open to either the left or right, allowing installation to be adapted to confined boiler-room conditions.

At least 300 mm clearance must be provided at the rear for removal of the rear smoke box and cleaning of the flue-gas passages.

| NOTES ON OVERALL DIMENSIONS (CONTINUED)

- A 400 mm clearance on each side is sufficient for ventilation and service-personnel access.

Connections and utilities

All hydraulic and flue-gas/air connections are concentrated at the top and rear of the boiler, simplifying installation in existing boiler rooms without rearrangement.

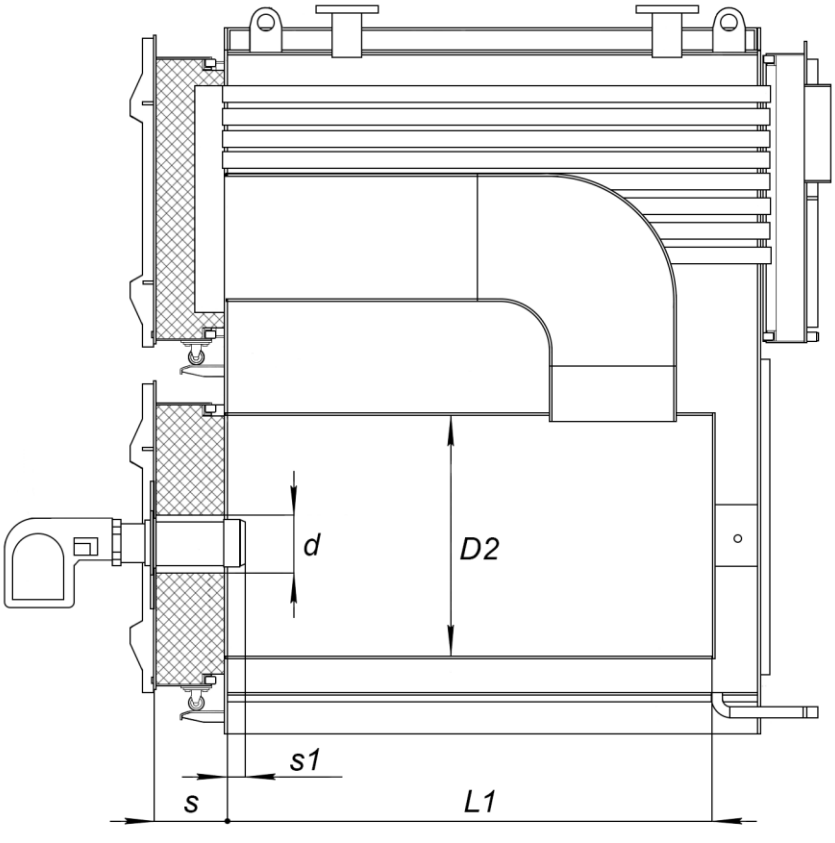
- Cable glands for the automation system and power supply are included in the package.

Heat-transfer medium supply and return connections, drain connection and flue connection have standardized locations.

BURNER SELECTION DIMENSIONS

Model Base	Burner opening diameter d, mm	Front cover thickness s, mm	Burner mounting dimension s1, mm	Furnace tube diameter D2, mm	Furnace tube length L1, mm	Reversal chamber length L2, mm
350	225	175	20–60	510	1300	—
450	225	175	20–60	510	1400	—
600	280	175	20–60	610	1500	—
800	280	175	20–60	610	1900	—
1000	320	175	20–60	700	1720	—
1250	320	175	20–60	700	2120	—

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



BURNER MATCHING

Selection guidance

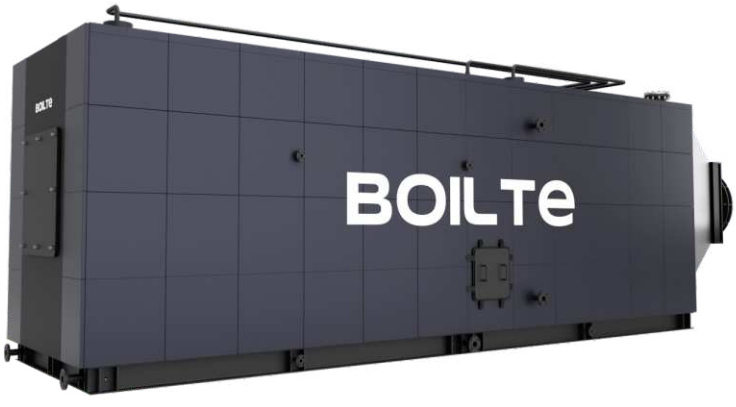
Burner interface

Match the selected burner to the opening diameter, mounting dimension and furnace dimensions shown in this section. Use the exact model row rather than the dimensions of a neighbouring size.

Selection information

Provide the fuel type, required operating range and boiler gas-side resistance with the enquiry. Confirm the flame-head arrangement and maintenance access with the boiler and burner documentation before manufacture.

MEGA



Parameter	Value
Capacity	≤ 50000 kW
Pressure	≤ 16 bar
Temperature	≤ 115 °C
Efficiency	> 93.0%

| DESCRIPTION

Boilte Mega water-tube tunnel-type single-pass boilers are power-generation units for producing hot water at temperatures up to 115 C and working pressure up to 1.6 MPa (16 bar) for large industrial facilities. The product range covers thermal output from 4,650 to 50,000 kW, allowing precise selection for the facility's actual load without excessive reserve capacity. Boiler efficiency reaches 94% thanks to a carefully engineered heating-surface arrangement and gas-tight construction that eliminates air infiltration and heat losses. A large-volume furnace with low volumetric heat release ensures complete fuel combustion with minimal nitrogen oxide (NOx) formation, meeting the strictest environmental requirements. Design service life: 20 years (when operating on natural gas).

| SCOPE OF SUPPLY

Boilers are supplied in a state of maximum factory readiness. Support frame: robust self-supporting steel structure with fixed and sliding supports.

Boiler pressure part (boiler block): fully assembled and welded main module including the furnace, convective banks, headers and all internal piping. Hydrostatically tested.

| SCOPE OF SUPPLY (CONTINUED)

Thermal insulation: high-efficiency basalt-fiber insulation installed on all heated surfaces to minimize heat loss.

External decorative casing: protective enclosure made of laminated steel sheets with a polymer coating.

Internal boiler piping package: all required bypass, drain and vent lines installed within the boiler envelope.

6. **Documentation:** passport, certificates.

| DESIGN FEATURES

Gas-tight construction: complete structural tightness eliminates heat losses and ensures safe pressurized-draft operation. The boiler can operate without an induced-draft fan, reducing auxiliary power consumption.

Reduced metal content: the modern water-tube design makes the boiler lighter and more compact than comparable units of the same output.

Smooth tubes: heating surfaces use smooth-wall tubes, minimizing soot deposition and simplifying cleaning.

Large-volume furnace: low volumetric heat release ensures complete, clean fuel combustion with minimal nitrogen oxide (NOx) formation.

| APPLICATIONS

- Large industrial enterprises (metallurgy, petrochemicals, mechanical engineering)
- Logistics hubs and warehouse complexes
- District and neighborhood boiler houses
- Heat supply for residential districts and social infrastructure
- Process applications requiring high heating-medium parameters

| ADVANTAGES

Compact dimensions. The modern water-tube design reduces footprint compared with conventional boilers, lowering capital costs for boiler-house construction or refurbishment.

Low NOx emissions. Optimized furnace dimensions and low volumetric heat release ensure clean combustion with minimal nitrogen oxide formation. Combined with modern burners, emission levels meet the strictest environmental standards.

| ADVANTAGES (CONTINUED)

Flexible selection and complete installation readiness. Output from 4.65 to 50.0 MW allows precise equipment selection for the facility load. Delivery as a single module on a self-supporting frame shortens installation time and requires no special foundation.

High operating parameters and versatility. Support for 95/70 and 115/70 C temperature schedules and pressure up to 16 bar makes the boiler suitable for heating and process applications requiring high-temperature water.

Advanced energy efficiency. Efficiency up to 94% is achieved through an optimized heating-surface arrangement and low stack losses. Pressurized-draft operation without an induced-draft fan reduces auxiliary electricity consumption.

Structural reliability and easy maintenance. Smooth-wall tubes simplify cleaning and help maintain high efficiency. Modular construction and access to key assemblies reduce repair time. Every pressure-bearing element is designed in accordance with the strictest standards.

Full compliance documentation. A complete certificate package ensures trouble-free commissioning.

TECHNICAL DATA

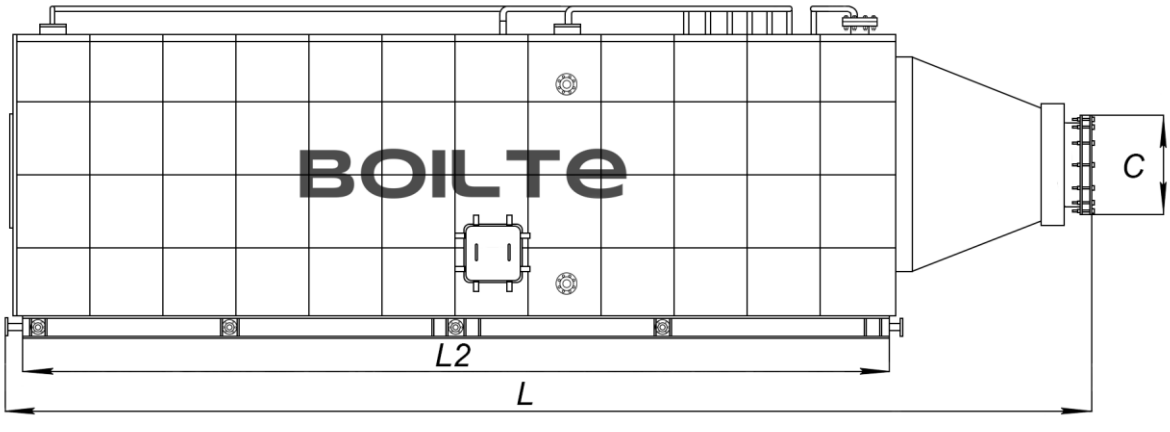
Model Mega	Power, kW**	Efficiency, %	Pressure, bar	Max. fluid temperature, °C	Min. fluid temperature, °C	Boiler resistance, mbar	Boiler water volume, L	Flue-gas flow, m³/h	Gas consumption, m³/h	Dry boiler mass, kg
4000	4650	93,8	16	115	70	1,45	89	5630	495	8141
7000	7560	93,8	16	115	70	3,42	146	9125	810	15360
10000	11630	93,8	16	115	70	1,78	221	15000	1247	22000
15000	15000	93,8	16	115	70	1,89	287	17868	1570	32000
18000	18000	94,8	16	115	70	3,10	398	20356	1870	36200
20000	23260	94,5	16	115	70	2,20	500	27210	2427	37560
25000	27000	94,8	16	115	70	3,30	601	31998	2806	38200
30000	30000	93,8	16	115	70	3,10	623	37887	3106	38500
35000	35000	94,5	16	115	70	2,10	662	41887	3605	43560
40000	40000	94,1	16	115	70	2,50	856	48102	4179	48850
45000	46500	93,8	16	115	70	3,30	1145	55102	4679	49500
50000	50000	94,5	16	115	70	3,10	1356	60144	6046	50560

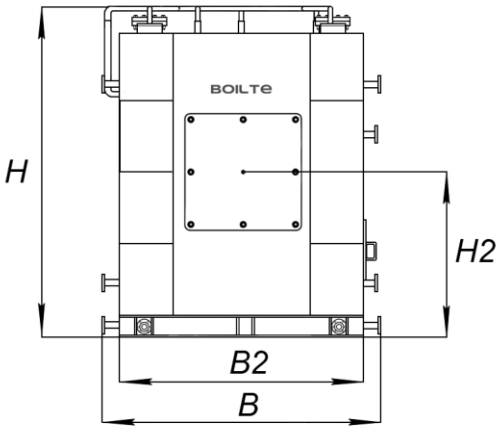
**Power: The stated values correspond to operation on methane (natural gas). When using diesel fuel or fuel oil, output may be adjusted (reduced) in accordance with calculation standards.

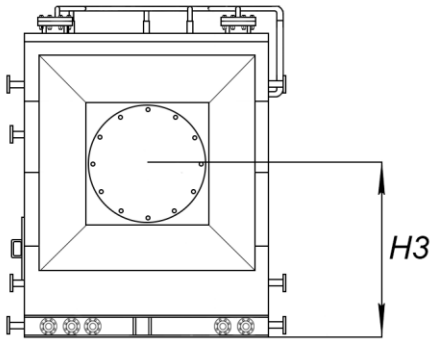
OVERALL DIMENSIONS

Model Mega	H, mm	H2, mm	H3, mm	L, mm	L2, mm	B, mm	B2, mm	C, mm	N1, DN	N2, DN
4000	2312	1205	1205	6550	5890	2248	1915	540	150	200
7000	2312	1205	1205	8500	7565	2250	1915	880	150	200
10000	2312	1205	1205	9320	8325	2250	1915	880	150	200
15000	2833	1430	1430	9950	9267	2460	2200	960	150	200
18000	2833	1430	1430	10707	9987	2460	2200	960	150	200
20000	3260	1640	1640	9821	9559	3060	2645	1260	150	200
25000	3260	1640	1640	11370	10315	2900	2645	1260	150	200
30000	3827	1930	1930	9990	9287	3620	3210	1440	150	200
35000	3827	1930	1930	11490	10267	3620	3210	1440	150	200
40000	3827	1930	1930	12130	10880	3620	3210	1540	150	200
45000	3827	1930	1930	12730	11280	3620	3210	1600	150	200
50000	3965	1930	1930	14680	13480	3620	3516	1670	150	200

Burner throat geometry and refractory-lining composition are determined by the burner manufacturer's requirements.
We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Maximum permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



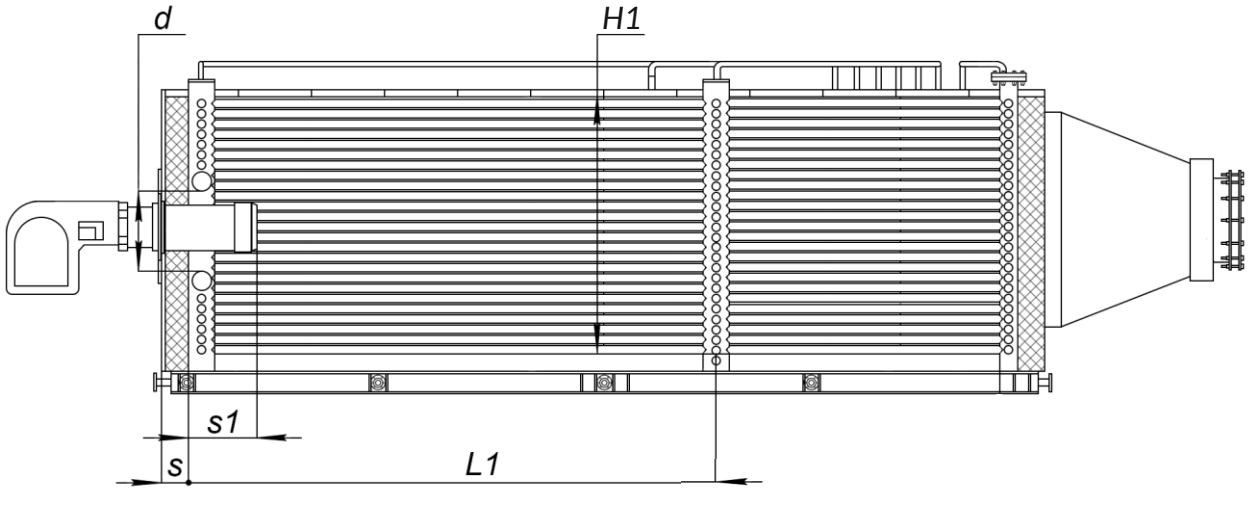




BURNER SELECTION DIMENSIONS

Model Base	Burner opening diameter d, mm	Front cover thickness s, mm	Burner mounting dimension s1, mm	Furnace length, L1, mm	Furnace width, B1, mm	Furnace height, H1, mm
4000	510	250	—	4300	1829	1793
7000	510	300	—	4700	1909	1793
10000	510	300	—	5300	2051	1935
15000	510	300	—	6500	2139	2219
18000	620	300	—	6800	2193	2219
20000	620	300	—	6500	2619	2645
25000	620	350	—	7000	2619	2645
30000	620	350	—	7250	3329	3213
35000	730	350	—	7500	3329	3213
40000	730	400	—	7980	3329	3213
45000	830	400	—	8224	3329	3213
50000	830	400	—	8921	3516	3415

Burner throat geometry and refractory-lining composition are determined by the burner manufacturer's requirements.
We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Maximum permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



BURNER MATCHING

Selection guidance

Burner interface

Match the selected burner to the opening diameter, mounting dimension and furnace dimensions shown in this section. Use the exact model row rather than the dimensions of a neighbouring size.

Selection information

Provide the fuel type, required operating range and boiler gas-side resistance with the enquiry. Confirm the flame-head arrangement and maintenance access with the boiler and burner documentation before manufacture.

CONTROL A35



Parameter	Value
Type	Relay
Protection rating	IP 56
Power supply	220 V, 50 Hz
Control circuits	220 V / 24 V

| DESCRIPTION

The CONTROL A35 control system is a specialized unit designed for automatic boiler control and protection when critical pressure, water-level or temperature values occur. The system is built on a relay-based hardware platform, providing high reliability, simple operation and resistance to failures. CONTROL A35 is ideally suited to low-output boilers operating autonomously without complex automation requirements.

| KEY FUNCTIONS

- Burner control
- Boiler overtemperature protection
- Boiler protection upon interruption of external safety circuits (gas pressure, water level, draft)
- Automatic boiler operation without operator attendance
- Alarm indication

| FUNCTIONAL CAPABILITIES

Forced burner shutdown on overtemperature. The built-in safety thermostat monitors boiler temperature. At 130 C, the system immediately shuts off fuel supply to the burner, preventing overheating.

| FUNCTIONAL CAPABILITIES (CONTINUED)

Forced burner shutdown if a safety circuit opens. Safety circuits are intended for connecting external sensors that monitor critical boiler operating parameters. Sensors required by applicable regional codes and regulations to stop fuel supply when permissible values are exceeded should be installed. If any safety circuit opens, the system immediately shuts down the burner and locks out restart.

Adjustable burner low-fire start temperature. The operator can set the heating-medium temperature at which the burner starts at the first (low-fire) stage. This maintains a stable thermal regime without frequent starts and stops.

Adjustable burner high-fire start temperature. The operator can set the heating-medium temperature at which the burner switches to the second (high-fire) stage. When the set temperature is reached, the burner returns to low fire or shuts down.

Operation as a 'safety unit' with an external controller. CONTROL A35 can be used as a stand-alone safety unit together with an external temperature controller or a more sophisticated control system. In this mode, it monitors only emergency parameters and shuts down the burner if limits are exceeded.

| DESIGN FEATURES

Hardware. The system uses a relay circuit without programmable logic controllers (PLCs). This provides maximum reliability, immunity to electromagnetic interference and easy repair. The relay circuit requires no programming or adjustment of complex parameters, reducing qualification requirements for maintenance personnel.

Burner control type. CONTROL A35 supports staged burner control. The system does not support continuous power modulation.

Manual control. Manual boiler control via thermostat is provided. The operator sets the required heating-medium temperature, after which the system automatically maintains it within the specified range.

Indication and visualization. The system is equipped with indicator lights that allow the operator to visually monitor boiler status. Indicators show: power available, burner operation and emergency shutdown.

| DESIGN FEATURES (CONTINUED)

Supervisory interface. For integration into higher-level systems, CONTROL A35 is equipped with a dry-contact output. In the event of an emergency boiler shutdown, the contact closes and transmits a fault signal.

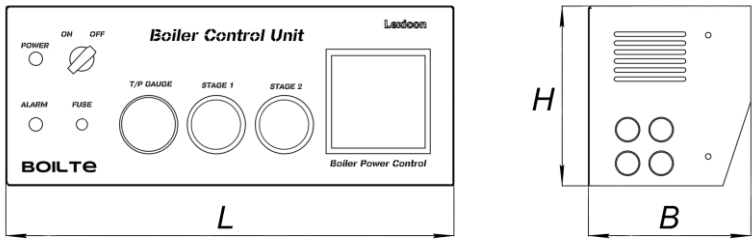
| ADVANTAGES

- Simplicity - relay circuit without complex programming
- Reliability - minimum number of failure-prone components
- Clarity - visual status indication
- Flexibility - adjustable stage-on temperatures
- Safety - forced burner shutdown if safety circuits open
- **Economy.** Lower cost compared with PLC-based systems.

TECHNICAL DATA

Model	Emergency shutdown	Alarm indication	Operating temperature, °C	Dry mass, kg	H, mm	L, mm	B, mm
Control A35	Yes	Yes	+5....+40	4	300	220	120

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



CONTROL A55



Parameter	Value
Type	PLC
Protection rating	IP 55
Power supply	220 V, 50 Hz
Control circuits	220 V / 24 V

| DESCRIPTION

The CONTROL A55 control system is an enhanced version of CONTROL A35, based on a programmable logic controller (PLC) and supporting modulating (continuously controlled) burners. The system retains all CONTROL A35 functionality (relay safety logic, SI1-SI3 circuits, forced shutdown by STB) and adds precise PID control, cascade control, supervisory integration and remote monitoring. CONTROL A55 is intended for medium-and high-output boilers requiring high temperature-control accuracy and energy-efficient burner operation.

| KEY FUNCTIONS

- Continuous (modulating) burner control
- High-accuracy maintenance of the heating-medium setpoint temperature
- Boiler overtemperature protection
- Boiler protection upon interruption of external safety circuits (gas pressure, water level, draft)
- Automatic boiler operation without continuous operator attendance
- Visualization of operating parameters and alarm conditions

| FUNCTIONAL CAPABILITIES

Modulating burner control. CONTROL A55 generates an analog signal for smooth burner output control from 0% to 100%. This enables precise maintenance of the set temperature without cyclic on/off operation, reducing fuel consumption and equipment wear.

PID control. The built-in PID controller continuously calculates optimum burner output based on the difference between setpoint and actual temperature.

Weather-compensated control. The system can be connected to an outdoor temperature sensor and automatically adjust the heating-medium setpoint according to outdoor temperature. This can save up to 20-25% fuel during the heating season.

Supervisory control and remote monitoring. CONTROL A55 is equipped with interfaces for integration into process-control systems, Modbus TCP for connection to the facility LAN, and an optional GSM module for SMS notifications and control via a mobile application. The dry-contact alarm output from A35 is retained.

Cold-return protection. CONTROL A55 monitors heating-medium return temperature. If it falls below the set threshold, the system reduces burner output or enables a bypass to prevent low-temperature corrosion.

| CONTROLS

Main switch SA1 - supplies power to the burner-control circuits. When switched off, it removes voltage from all circuits.

HL1 'Power' indicator - green lamp confirming voltage is present in the control circuits and the system is ready for operation.

TS1 safety thermostat - limits the maximum boiler temperature. When tripped, it shuts down the burner and requires manual reset.

4. HL2 'Alarm' indicator - red lamp indicating a burner fault or safety-circuit trip.

Thermomanometer - combined instrument displaying the current temperature and pressure of the heating medium in the boiler.

TS2 first-stage thermostat - sets the operating temperature for the first control loop. Used in PID algorithms as a reference value or threshold for minimum-output operation.

| CONTROLS (CONTINUED)

TS3 second-stage thermostat - sets the operating temperature for the second control loop. It can be used as the upper temperature limit or the threshold for transition to maximum output.

A1 temperature controller - controls the output of the modulating burner. It generates a 0-10 V or 4-20 mA analog signal proportional to deviation from the temperature setpoint, providing smooth output adjustment from minimum to maximum.

| APPLICATIONS

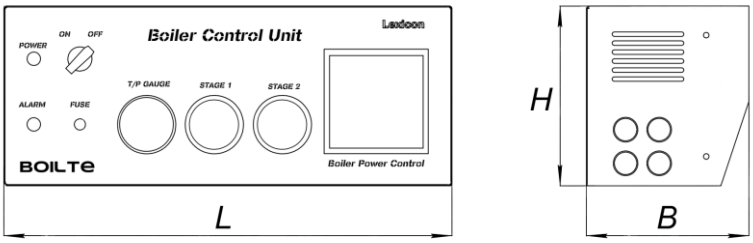
The CONTROL A55 control system is recommended for the following applications: Medium-and high-output hot-water and steam boilers

- Boilers with modulating burners (gas, diesel, dual-fuel)
- Industrial boiler houses with stringent temperature-control accuracy requirements

TECHNICAL DATA

Model	Emergency shutdown	Alarm indication	Operating temperature, °C	Dry mass, kg	H, mm	L, mm	B, mm
Control A55	Yes	Yes	+5....+40	4	300	220	120

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



CONTROL A75



Parameter	Value
Type	PLC (extended)
Protection rating	IP 55
Power supply	380 V, 50 Hz
Control circuits	220 V / 24 V

| DESCRIPTION

The CONTROL A75 control system is a universal scalable solution for automation of hot-water boilers and boiler plants. Depending on customer requirements and equipment configuration, CONTROL A75 can provide local control of one boiler, cascade control of a boiler group, or control of heating and domestic hot-water (DHW) circuits. The system is based on relay logic (safety circuits) and a programmable logic controller (PLC) with preinstalled software.

| SCOPE OF SUPPLY

Configuration 1: Single-boiler control A75.01

Purpose. Local automated control system for one hot-water boiler and its auxiliary equipment.

- Control of staged and modulating burners (discrete signals)
- Maintenance of the supply-temperature setpoint in the downstream boiler header
- Boiler pump control

  Maintenance of boiler inlet temperature (cold-return protection) using a circulation pump or three-way mixing valve
- Heating-medium pressure monitoring

| SCOPE OF SUPPLY (CONTINUED)

- Boiler and pump alarm monitoring
- Cascade integration capability (connection to CONTROL A75 in cascade-controller configuration)

Configuration 2: Cascade control of a group of boilers A75.02

Purpose. Weather-compensated cascade control of two to four hot-water boilers with rotation, alarm monitoring and automatic standby boiler start.

Functions:

Weather-compensated maintenance of the supply-temperature setpoint in the common header (according to the setpoint curve)

- Upper-and lower-limit monitoring of supply pressure in the common header
- Monitoring boiler status and equal distribution of operating hours between boilers (rotation)
- System pump control

  Return heating-medium temperature control for the boiler group using a circulation pump or three-way mixing valve
- Make-up control in the common header

  Control of DHW and heating circuits (when CONTROL A75 is connected in circuit-controller configuration, up to two circuits)

Configuration 3: Heating and DHW circuit control A75.03

Purpose. Control of closed heating and domestic hot-water circuits. Operates together with CONTROL A55 configured as a cascade controller. One unit controls two circuits. Up to two units can be connected to one cascade-control system, creating a four-circuit multi-loop system in various combinations.

Functions (circuit combinations):

- DHW + heating
- Heating + heating
- DHW + DHW

Functional capabilities:

- Temperature control in heating and DHW circuits using a three-way valve
- Weather-compensated temperature-setpoint control in heating circuits
- Operation at a reduced setpoint at night, on weekends and weekdays (programmable modes)
- Control of a two-pump circulation group for each circuit
- Circuit make-up control using make-up pumps and a make-up valve
- Upper-and lower-limit monitoring of heating-medium pressure in the common pipeline
- Alarm indication

| ADVANTAGES

Versatility and scalability. One system can operate as a local controller for a single boiler, a cascade controller for 2-4 boilers, or a controller for heating and DHW circuits. The customer selects the configuration according to facility requirements.

Modularity. Functionality can be expanded without replacing equipment. When the boiler house is expanded, the corresponding modules can simply be added.

Weather-compensated control. Automatic adjustment of heating-medium temperature according to outdoor temperature. Thermal-energy savings up to 20-25%.

Cascade control with rotation. Even load distribution between boilers, automatic starting of the standby boiler if the duty boiler fails, and balancing of operating hours.

Programming flexibility. Supports various operating modes: day/night, weekdays/weekends, public holidays.

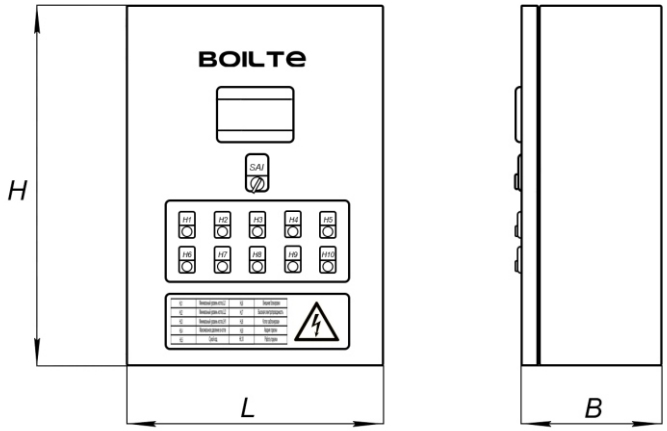
Supervisory integration. Supports Modbus RTU and Modbus TCP/IP for integration into higher-level systems (process-control systems, SCADA, control rooms).

Reliability: the relay safety circuit and PLC operate in parallel. Protection remains active if the controller fails.

TECHNICAL DATA

Model	Emergency shutdown	Alarm indication	Operating temperature, °C	Dry mass, kg	H, mm	L, mm	B, mm
Control A75	Yes	Yes	+5....+40	22	600	600	220

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



ECO



Parameter	Value
Capacity	≤ 20000 kg/h
Pressure	≤ 16 bar
Temperature	≤ 130 °C
Efficiency	> +2.0%

| DESCRIPTION

The economizer is a flue-gas/water heat exchanger with a finned-tube heat-exchange bank. It is a downstream heating surface designed to recover heat from exhaust flue gases and increase boiler efficiency. Average efficiency gain is 2% or more (higher than stated values in condensing operation). The economizer is intended for natural gas, LPG and diesel fuel operation.

| SCOPE OF SUPPLY

The heat exchanger is supplied fully factory-assembled as one transportable module.

The scope of supply includes:

- Complete economizer (finned heat exchanger in carbon steel; stainless steel on request)
- Connection pipes
- Thermometer
- Operating manual
- Data sheet (included in the boiler data sheet)

The economizer is supplied without packaging or wrapped in protective film to ensure preservation during transportation and storage. All openings are sealed with plugs to prevent ingress of moisture and dirt.

| ADVANTAGES

- Boiler efficiency increase (average 2%; higher in condensing mode)
- Recovery of sensible and latent heat of fuel combustion
- Finned tubes - compact design and high efficiency
- Two installation options - boiler-mounted or floor-mounted
- Ready-made rectangular-to-round transition - simplifies flue connection
- Material choice - carbon steel or stainless steel
- Condensing-mode capability - maximum efficiency
- Custom connection arrangements - tailored to customer requirements

| VERSIONS

The unit is installed at the rear of the boiler at the flue-gas outlet to heat an external low-temperature circuit through partial heat recovery. Condensing operation of the economizer is permitted, providing maximum utilization efficiency. The economizer is installed on Boilte fire-tube hot-water boilers.

Efficiency values at maximum load are given in the main-performance tables for each boiler type.

| DESIGN FEATURES

The heat-exchange bank is made of finned tubes, increasing the heat-transfer area and improving heat-recovery efficiency.

- Flanged water inlet and outlet connections.
- Boiler and flue connection ducts ensure gas-path tightness.

| DESIGN FEATURES (CONTINUED)

Rectangular-to-round transition - the economizer incorporates a transition that returns the gas duct to a round section, allowing unobstructed connection to flue stacks.

- Choice of heat-exchanger material - carbon steel (standard) or stainless steel (on request).

TECHNICAL DATA

Model Eco	Power, kW**	Efficiency, %	Gas-side resistance, mbar	Flue-gas outlet temperature, °C	Dry economizer mass, kg	H, mm	L, mm	B, mm	C, mm	N1, N2, DN
1000	46	1,5	0,08	130	320	1400	740	540	350	125
1500	70	1,6	0,09	130	420	1500	920	540	350	125
2000	114	1,9	0,16	130	620	1600	920	710	500	150
2200	117	1,8	0,21	130	620	1600	920	710	500	150
2500	112	1,5	0,25	130	620	1600	920	710	500	150
3000	142	1,6	0,38	130	780	1600	920	880	550	200
3200	142	1,5	0,33	130	830	1700	920	880	550	200
3500	172	1,6	0,42	130	1000	1700	920	1050	550	200
4000	177	1,5	0,3	130	1020	2100	920	880	650	200
4500	209	1,5	0,43	130	1130	2100	920	965	650	200
5000	297	2	0,82	130	1250	2100	920	1050	650	200
5500	274	1,7	0,73	130	1310	2200	920	1050	650	250
6000	290	1,6	0,95	130	1250	2100	920	1050	650	250
6500	314	1,6	1,14	130	1430	2200	920	1135	650	250
7000	446	2,1	1,51	130	1880	2300	920	1390	650	250
7500	439	1,9	1,69	130	1880	2300	920	1390	650	250
8000	473	2	1,81	130	1880	2300	920	1390	800	300
8500	473	1,9	2,05	130	2100	2400	920	1475	800	300
9000	445	1,6	2,49	130	1880	2300	920	1390	800	300
10000	566	1,03	1,1	130	2870	2600	1100	1560	800	300
11000	625	1,45	1,55	130	2870	2600	1100	1560	800	300
12000	612	1,7	1,79	130	2870	2600	1100	1560	1000	400
13000	600	1,5	2,04	130	2870	2600	1100	1560	1000	400
14000	912	2,2	1,59	130	4210	2800	1280	1730	1000	400
15000	882	2	1,74	130	4210	2800	1280	1730	1000	400
16500	915	1,8	2,04	130	4680	2800	1280	1900	1000	400
18000	980	1,8	2,7	130	4680	2800	1280	1900	1000	400
20000	1120	1,9	2,38	130	5460	2800	1460	1900	1000	500

**Power: The stated values correspond to operation on methane (natural gas). When using diesel fuel or fuel oil, output may be adjusted (reduced) in accordance with calculation standards.
Economizer overall dimensions are specified for the tube bundle only (excluding piping, insulation and supporting structures).

LADDER



Parameter	Value
Material	Steel
Height	≤ 6 m
Inclination	45–60 °
Steps	Corrugated

| DESCRIPTION

The ladder and guardrails provide maintenance personnel with safe access to the inspection platform, instrumentation, valves and other hot-water-boiler components located at height. The design complies with safety requirements for operation of thermal-mechanical equipment.

| DESIGN FEATURES

The ladder and guardrails form a welded structure made from steel sections. The upper guardrail is secured by support posts welded to the hot-water boiler body, ensuring stability and strength of the complete system.

The access ladder package for the inspection platform includes: Guardrails - side protection along the ladder to prevent falls from height.

- Toe boards - additional side barriers preventing a foot from slipping off the side of a step.

  Safety cage - fall-protection enclosure for platforms located more than 3 meters above floor level.

| DESIGN FEATURES (CONTINUED)

- Anti-slip step inserts - serrated surfaces or pads preventing footwear from slipping.
- Fall-protection grating - installed in platform openings.

| ADVANTAGES

- Safety - full compliance with occupational-safety requirements for work at height
- Reliability - welded steel-section construction withstands long-term operating loads
- Stability - direct attachment to the boiler shell prevents loosening and vibration
- Slip protection - anti-slip inserts ensure safe ascent and descent in all weather conditions

| APPLICATION

Ladders and guardrails are installed on medium-and high-output hot-water boilers where regular access at height is required for maintenance, inspection and repair.

PROJECT CHECKPOINT Selection guidance

Selection data

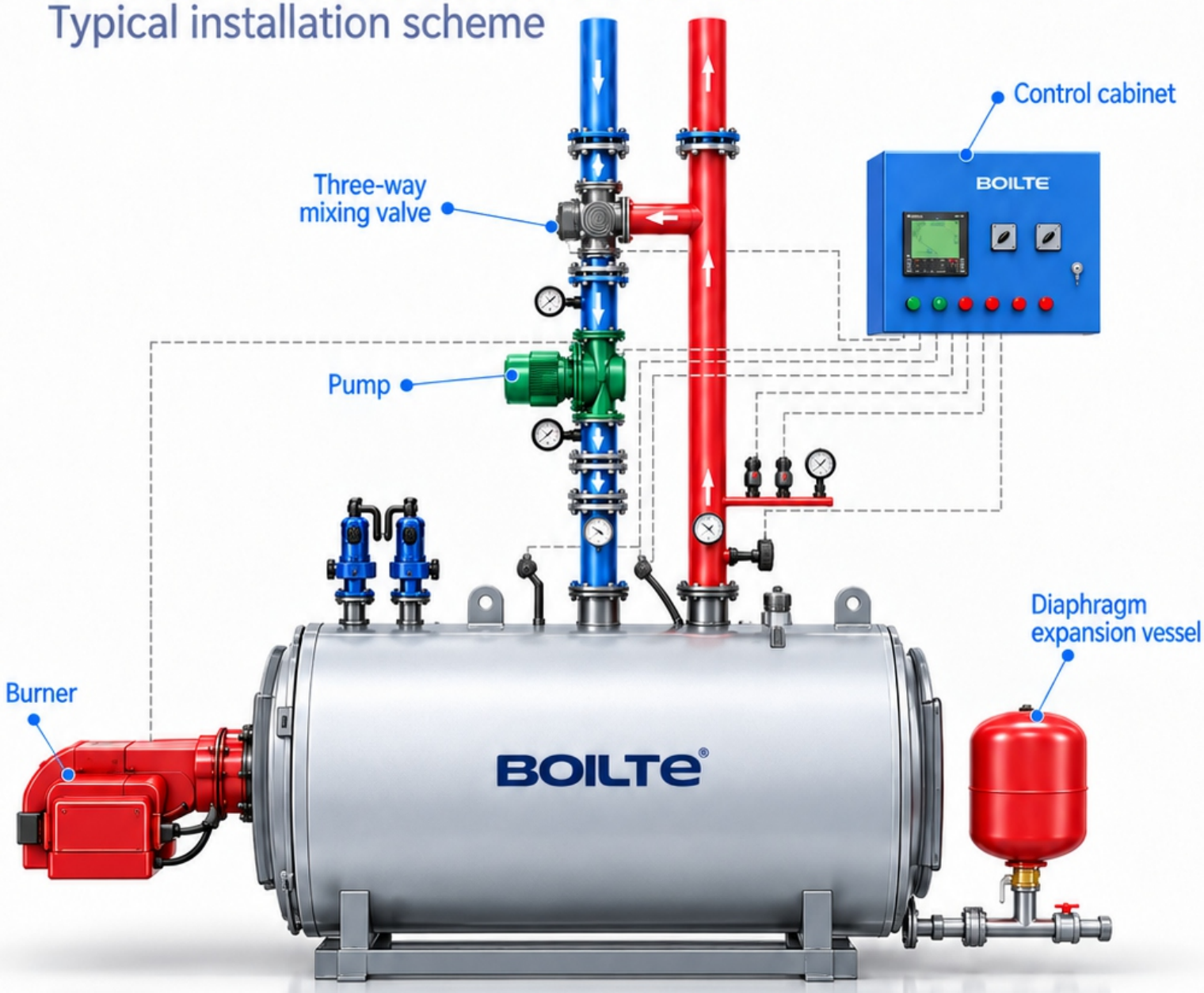
Coordination

BOILTE®
engineered trust

RELIABLE SOLUTIONS FOR THERMAL ENERGY

THERMAL DIAGRAM OF HOT-WATER BOILER PIPING

Typical installation scheme



HIGH-TEMPERATURE WATER BOILERS

| HIGH-TEMPERATURE HEAT SOURCE

Boilte manufactures a broad range of high-temperature water boilers designed to provide industrial facilities with a reliable and efficient high-temperature heating medium. Our equipment combines proven design solutions with modern engineering calculations, ensuring long service life and stable operation.

Need a powerful and reliable source of high-temperature heat for process applications? Boilte high-temperature water boilers are specialized units that generate a heating medium above 115 C. We offer a broad range from 150 to 300,000 kW, capable of meeting any requirement - from supplying heat to a small process area to supporting high-temperature processes at a major industrial complex or providing district heating.

Thanks to gas-tight construction and an optimized arrangement of heating surfaces, our boilers achieve efficiency up to 94-96%, while reinforced thermal insulation and automated control systems minimize operating costs throughout the service life.

| MAIN TYPES OF HIGH-TEMPERATURE WATER BOILERS

Fire-tube boilers - a classic design with smoke tubes, offering high reliability, easy maintenance and compact dimensions. Optimal for medium-and high-output facilities.

Water-tube (coil-type) boilers - water circulates inside small-diameter tubes, making the design ideal for high temperatures and pressures. They offer enhanced safety and resistance to thermal shock.

High-output industrial water-tube boilers - for megawatt-scale applications in CHP plants and district boiler houses.

Depending on heat-transfer efficiency requirements, we offer boilers with two and three flue-gas passes, allowing efficiency to be optimized and fuel consumption reduced.

| TECHNOLOGIES FOR EVERY APPLICATION

Under one brand, Boilte combines several engineering solutions for high-temperature hot-water equipment, enabling selection of the optimum model for specific process requirements:

Quant series - two-pass high-temperature water boilers with output of 350-3,500 kW. Temperature up to 151 C, pressure up to 10 bar. Efficiency up to 94%. Ideal for utility and municipal facilities.

Quantum series - three-pass high-temperature boilers with output of 1,000-20,000 kW. Temperature up to 190 C, pressure up to 18 bar. Efficiency above 94%. Designed for the most demanding processes - from chemical production to large heat-and-power installations.

Eon series - water-tube (coil-type) high-temperature water boilers with output of 150-8,000 kW. Temperature up to 180 C, pressure up to 18 bar. Distinguished by enhanced safety, thermal-shock resistance and modular construction for easy maintenance.

Mega X series - high-output water-tube hot-water boilers from 50,000 to 300,000 kW. Temperature up to 150 C (optionally up to 190 C), pressure up to 10-18 bar. Efficiency up to 95%. Available in U-shaped or tower arrangements and supplied in blocks (2 or 4 blocks). Used at CHP plants for peak district-heating loads, in large district boiler houses and for heat supply to residential areas.

| KEY FEATURES AND ADVANTAGES

Wide capacity range

From compact 150 kW units for local process needs to massive 300,000 kW installations for CHP plants.

Specialized output for high-temperature processes

Standard hot-water boilers are limited to approximately 115 C. Our high-temperature water boilers are designed to operate at 130-200 C and above, providing the heat required for complex process cycles. This improves production-line efficiency and creates a stable, controllable heat source with precise parameter control.

Fuel flexibility

Operation on natural gas, LPG, diesel fuel, fuel oil and biofuel. Dual-fuel burners can be fitted for rapid switching between energy sources according to market conditions.

| QUALITY CONTROL AND RELIABILITY

Every Boilte boiler passes a multi-stage quality-control system: Incoming inspection of metal and components with certificate verification.

- Robotic welding in shielding gas, eliminating human-factor variability.
- Non-destructive weld inspection (ultrasonic testing, radiography) with reports issued.
- Hydrostatic testing at 25-50% above working pressure.

| LIFETIME WARRANTY AND DURABILITY

We are so confident in the quality of our materials and the accuracy of our engineering calculations that we provide a lifetime warranty on the boiler's main heat exchanger - the key element operating under maximum load. This is our responsibility to you and confirmation of Boilte's highest reliability standard.

The design service life of Boilte high-temperature water boilers, subject to compliance with operating regulations, is more than 20-25 years depending on the series.

QUANT



Parameter	Value
Capacity	≤ 3500 kW
Pressure	≤ 10 bar
Temperature	≤ 151 °C
Efficiency	> 92.0%

| DESCRIPTION

Boilte Quant industrial high-temperature water boilers are a professional solution for generating a high-temperature heating medium at parameters up to 151 C and 10 bar. The design is based on a two-pass arrangement with a wet-back furnace and a complete set of turbulators, ensuring maximum heat recovery and stable operation. Output: 0.3-3.5 MW (300-3,500 kW). Efficiency: up to 94%. Intended for large industrial facilities, municipal utilities and any application requiring high thermodynamic parameters. Service life: more than 25 years.

| SCOPE OF SUPPLY

Main structure and casing: sectional thermally insulated body with mineral-wool insulation and steel cladding. Removable front door on adjustable hinges (opening either direction) for access to the furnace and burner. Rear cover and rear smoke box. Lifting device for safe installation.

Efficiency components: complete set of turbulators for smoke tubes (increase efficiency). Burner flange for burner installation. Flame inspection port with heat-resistant glass.

Hydraulic and gas-path connections: heating supply and return connections. System drain connection. Flue connection and condensate drain connection. Temperature-monitoring tapping.

| SCOPE OF SUPPLY (CONTINUED)

System drain connection. Flue connection and condensate drain connection. Temperature-monitoring tapping.

Safety, monitoring and control: thermometer for visual monitoring. Control and safety thermostats for basic protection. Electrical control cabinet - intelligent automation system for monitoring, control and diagnostics.

5. **Documentation:** passport and operating instructions.

| DESIGN FEATURES

Two-pass design - flue gases make two complete passes through the gas passages, flowing through the wet-back furnace and smoke tubes with turbulators. This provides deep flue-gas cooling and maximum heat recovery.

Cylindrical symmetry - the shell and tube sheets have an ideal isotropic form, ensuring uniform distribution of mechanical and thermal stresses. The boiler is designed to accommodate continuous loads from high pressure and temperature variations, radically increasing fatigue life and preventing deformation.

- Gas-tight construction - pressurized-draft operation, no air infiltration, stable combustion.

| APPLICATIONS

- Process heat supply in industrial plants (food, chemical and light industries).

  High-temperature heating systems for large loads (industrial workshops, logistics complexes, large buildings).

  Municipal-energy facilities requiring reliable sources of heating medium at elevated parameters.

| ADVANTAGES

High energy efficiency and reduced costs. The two-pass design with wet-back furnace and turbulators provides efficiency up to 94%, directly reducing fuel operating costs throughout the boiler life cycle.

Engineering reliability designed for decades. Cylindrical symmetry of the shell and tube sheets provides ideal distribution of mechanical and thermal stresses, radically increasing fatigue strength. This minimizes downtime and repair costs, ensuring a low total cost of ownership.

| ADVANTAGES (CONTINUED)

Readiness for high loads and stable parameters. Quant boilers are designed for high-parameter heating medium (up to 151 C at 10 bar). High system thermal inertia acts as an integrated damper, maintaining stable temperature and pressure even under sharp load fluctuations - critical for continuity of industrial processes.

Fuel flexibility and investment protection. Operation on gaseous and liquid fuels provides strategic flexibility. Your business is protected against energy-price fluctuations by the ability to switch rapidly between fuels without replacing the main equipment.

Intelligent control and diagnostics. The standard scope includes a control cabinet - a system that monitors operation, records deviations, logs faults and transmits data to the operator. This improves safety and supports a shift from reactive to preventive maintenance.

TECHNICAL DATA

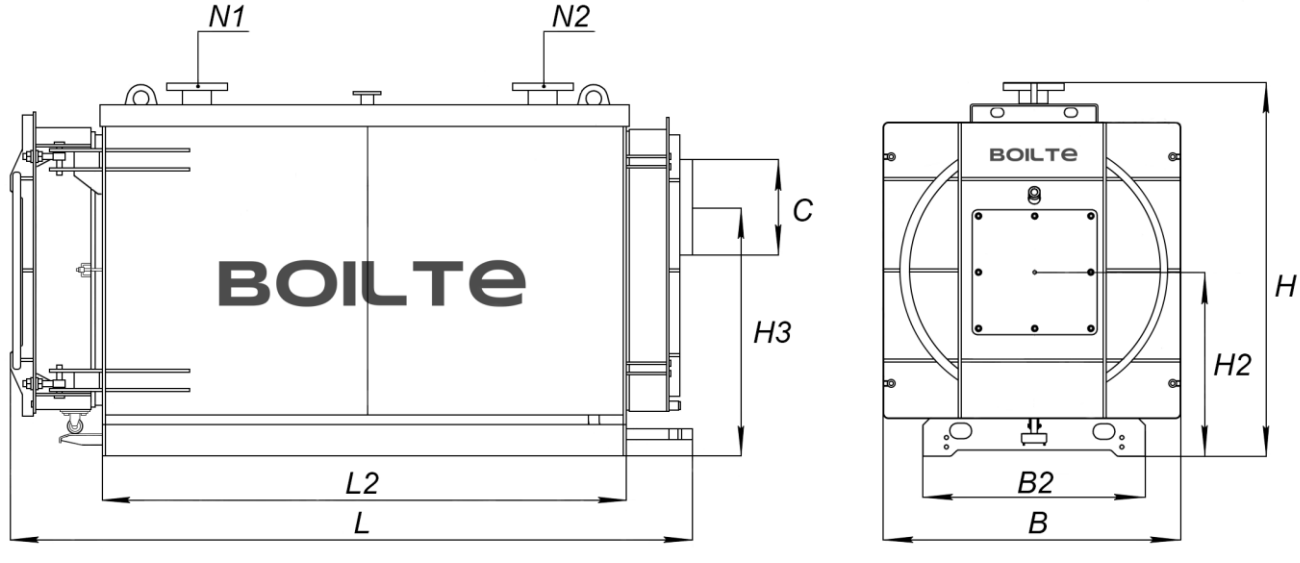
Model Quant	Power, kW*	Efficiency, %	Pressure, bar	Max. fluid temperature, °C	Min. fluid temperature, °C	Boiler resistance, mbar	Boiler water volume, L	Flue-gas flow, m³/h	Gas consumption, m³/h	Dry boiler mass, kg*
300	300	92,11	8/10	140/150	60	3,1	400	390,08	32,81	875
500	500	92,11	8/10	140/150	60	4,8	560	658,26	54,69	1110
700	700	92,12	8/10	140/150	60	5,7	750	938,68	77,03	1310
800	800	92,02	8/10	140/150	60	3,9	910	1072,72	88,58	1935
1000	1000	92,14	8/10	140/150	60	6,7	1030	1328,81	109,38	2655
1200	1200	92,11	8/10	140/150	60	5,2	1170	1597,02	131,72	2958
1500	1500	92,11	8/10	140/150	60	5,1	1250	1999,32	164,45	3520
1700	1700	92,12	8/10	140/150	60	7	1330	2267,34	186,41	3615
2000	2000	92,12	8/10	140/150	60	8	1360	2669,16	219,53	4245
2500	2500	92,14	8/10	140/150	60	6,8	1850	3328,14	273,45	5345
3000	3000	92,51	8/10	140/150	60	11	2250	3998,64	328,91	5620
3500	3500	92,11	8/10	140/150	60	16,5	3640	4693,15	385,14	6855

**Power: The stated values correspond to operation on methane (natural gas). When using diesel fuel or fuel oil, output may be adjusted (reduced) in accordance with calculation standards.

*Weight specified for the model with 10 bar working pressure.

OVERALL DIMENSIONS

Model Quant	H, mm	H2, mm	H3, mm	L, mm	L2, mm	B, mm	B2, mm	C, mm	N1, DN	N2, DN
300	1093	536	711	1724	1316	900	641	250	65	65
500	1194	595	795	1974	1516	1000	712	300	80	80
700	1194	595	795	2474	2016	1000	712	300	100	100
800	1523	774	1093	2186	1720	1300	926	400	100	100
1000	1523	774	1093	2486	2020	1300	926	400	125	125
1200	1523	774	1093	2656	2120	1300	926	400	125	125
1500	1702	863	1224	2778	2220	1450	1032	400	150	150
1700	1702	863	1224	2978	2420	1450	1032	400	150	150
2000	1842	927	1337	3182	2520	1550	1109	500	200	200
2500	2126	1076	1566	3183	2520	1800	1288	550	200	200
3000	2126	1076	1566	3533	2870	1800	1288	550	200	200
3500	2126	1076	1566	3833	3150	1800	1288	550	200	200



INSTALLATION PLANNING

Selection guidance

Installation envelope

Use the selected model row together with the drawing. Check overall height, length and width against the delivery route, installation position and available access for service.

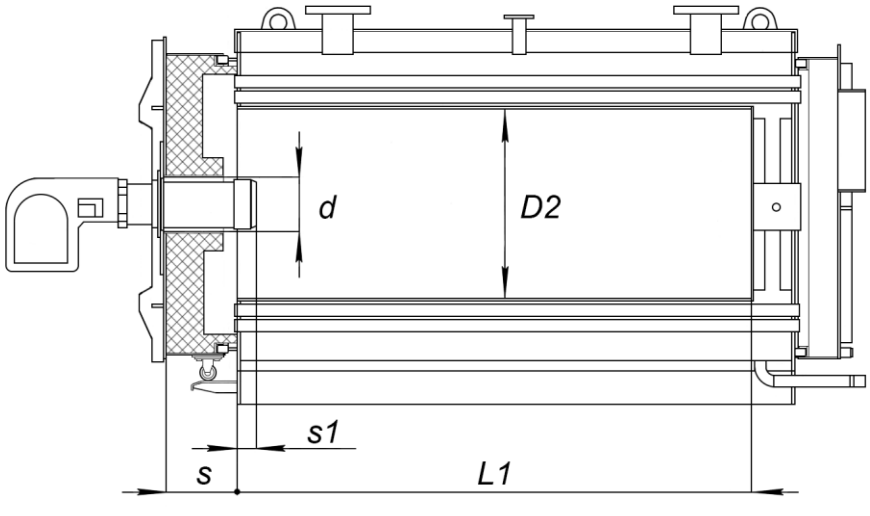
Connection schedule

Confirm connection sizes and locations for the ordered configuration. Coordinate supports and adjacent equipment with project drawings; overall dimensions alone do not define service clearances.

BURNER SELECTION DIMENSIONS

Model Quant	Burner opening diameter d, mm	Front cover thickness s, mm	Burner mounting dimension s1, mm	Furnace tube diameter D2, mm	Furnace tube length L1, mm	Reversal chamber length L2, mm
300	190	180	20–60	514	1200	—
500	225	220	20–60	614	1400	—
700	225	220	20–60	614	1900	—
800	280	220	20–60	704	1600	—
1000	280	220	20–60	704	1900	—
1200	300	220	20–60	704	2200	—
1500	320	250	20–60	804	2130	—
1700	320	250	20–60	804	2330	—
2000	360	250	20–60	900	2430	—
2500	400	250	20–60	1000	2430	—
3000	400	250	20–60	1000	2780	—
3500	400	250	20–60	1000	3080	—

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Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



BURNER MATCHING

Selection guidance

Burner interface

Match the selected burner to the opening diameter, mounting dimension and furnace dimensions shown in this section. Use the exact model row rather than the dimensions of a neighbouring size.

Selection information

Provide the fuel type, required operating range and boiler gas-side resistance with the enquiry. Confirm the flame-head arrangement and maintenance access with the boiler and burner documentation before manufacture.

QUANTUM



Parameter	Value
Capacity	≤ 20000 kW
Pressure	≤ 15 bar
Temperature	≤ 170 °C
Efficiency	> 92.0%

| DESCRIPTION

Quantum three-pass high-temperature boilers are professional equipment for the most demanding applications where output and stable delivery of pressurized high-temperature heating medium are critical. The series heats water to 190 C at working pressure up to 15 bar and output from 1,000 to 20,000 kW. Efficiency: above 94%. An ideal solution for uninterrupted supply of high-temperature water to process units and heating of large industrial complexes. Service life: more than 25 years.

| SCOPE OF SUPPLY

The main heat-exchange module includes the flame tube (furnace) - the primary combustion zone, second-and third-pass smoke tubes, and the outer shell forming the main cylindrical body.

Furnace and inspection equipment includes a refractory-lined front boiler door for access to the furnace and burner, burner plate for burner mounting, water-space manholes (for outputs from 8 MW) for internal inspection, a smoke-box inspection cover and a sight glass for access and visual flame monitoring.

Hydraulic connections include water inlet and outlet nozzles, emergency-line connection, boiler and smoke-box drain nozzles, and a water-guiding element for optimum heating-medium circulation.

| SCOPE OF SUPPLY (CONTINUED)

Gas path and supports comprise the smoke box - the final flue-gas collection section, flue-gas outlet connection for attachment to the stack, steel load-bearing supports for mounting the boiler on the foundation, and lifting lugs for safe transportation and installation.

Thermal insulation and casing are made from high-density materials that minimize heat loss and are protected by galvanized cladding serving both protective and aesthetic functions.

The control system and documentation include an electrical control cabinet - a centralized panel for monitoring and controlling boiler operation.

| DESIGN FEATURES

Three-pass flue-gas flow - thermal energy is extracted consecutively in three independent circuits, enabling efficiency close to the theoretical maximum. Every percentage point of efficiency translates directly into budget savings.

The cylindrical shape of the drum and tube sheets, combined with special-grade boiler steels, ensures uniform distribution of thermal and mechanical loads.

Automated welding under digital-system control - every critical weld is inspected by radiographic and ultrasonic methods. Equipment durability is confirmed not by words, but by test reports.

Ease of maintenance - the design provides simple access to key assemblies, reducing the time and cost of scheduled maintenance.

| APPLICATIONS

- Industry - process applications.
- Energy - support of district-heating networks.
- Large facilities - heating and DHW.

TECHNICAL DATA

Model Quantum	Power, kW**	Efficiency, %	Pressure, bar	Max. fluid temperature, °C	Min. fluid temperature, °C	Boiler resistance, mbar	Boiler water volume, L	Flue-gas flow, m³/h	Gas consumption, m³/h	Dry boiler mass, kg*
1000	1000	92,4	8/10/15	140/150/170	70	5,4	2,03	0,43	102	3540
1500	1500	92,3	8/10/15	140/150/170	70	5,1	2,98	0,66	161	4470
2000	2000	92,2	8/10/15	140/150/170	70	4	2,98	0,87	218	5376
2200	2200	92,2	8/10/15	140/150/170	70	5,1	3,16	0,96	239	5250
2500	2500	92,2	8/10/15	140/150/170	70	7	3,38	1,09	271	7030
3000	3000	92,8	8/10/15	140/150/170	70	6,4	4,41	1,31	327	7260
3200	3200	92,11	8/10/15	140/150/170	70	7,6	4,74	1,4	352	7566
3500	3500	93,5	8/10/15	140/150/170	70	9,8	5,59	1,42	382	8246
4000	4000	93,57	8/10/15	140/150/170	70	7,6	6,28	1,81	438	10222
4500	4500	92,1	8/10/15	140/150/170	70	10	6,68	2,03	491	11220
5000	5000	93,7	8/10/15	140/150/170	70	5	6,85	2,16	549	11431
5500	5500	93,6	8/10/15	140/150/170	70	9,5	7,25	2,32	606	11363
6000	6000	92,9	8/10/15	140/150/170	70	12,4	7,99	2,58	658	13595
6500	6500	92,9	8/10/15	140/150/170	70	9,8	8,25	2,83	711	14706
7000	7000	93,4	8/10/15	140/150/170	70	11,7	8,47	3,01	771	15007
7500	7500	93,2	8/10/15	140/150/170	70	11,9	8,99	3,23	822	15707
8000	8000	94,1	8/10/15	140/150/170	70	11,2	9,87	3,41	879	17727
8500	8500	93,7	8/10/15	140/150/170	70	13,7	10,85	3,72	933	18089
9000	9000	93,7	8/10/15	140/150/170	70	13,6	11,84	4,04	987	19089
10000	10000	94,3	8/10/15	140/150/170	70	12,1	12,88	4,25	1112	21119
11000	11000	93	8/10/15	140/150/170	70	13,2	14,12	4,99	1208	22119
12000	12000	93	8/10/15	140/150/170	70	13,8	16,73	5,27	1321	24988
13000	13000	94,2	8/10/15	140/150/170	70	13,7	17,94	5,73	1433	24988
14000	14000	94,1	8/10/15	140/150/170	70	14,7	18,57	6,05	1544	30167
15000	15000	94,7	8/10/15	140/150/170	70	16,5	20,89	6,52	1648	31167
16500	16500	94,8	8/10/15	140/150/170	70	19,1	21,63	7,19	1811	31804
18000	18000	94,3	8/10/15	140/150/170	70	13,12	24,79	7,59	1982	40500
20000	20000	95	8/10/15	140/150/170	70	15,88	25,93	8,47	2211	40250

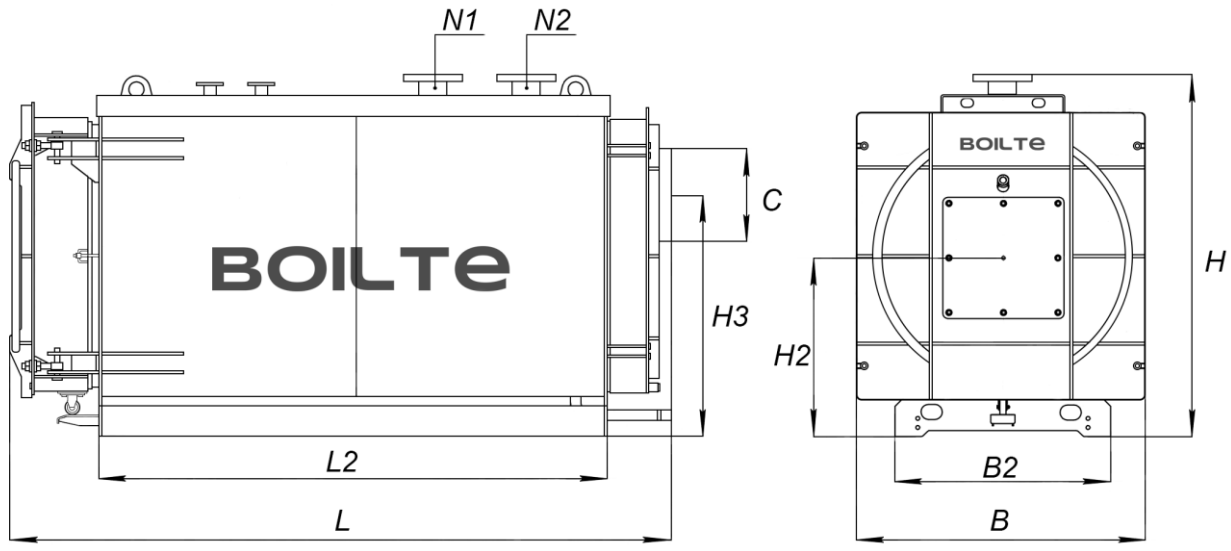
**Power: The stated values correspond to operation on natural gas or diesel fuel. When using fuel oil, adjustment may be required (reduced) in accordance with calculation standards.

*Weight specified for the model with 10 bar working pressure.

OVERALL DIMENSIONS

Model Quantum	H, mm	H2, mm	H3, mm	L, mm	L2, mm	B, mm	B2, mm	C, mm	N1, DN	N2, DN
1000	1842	927	1337	3091	2524	1550	1109	350	125	125
1500	1842	927	1337	3491	2924	1550	1109	350	125	125
2000	2126	1076	1566	3829	3124	1800	1288	500	150	150
2200	2126	1076	1566	3929	3224	1800	1288	500	150	150
2500	2126	1076	1566	4229	3524	1800	1288	500	150	150
3000	2346	1196	1806	4529	3724	2000	1431	550	200	200
3200	2346	1196	1806	4729	3924	2000	1431	550	200	200
3500	2346	1196	1806	4929	4124	2000	1431	550	200	200
4000	2610	1334	2007	5128	4420	2230	1595	650	200	200
4500	2610	1376	1805	5130	4330	2230	1595	650	200	200
5000	2690	1205	2065	5088	4420	2300	1645	650	200	200
5500	2690	1205	2065	5328	4660	2300	1645	650	250	250
6000	2690	1205	2065	5528	4860	2300	1645	650	250	250
6500	3073	1579	2394	5580	5160	2640	1789	650	250	250
7000	3073	1579	2394	5790	4420	2640	1789	650	250	250
7500	3073	1579	2394	5990	5750	2640	1789	650	250	250
8000	3140	1506	2459	6067	5228	2780	1800	800	300	300
8500	3140	1506	2459	6160	5830	2780	1800	800	300	300
9000	3200	1506	2459	6460	5928	2780	1821	800	300	300
10000	3200	1506	2459	6867	6028	2780	1821	800	300	300
11000	3565	1564	2664	6770	5470	3060	1910	800	300	300
12000	3565	1564	2664	6970	5670	3060	1910	1000	400	400
13000	3565	1564	2664	7170	5870	3060	1820	1000	400	400
14000	3600	1794	2724	7760	6620	3100	2021	1000	400	400
15000	3600	1794	2724	7960	6730	3100	2021	1000	400	400
16500	3600	1794	2724	8265	7426	3100	2021	1000	400	400
18000	3850	1985	2964	8570	7502	3320	2040	1000	400	400
20000	3850	1985	2964	8670	7702	3320	2040	1000	400	400

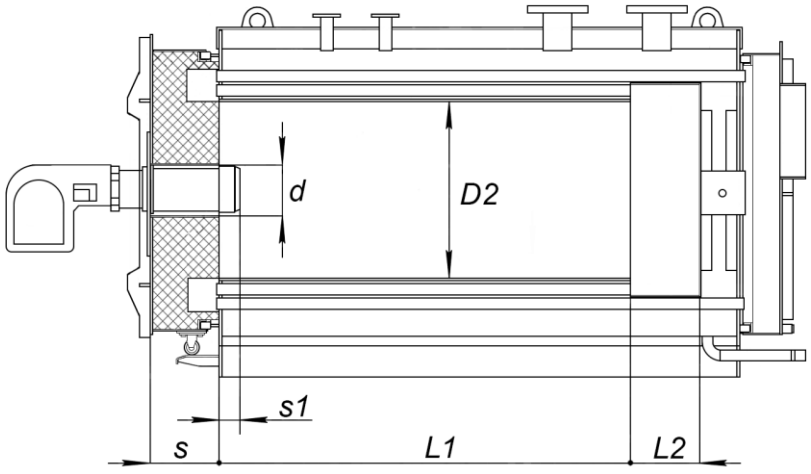
*Overall dimensions are specified for Boilte boiler models rated for 8 and 10 bar.



BURNER SELECTION DIMENSIONS

Model Quantum	Burner opening diameter d, mm	Front cover thickness s, mm	Burner mounting dimension s1, mm	Furnace tube diameter D2, mm	Furnace tube length L1, mm	Reversal chamber length L2, mm
1000	300	241	20–60	700	1950	400
1500	300	241	20–60	700	2350	400
2000	400	241	20–60	800	2500	400
2200	400	241	20–60	800	2500	500
2500	400	241	20–60	800	2800	500
3000	450	313	20–60	900	2900	600
3200	450	313	20–60	900	3100	600
3500	450	313	20–60	900	3300	600
4000	500	313	20–60	1000	3600	600
4500	500	313	20–60	1000	3600	600
5000	500	313	20–60	1000	3600	600
5500	500	313	20–60	1200	3900	600
6000	500	313	20–60	1200	4100	600
6500	550	313	20–60	1200	4200	600
7000	550	313	20–60	1300	4300	600
7500	550	313	20–60	1300	4400	600
8000	600	346	20–60	1300	4500	600
8500	600	346	20–60	1400	5000	600
9000	600	346	20–60	1400	5000	600
10000	600	346	20–60	1400	5200	600
11000	730	346	20–60	1500	5200	640
12000	730	346	20–60	1500	5400	640
13000	730	346	20–60	1500	5600	640
14000	730	346	20–60	1588	6100	600
15000	730	346	20–60	1588	6300	600
16500	730	346	20–60	1588	6600	600
18000	750	373	20–60	1700	7000	600
20000	750	373	20–60	1700	7000	600

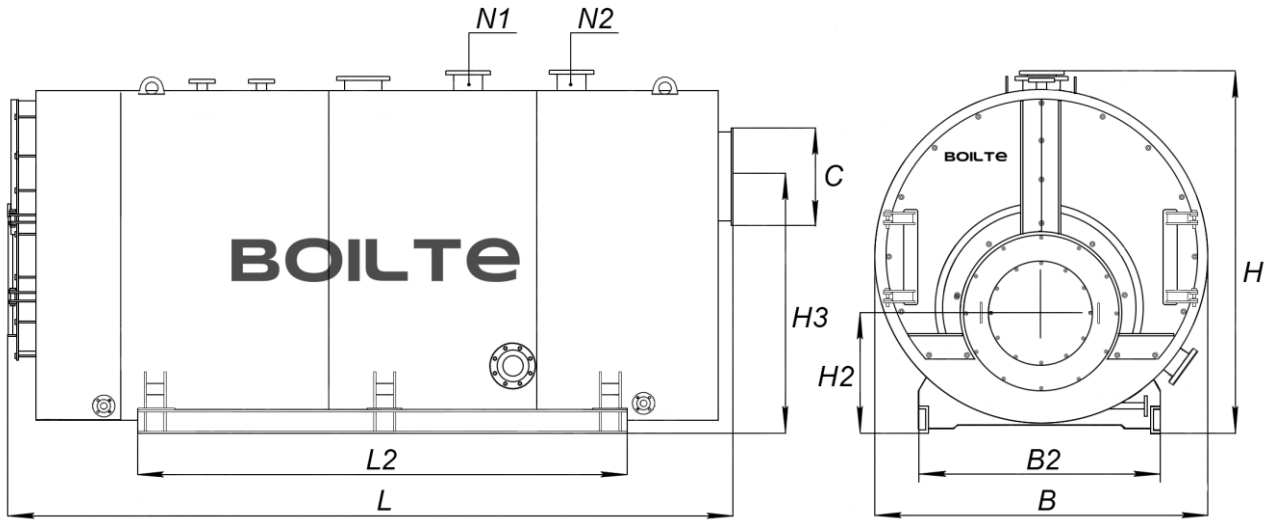
*Overall dimensions are specified for Boilte boiler models rated for 8 and 10 bar.
We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.



OVERALL DIMENSIONS

Model Quantum	H, mm	H2, mm	H3, mm	L, mm	L2, mm	B, mm	B2, mm	C, mm	N1, DN	N2, DN
1000	2147	734	1589	3340	1890	1900	1450	350	125	125
1500	2147	734	1589	3740	2090	1900	1450	350	125	125
2000	2147	734	1589	3990	2440	1900	1450	500	150	150
2200	2147	734	1589	4090	2440	1900	1450	500	150	150
2500	2147	734	1589	4390	2740	1900	1450	500	150	150
3000	2348	893	1740	4680	2980	2100	1400	500	200	200
3200	2348	893	1740	4880	3180	2100	1400	500	200	200
3500	2348	893	1740	5080	3380	2100	1400	500	200	200
4000	2650	953	1740	5418	3620	2400	1600	650	200	200
4500	2650	953	1740	5418	3620	2400	1600	650	200	200
5000	2650	953	1740	5418	3620	2400	1600	650	200	200
5500	2650	953	1740	5618	3960	2400	1600	650	250	250
6000	2650	953	1740	5818	3620	2400	1600	650	250	250
6500	3141	1186	2382	5923	4060	2900	1901	800	250	250
7000	3141	1186	2382	6233	4370	2900	1901	800	250	250
7500	3141	1186	2382	6333	4370	2900	1901	800	300	300
8000	3141	1186	2382	6333	4370	2900	1901	800	300	300
8500	3141	1186	2382	6433	4370	2900	1901	800	300	300
9000	3141	1186	2382	6533	4570	2900	1901	900	300	300
10000	3141	1186	2382	7133	5170	2900	1901	900	300	300
11000	3337	1205	2508	7133	5170	3110	2200	900	350	350
12000	3337	1205	2508	7533	5370	3110	2200	900	350	350
13000	3337	1205	2508	8033	5870	3110	2200	1000	400	400
14000	3337	1205	2508	8233	5870	3110	2200	1000	400	400
15000	3337	1205	2508	8533	6412	3110	2200	1000	400	400
16500	3337	1205	2508	8533	6412	3110	2200	1000	400	400
18000	3842	1362	2884	8544	5840	3500	2300	1100	400	400
20000	3842	1362	2884	9044	6922	3500	2300	1100	400	400

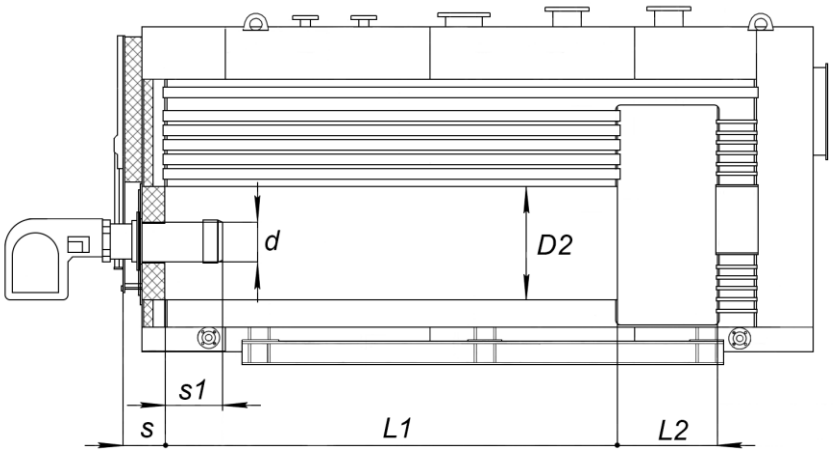
*Overall dimensions are specified for Boilte boiler models rated for 15 bar.



BURNER SELECTION DIMENSIONS

Model Quantum	Burner opening diameter d, mm	Front cover thickness s, mm	Burner mounting dimension s1, mm	Furnace tube diameter D2, mm	Furnace tube length L1, mm	Reversal chamber length L2, mm
1000	300	250	20–60	700	1950	400
1500	300	250	20–60	700	2350	400
2000	380	300	20–60	800	2500	400
2200	380	300	20–60	800	2500	500
2500	380	300	20–60	800	2800	500
3000	450	350	20–60	900	2900	600
3200	450	350	20–60	900	3100	600
3500	450	350	20–60	900	3300	600
4000	450	350	20–60	1000	3600	600
4500	450	350	20–60	1000	3600	600
5000	450	350	20–60	1000	3600	600
5500	450	350	20–60	1200	3900	600
6000	450	350	20–60	1200	4100	600
6500	500	350	20–60	1200	4200	600
7000	500	350	20–60	1300	4300	600
7500	500	350	20–60	1300	4400	600
8000	590	350	20–60	1300	4500	600
8500	590	350	20–60	1400	5000	600
9000	590	350	20–60	1400	5000	600
10000	590	350	20–60	1400	5200	600
11000	730	350	20–60	1500	5200	640
12000	730	350	20–60	1500	5400	640
13000	730	350	20–60	1500	5600	640
14000	730	350	20–60	1588	6100	600
15000	730	350	20–60	1588	6300	600
16500	730	350	20–60	1588	6600	600
18000	760	470	20–60	1700	7000	600
20000	760	470	20–60	1700	7000	600

*Overall dimensions are specified for Boilte boiler models rated for 15 bar.
Maximum permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



EON



Parameter	Value
Capacity	≤ 8000 kW
Pressure	≤ 10 bar
Temperature	≤ 180 °C
Efficiency	> 92.0%

| DESCRIPTION

Eon water-tube high-temperature water boilers are the result of in-depth engineering and uncompromising production control. Output: 150-8,000 kW. Water temperature: up to 180 C. Working pressure: standard up to 10 bar, optional up to 18 bar. Designed for heat-supply systems at industrial enterprises and large administrative complexes where steam is not required but high-enthalpy water is needed. Service life: more than 25 years.

| SCOPE OF SUPPLY

Main heat-exchange module (coil block): coil-type heat-exchange block made from a system of seamless tubes.

Frame, casing and insulation: boiler support frame - a rigid load-bearing structure; outer protective casing of galvanized steel; multilayer high-density thermal insulation minimizing heat loss and ensuring a safe external-surface temperature.

Burner and inspection equipment: burner plate (front panel) with burner mounting provision; sight glass for flame monitoring.

Hydraulic connections: inlet and outlet nozzles with flanged connections, drain/blowdown nozzles, connections for safety and instrumentation valves.

| SCOPE OF SUPPLY (CONTINUED)

Gas path: smoke box for collecting exhaust gases; flue-gas outlet nozzle with flange for connection to the flue-gas removal system.

Control system: electrical control cabinet with controller for burner and pump control and monitoring of main parameters (temperature, pressure).

7. **Documentation:** product passport with warranty certificate, operating and installation manual.

| DESIGN FEATURES

Coil-type (water-tube) arrangement - water circulates inside small-diameter seamless tubes while combustion products flow around the outside. This provides high specific output, optimum circulation and enhanced operating safety. A significant volume of pressurized water is distributed throughout the tube system rather than concentrated in a single drum, reducing the potential energy of a possible failure.

The small diameter of the coil tubes and their optimum positioning in the gas stream create high heating-medium velocities and intense turbulent flow that breaks down the laminar boundary layer. This provides the maximum heat-transfer coefficient from flue gas to water.

Reduced inertia - compared with conventional fire-tube boilers, the Eon system has less metal and water mass in the heat exchanger, enabling faster response to automation commands, more accurate setpoint-temperature control and more efficient modulating operation.

| ADVANTAGES

Engineering and technological superiority. The coil design radically improves operating safety: a significant volume of pressurized water is distributed through a system of small-diameter tubes, reducing the potential energy of a possible failure. The small diameter and optimum arrangement of the tubes create intense turbulent flow, providing maximum heat-transfer coefficient and efficiency.

| ADVANTAGES (CONTINUED)

Operational and economic benefits. The coil design made from high-quality seamless tubes offers increased resistance to cyclic thermal and mechanical loads, ensuring stable operation during frequent starts/stops and load changes.

Custom configuration for your process. The Eon boiler design allows flexible adaptation of operating parameters to specific customer requirements. You receive not a standard product, but a precise tool integrated into your production process.

TECHNICAL DATA

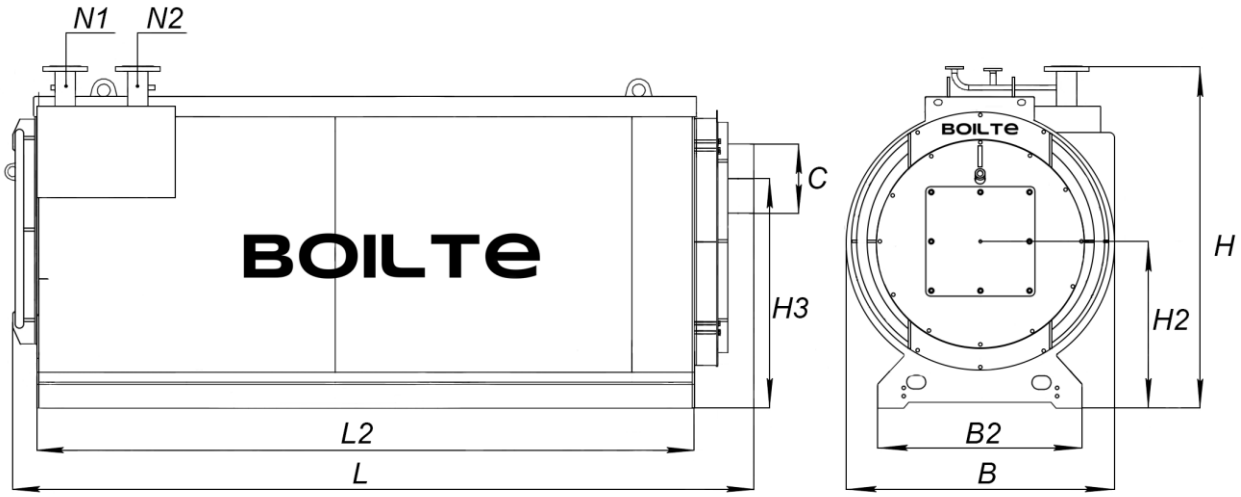
Model Eon	Power, kW**	Efficiency, %	Pressure, bar	Max. fluid temperature, °C	Min. fluid temperature, °C	Boiler resistance, mbar	Boiler water volume, L	Flue-gas flow, m³/h	Gas consumption, m³/h	Dry boiler mass, kg
150	174	88,2	10	180	60	3,2	46	177	21,19	650
250	291	88,4	10	180	60	3,7	51	251	28,75	740
350	407	89,2	10	180	60	4,1	99	439	50,12	875
450	523	89,1	10	180	60	4,4	120	565	64,72	1500
550	640	88,5	10	180	60	5,8	152	679	78,81	1160
800	930	89,2	10	180	60	8,2	239	992	115,84	1980
1000	1160	89,5	10	180	60	8,3	269	1255	144,49	2610
1250	1453	89,3	10	180	60	8,7	465	1564	180,49	2800
1500	1745	89,2	10	180	60	9,1	517	1886	216,84	3250
2000	2320	89,4	10	180	60	9,4	756	2461	284,2	4350
2500	2900	89,2	10	180	60	10,1	1320	3058	350,4	5450
3000	3480	90,1	10	180	60	10,5	1530	3717	427,25	5830
4000	4650	89,5	10	180	60	11,3	1980	5020	579,2	7300
5000	5810	89,2	10	180	60	12,5	2840	5439	622,82	8650
6000	6970	89,5	10	180	60	12,9	3200	7544	868,21	9500
7000	8100	89,3	10	180	60	13,4	3350	8760	1008,98	10200

****Power:** The stated values correspond to operation on methane (natural gas). When using diesel fuel or fuel oil, output may be adjusted (reduced) in accordance with calculation standards.

OVERALL DIMENSIONS

Model Eon	H, mm	H2, mm	H3, mm	L, mm	L2, mm	B, mm	B2, mm	C, mm	N1, DN	N2, DN
150	1400	830	965	1700	1275	1300	1000	180	32	32
250	1400	830	965	1800	1275	1400	1000	180	50	50
350	1600	760	925	2000	1900	1400	1000	200	65	65
450	1600	760	925	2200	1900	1400	1000	200	65	65
550	1600	760	925	2400	1900	1400	1000	250	65	65
800	1750	930	1130	2700	2900	1650	1250	250	80	80
1000	1750	930	1130	3100	2900	1650	1250	350	100	100
1250	1850	950	1170	3500	3500	1700	1250	350	100	100
1500	2000	940	1200	3650	3600	2100	1520	450	125	125
2000	2200	1000	1500	3750	3800	2350	1800	450	125	125
2500	2450	1375	1850	4000	3800	2700	1600	550	125	125
3000	2450	1170	1620	4200	4200	2700	1600	550	150	150
4000	2450	1400	1800	5100	4000	2700	1600	700	150	150
5000	2900	1450	2050	6000	4000	3100	1800	750	200	200
6000	2950	1450	2050	7000	5000	3100	1800	800	200	200
7000	3200	1550	2200	7500	5400	3400	2000	850	200	200

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



INSTALLATION PLANNING

Selection guidance

Installation envelope

Use the selected model row together with the drawing. Check overall height, length and width against the delivery route, installation position and available access for service.

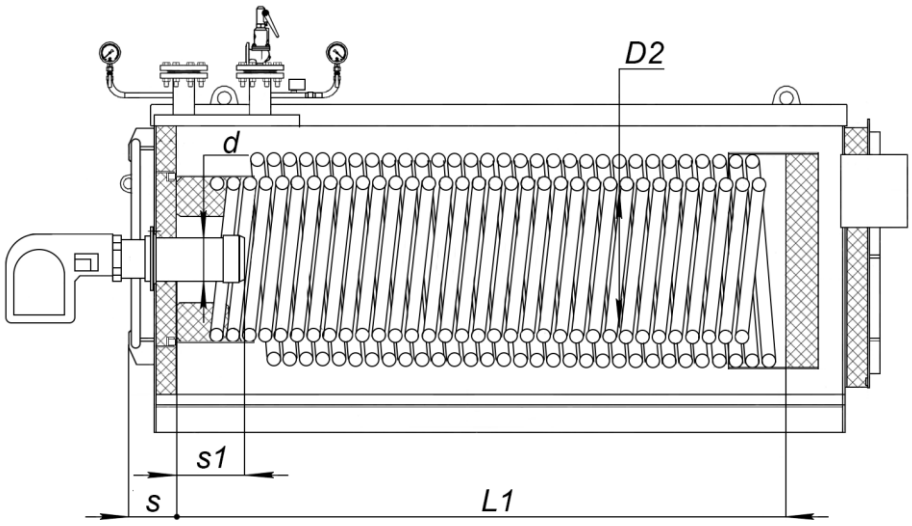
Connection schedule

Confirm connection sizes and locations for the ordered configuration. Coordinate supports and adjacent equipment with project drawings; overall dimensions alone do not define service clearances.

BURNER SELECTION DIMENSIONS

Model Eon	Burner opening diameter d, mm	Front cover thickness s, mm	Burner mounting dimension s1, mm	Furnace tube diameter D2, mm	Furnace tube length L1, mm	Reversal chamber length L2, mm
150	160	200	20–60	390	900	—
250	225	200	20–60	460	1050	—
350	225	200	20–60	480	1390	—
450	280	200	20–60	480	1570	—
550	280	200	20–60	460	1770	—
800	280	220	20–60	620	2340	—
1000	280	220	20–60	620	2340	—
1250	320	220	20–60	650	2750	—
1500	320	220	20–60	770	2900	—
2000	400	260	20–60	1080	3350	—
2500	400	260	20–60	1245	3750	—
3000	400	260	20–60	1245	4200	—
4000	400	285	20–60	1245	4900	—
5000	490	285	20–60	1650	5500	—
6000	490	285	20–60	1715	6200	—
7000	490	285	20–60	1715	6800	—

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



BURNER MATCHING

Selection guidance

Burner interface

Match the selected burner to the opening diameter, mounting dimension and furnace dimensions shown in this section. Use the exact model row rather than the dimensions of a neighbouring size.

Selection information

Provide the fuel type, required operating range and boiler gas-side resistance with the enquiry. Confirm the flame-head arrangement and maintenance access with the boiler and burner documentation before manufacture.

MEGA X



Parameter	Value
Capacity	≤ 300000 kW
Pressure	≤ 16 bar
Temperature	≤ 170 °C
Efficiency	> 91.0%

| DESCRIPTION

Mega X water-tube hot-water boilers are designed to produce hot water at temperatures up to 170 C and are used as a primary or peak heat source in heating boiler houses, CHP plants, and for domestic and industrial hot-water supply. Thermal output: 4.65-300 MW. Efficiency: above 92% (up to 95%). Minimum water working pressure: 1.6 MPa (16 bar). Fuel: natural gas, diesel fuel, fuel oil. Design service life: 20 years (when operating on natural gas).

| SCOPE OF SUPPLY

Mega X tower-type boilers are supplied in modular form - four or eight blocks depending on output - at maximum factory readiness. Standard supply includes the boiler tube system comprising the furnace, convective banks, headers and membrane-wall panels, installed on a support frame with fixed and sliding supports. The boiler frame is equipped with stiffening belts and load-bearing crossbeams for suspension of the tube system. All heated surfaces are covered with high-efficiency basalt-fiber insulation and protective external steel-sheet cladding.

| SCOPE OF SUPPLY (CONTINUED)

All required bypass, drain and vent lines with shut-off valves are installed inside the boiler within the equipment envelope.
Heat-resistant-glass inspection ports are provided for visual monitoring of combustion, while sealed manholes in the lower part of the walls provide access for inspection and repair of internal surfaces.

The complete technical-documentation package includes the boiler passport with serial number, operating manual, non-destructive examination reports (radiography and ultrasonic testing) for welded joints, hydrostatic-test reports and certificates of conformity.

| DESIGN FEATURES

The key advantage is modular boiler delivery. Depending on output, the equipment is supplied in 4 or 8 blocks whose dimensions permit transportation by any mode of transport (road, rail or sea).

Advantages of modular delivery:

Multiple increase in welding and assembly quality because these operations are performed under factory conditions.

- Minimized site installation and commissioning costs.
- Shorter commissioning time.

| QUALITY CONTROL

Incoming inspection - certificate verification and laboratory testing of each batch of metal. All materials have individual markings for traceability.

Manufacturing control - automated laser cutting and robotic welding of membrane panels. In-process geometry control. Welds undergo 100% non-destructive examination (radiography, UT, dye-penetrant testing).

3. Assembly control - checking geometry, alignment and cleanliness of internal cavities.

Hydrostatic testing - at 1.5 times working pressure, with a 10-20 minute hold. Results are recorded in reports. Radiographic and ultrasonic examination reports are supplied to the customer. The design withstands thermal cycling, ensuring durability even under intensive start-stop operation.

| APPLICATIONS

- High-output district and neighborhood boiler houses
- CHP plants for peak district-heating loads
- Heat supply for industrial clusters and residential areas
- Domestic hot-water supply for large facilities

| ADVANTAGES

High efficiency - up to 95%, achieved through gas-tight construction eliminating air infiltration, optimum heating-surface arrangement and effective heat transfer in the convective section.

Low NOx emissions - below 90 mg/Nm3 when using the flue-gas recirculation induced-draft system (FGR), meeting the strictest environmental requirements.

Operating flexibility - operation in both base-load and peak-load modes with a load-control range of 30-100% of nominal capacity.

Reliability and maintainability are ensured by the suspended tube-system design, which expands freely downward and eliminates thermal stresses, horizontal stiffening belts, and removable insulation and cladding for rapid access to heating surfaces. For fuel-oil operation, a gas-impulse cleaning system and water-washing capability for the convective section are provided.

Operating-cost savings are achieved through pressurized-draft operation without an induced-draft fan, reduced excess air in the furnace (higher efficiency and lower fuel consumption), and modular delivery that minimizes installation and commissioning costs.

DUTY-POINT SELECTION

Selection guidance

Required operating data

State the required heat output, flow and return temperatures, working pressure and operating schedule.

Model selection

Select the model using the corresponding technical-data row.

CONTROL W35



Parameter	Value
Type	Relay
Protection rating	IP 54
Power supply	380 V, 50 Hz
Control circuits	220 V / 24 V

| DESCRIPTION

The CONTROL W35 control system is a specialized version based on CONTROL A35 and adapted for high-temperature water boilers (heating-medium temperature up to 120-150 C). Unlike standard systems, CONTROL W35 accounts for the operating characteristics of high-temperature hot-water boilers: minimum-flow monitoring through the boiler, protection against boiling if circulation drops, and basic pump control. The system uses relay-based hardware, providing high reliability, simple operation and resistance to failures. All safety and basic-control functionality implemented in CONTROL A35 is fully retained and supplemented with functions required for safe operation of high-temperature water boilers.

| KEY FUNCTIONS

- Staged burner control (single-or two-stage)
- Maintenance of the high-temperature-water setpoint
- Minimum heating-medium flow monitoring through the boiler (boiling protection)
- Basic circulation-pump control
- Boiler protection against overheating and overpressure
- Protection upon interruption of external safety circuits

| KEY FUNCTIONS (CONTINUED)

- Automatic boiler operation

| FUNCTIONAL CAPABILITIES

Overtemperature protection. The thermostat shuts down the burner when the maximum temperature is exceeded. Manual reset is required.

Boiling protection. A flow sensor/switch shuts down the burner if heating-medium circulation falls (pump stops). Special function for high-temperature water boilers.

Safety-circuit protection. Burner shutdown and lockout if any safety circuit opens: gas pressure, heating-medium flow, system pressure, draft or flame.

Adjustable burner high-fire start temperature. The operator can set the heating-medium temperature at which the burner switches to the second (high-fire) stage.

Circulation-pump control. CONTROL W35 starts and stops the circulation pump on a thermostat command or temperature-sensor signal. If the pump stops (due to a fault or shutdown), the system shuts down the burner.

- **Safety unit.** Can operate as a stand-alone safety unit with an external temperature controller.

| ADVANTAGES

Specialized for high-temperature water - operating characteristics of high-temperature circuits are taken into account.

Boiling protection - minimum heating-medium flow through the boiler is monitored by a flow switch.

- Simplicity - relay circuit without complex programming.
- Reliability - minimum number of components and resistance to voltage surges.
- Clear indication - visual status and alarm indication.
- Safety - forced overtemperature shutdown with manual reset and safety-circuit monitoring.

| ADVANTAGES (CONTINUED)

- Economy - lower cost compared with PLC-based systems

| APPLICATIONS

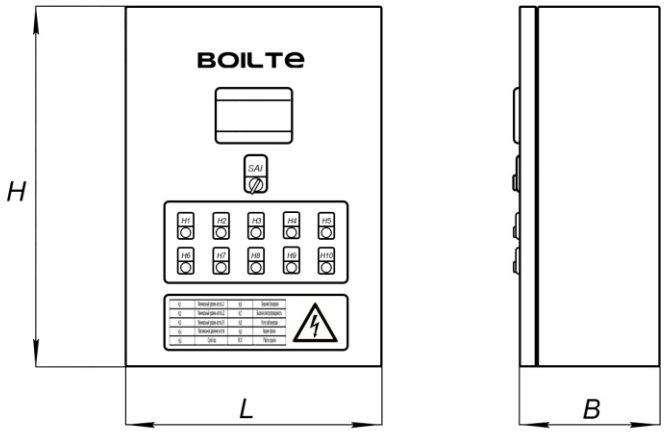
The CONTROL W35 control system is recommended for the following applications: Low-output high-temperature water boilers.

- High-temperature heat generators with basic automation requirements.
- Heating boilers in private houses, cottages and small administrative buildings.
- Facilities that do not require sophisticated automation or cascade control.
- Standby heat sources with a high-temperature circuit.

TECHNICAL DATA

Model	Emergency shutdown	Alarm indication	Operating temperature, °C	Dry mass, kg	H, mm	L, mm	B, mm
Control W35	Yes	Yes	+5....+40	22	600	600	220

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



CONTROL W55



Parameter	Value
Type	PLC
Protection rating	IP 54
Power supply	380 V, 50 Hz
Control circuits	220 V / 24 V

| DESCRIPTION

The CONTROL W55 control system is a specialized version based on CONTROL A55 and adapted for high-temperature water boilers (heating-medium temperature up to 120-180 C and above). Unlike low-temperature hot-water boilers, CONTROL W55 accounts for the operating characteristics of high-temperature circuits: minimum-flow monitoring through the boiler, boiling protection if pressure drops, control of forced-circulation pumps and expansion tanks.

The system is based on a programmable logic controller (PLC) and supports modulating burners. All safety and basic-control functionality implemented in CONTROL A55 is fully retained and supplemented with functions required for safe operation of high-temperature water boilers.

| KEY FUNCTIONS

- Continuous (modulating) burner control
- High-accuracy maintenance of the heating-medium setpoint temperature
- Minimum heating-medium flow monitoring through the boiler (boiling protection)
- Forced-circulation pump control (duty + standby)
- Boiler protection against overheating and overpressure

| KEY FUNCTIONS (CONTINUED)

- Protection upon interruption of external safety circuits (gas pressure, draft, air pressure)
- Automatic boiler operation without continuous operator attendance
- Visualization of operating parameters and alarm conditions

| FUNCTIONAL CAPABILITIES

Overtemperature protection. Thermostat TS1 shuts down the burner if the maximum temperature is exceeded. Manual reset is required.

Boiling protection. A flow sensor shuts down the burner if heating-medium circulation drops (pump stops).

Safety-circuit protection. Burner shutdown if any circuit opens: gas pressure, flow, system pressure, draft or flame.

Continuous burner control. Analog output modulation provides accurate temperature control and fuel savings.

- **Pump control.** Automatic transfer to the standby circulation pump if the duty pump fails.
- **Pressure monitoring.** Make-up request or burner shutdown if system pressure falls.

PLC. Flexible algorithm configuration, support for additional sensors and supervisory-system integration.

Supervisory control. Data transmission via Modbus (RTU/TCP) and GSM: temperature, pressure, flow, pump status and SMS notification.

| ADVANTAGES

Specialized for high-temperature water - all operating characteristics of high-temperature circuits are taken into account.

- Boiling protection - minimum heating-medium flow through the boiler is monitored.
- Circulation-pump control - automatic transfer to the standby pump.
- Smooth modulating control - precise temperature maintenance and fuel savings.

| ADVANTAGES (CONTINUED)

- High accuracy - PID control with +/-1-2 C deviation.
- Supervisory control - remote monitoring and SMS notification.
- Reliability - industrial-grade PLC and event log.

| APPLICATIONS

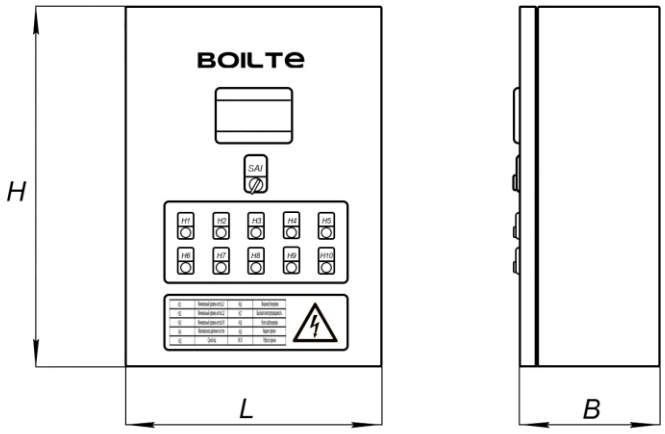
The CONTROL W55 control system is recommended for the following applications: High-temperature water boilers (temperature 120-200 C).

- Boilers with forced heating-medium circulation.
- Industrial boiler houses with stringent temperature-control accuracy requirements.
- Facilities requiring supervisory control and remote monitoring.
- Weather-compensated heat-supply systems.

TECHNICAL DATA

Model	Emergency shutdown	Alarm indication	Operating temperature, °C	Dry mass, kg	H, mm	L, mm	B, mm
Control W55	Yes	Yes	+5....+40	22	600	600	220

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



CONTROL W75



Parameter	Value
Type	PLC (extended)
Protection rating	IP 54
Power supply	380 V, 50 Hz
Control circuits	220 V / 24 V

| DESCRIPTION

The CONTROL W75 control system is the flagship version based on CONTROL A75 and adapted for high-temperature water boilers (heating-medium temperature up to 200 C and above). The system is built around a programmable logic controller (PLC) with an operator touch panel and supports modulating burners. CONTROL W75 accounts for all operating characteristics of high-temperature hot-water boilers: minimum-flow monitoring through the boiler, boiling protection if circulation falls, duty and standby pump control, and cascade control of a boiler group. All safety and control functionality implemented in CONTROL A75 is fully retained and supplemented with functions required for safe and efficient operation of high-temperature water boilers.

| SCOPE OF SUPPLY

- Complete CONTROL W75 PLC-based control unit
- Operator touch panel (7 in.)
- TS1 safety thermostat (hardware backup)
- Temperature sensor for PID controller
- Heating-medium flow sensor/switch
- Pressure sensor (2 pcs.)
- Set of installation hardware and terminal blocks
- Product passport
- Installation and operating manual
- Electrical schematic diagram

| SCOPE OF SUPPLY (CONTINUED)

- PLC configuration software

Optional equipment:

- Supervisory communication module (GSM, Ethernet)
- Outdoor temperature sensor
- 10-in. operator touch panel
- Backup power module (UPS)
- Variable-frequency drives for pumps
- Extended event log with trend charts

| FUNCTIONAL CAPABILITIES

Overtemperature protection. The thermostat shuts down the burner when the maximum temperature is exceeded. Manual reset is required.

Boiling protection. A flow sensor/switch shuts down the burner if heating-medium circulation falls (pumps stop).

Safety-circuit protection. Burner shutdown and lockout if gas-pressure, flow, system-pressure, draft or flame monitoring circuits open.

Smooth modulating burner control. A 0-10 V or 4-20 mA analog signal provides accurate temperature control, fuel savings and fewer starts/stops.

Pump control. Automatic transfer to the standby circulation pump if the duty pump fails. Soft start is optional.

System pressure monitoring. Make-up request or burner shutdown if pressure falls. Emergency shutdown on overpressure.

PLC. Powerful industrial controller for flexible configuration, algorithm modification and support of additional sensors.

Operator touch panel. Color graphical interface (7 in. or larger) for displaying parameters, changing setpoints, and viewing event logs and trends.

- **Self-tuning PID control.** Temperature-control accuracy +/-1 C and fast response to load changes.

  Weather-compensated control. Heating-medium temperature is adjusted using an outdoor sensor. Fuel savings up to 15-20%.
- **Cascade control.** Up to 8 boilers with automatic load sharing and demand-based start/stop.

  Supervisory control and remote monitoring. Supports Modbus RTU/TCP, Profibus, GSM (SMS) and Wi-Fi. Remote monitoring of parameters and alarms, plus remote setpoint adjustment.
- **Event and alarm recording.** Time-stamped log. Data export to USB or the supervisory system.
- **Remote control (option).** Boiler control via web interface or mobile application.

| ADVANTAGES

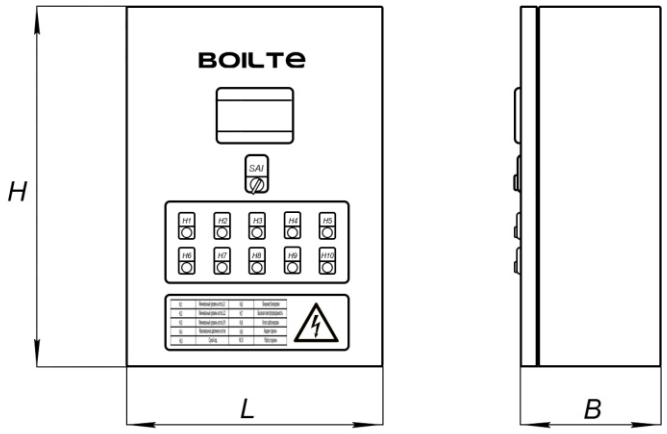
Specialized for high-temperature water - full consideration of high-temperature-circuit operating characteristics

- Boiling protection - minimum flow through the boiler is monitored
- Pump control - automatic transfer to the standby pump
- Cascade control - up to 8 boilers with load sharing
- Smooth modulation - precise temperature control and fuel savings
- PID control - temperature deviation +/-1 C
- Weather-compensated control - fuel savings up to 20%
- Touch panel - graphical interface, event log and trends
- Supervisory control - Modbus, GSM, Ethernet, remote monitoring
- High reliability - industrial PLC with hardware-redundant protection
- All-weather design - operation from -40 C to +50 C

TECHNICAL DATA

Model	Emergency shutdown	Alarm indication	Operating temperature, °C	Dry mass, kg	H, mm	L, mm	B, mm
Control W75	Yes	Yes	+5....+40	22	600	600	220

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



ECO



Parameter	Value
Capacity	≤ 20000 kg/h
Pressure	≤ 16 bar
Temperature	≤ 130 °C
Efficiency	> +2.0%

| DESCRIPTION

The economizer is a flue-gas/water heat exchanger with a finned-tube heat-exchange bank. It is a downstream heating surface designed to recover heat from exhaust flue gases and increase boiler efficiency. Average efficiency gain is 2% or more (higher than stated values in condensing operation). The economizer is intended for natural gas, LPG and diesel fuel operation.

| SCOPE OF SUPPLY

The economizer is a fully factory-completed product supplied as one assembled transportable module.

The scope of supply includes:

- Complete economizer (finned heat exchanger in carbon steel; stainless steel on request)
- Connection pipes
- Thermometer
- Operating manual
- Data sheet (included in the boiler data sheet)

The economizer is supplied without packaging or wrapped in protective film to ensure preservation during transportation and storage. All openings are sealed with plugs to prevent ingress of moisture and dirt.

| ADVANTAGES

- Boiler efficiency increase (average 2%; higher in condensing mode)
- Recovery of sensible and latent heat of fuel combustion
- Finned tubes - compact design and high efficiency
- Two installation options - boiler-mounted or floor-mounted
- Ready-made rectangular-to-round transition - simplifies flue connection
- Material choice - carbon steel or stainless steel
- Condensing-mode capability - maximum efficiency
- Custom connection arrangements - tailored to customer requirements

| VERSIONS

The unit is installed at the rear of the boiler at the flue-gas outlet to heat an external low-temperature circuit through partial heat recovery. Condensing operation of the economizer is permitted, providing maximum utilization efficiency. The economizer is installed on Boilte fire-tube hot-water boilers of the following types:

- (all sizes in the range)

Efficiency values at maximum load are given in the main performance tables for each boiler type.

Quantum

| DESIGN FEATURES

The heat-exchange bank is made of finned tubes, increasing the heat-transfer area and improving heat-recovery efficiency.

- Flanged water inlet and outlet connections.
- Boiler and flue connection ducts ensure gas-path tightness.

| DESIGN FEATURES (CONTINUED)

Rectangular-to-round transition - the economizer incorporates a transition that returns the gas duct to a round section, allowing unobstructed connection to flue stacks.

- Choice of heat-exchanger material - carbon steel (standard) or stainless steel (on request).

TECHNICAL DATA

Model Eco	Power, kW**	Efficiency, %	Gas-side resistance, mbar	Flue-gas outlet temperature, °C	Dry economizer mass, kg	H, mm	L, mm	B, mm	C, mm	N1, N2, DN
1000	46	1,5	0,08	130	320	1400	740	540	350	125
1500	70	1,6	0,09	130	420	1500	920	540	350	125
2000	114	1,9	0,16	130	620	1600	920	710	500	150
2200	117	1,8	0,21	130	620	1600	920	710	500	150
2500	112	1,5	0,25	130	620	1600	920	710	500	150
3000	142	1,6	0,38	130	780	1600	920	880	550	200
3200	142	1,5	0,33	130	830	1700	920	880	550	200
3500	172	1,6	0,42	130	1000	1700	920	1050	550	200
4000	177	1,5	0,3	130	1020	2100	920	880	650	200
4500	209	1,5	0,43	130	1130	2100	920	965	650	200
5000	297	2	0,82	130	1250	2100	920	1050	650	200
5500	274	1,7	0,73	130	1310	2200	920	1050	650	250
6000	290	1,6	0,95	130	1250	2100	920	1050	650	250
6500	314	1,6	1,14	130	1430	2200	920	1135	650	250
7000	446	2,1	1,51	130	1880	2300	920	1390	650	250
7500	439	1,9	1,69	130	1880	2300	920	1390	650	250
8000	473	2	1,81	130	1880	2300	920	1390	800	300
8500	473	1,9	2,05	130	2100	2400	920	1475	800	300
9000	445	1,6	2,49	130	1880	2300	920	1390	800	300
10000	566	1,03	1,1	130	2870	2600	1100	1560	800	300
11000	625	1,45	1,55	130	2870	2600	1100	1560	800	300
12000	612	1,7	1,79	130	2870	2600	1100	1560	1000	400
13000	600	1,5	2,04	130	2870	2600	1100	1560	1000	400
14000	912	2,2	1,59	130	4210	2800	1280	1730	1000	400
15000	882	2	1,74	130	4210	2800	1280	1730	1000	400
16500	915	1,8	2,04	130	4680	2800	1280	1900	1000	400
18000	980	1,8	2,7	130	4680	2800	1280	1900	1000	400
20000	1120	1,9	2,38	130	5460	2800	1460	1900	1000	500

Economizer overall dimensions are specified for the tube bundle only (excluding piping, insulation and support structures).

THERMAL OIL BOILERS

| HIGH TEMPERATURES WITHOUT HIGH PRESSURE

Boilte manufactures thermal oil boilers - specialized equipment for heating liquid organic heat-transfer fluid to 300 C at a working pressure of 10 bar. This is a fundamentally different approach to high-temperature heating, radically safer and more economical than steam systems.

Why are 68% of industrial facilities switching to thermal-oil systems? Steam boilers at 300 C generate pressure above 86 bar. This is a high-hazard level requiring licenses, specially certified personnel, expensive insurance and regular inspections. A Boilte thermal oil boiler at the same 300 C operates below 10 bar. This is not merely an engineering improvement, but a change in the safety paradigm.

| BOILTE THERMAL OIL BOILER SERIES

Magma series - thermal oil boilers with output from 150 to 10,000 kW (0.15-10 MW). Temperature up to 300 C, efficiency up to 92%. Equipped with a three-pass coaxial furnace and double coil, providing maximum heat recovery and reducing NOx emissions by 25-30%. Optimal for chemical, petrochemical, woodworking and food industries.

Crux series - vertical thermal oil boilers with output from 150 to 8,000 kW (0.15-8 MW). Temperature up to 300 C. The vertical arrangement saves up to 40% of production floor space, uses natural convection to improve efficiency and provides an additional safety margin if the pumps stop. Ideal for confined spaces and multi-stream production facilities.

| ENERGY EFFICIENCY

Heat losses in a steam-system circuit are 15-20% due to latent heat of vaporization and blowdown. In a thermal-oil system they are only 3-5%. Energy efficiency is 17% higher. Boilte boiler efficiency reaches 92-94% depending on model and operating mode. The absence of phase change and blowdown losses makes thermal-oil systems 15-25% more efficient than steam systems in the high-temperature range.

| DESIGN FEATURES

Heat-resistant-steel coil heat exchanger - the heart of every Boilte boiler. Made from special-grade seamless tubes (including 9% chromium steel for high-temperature versions), designed for long-term operation at temperatures up to 300 C and under cyclic loads.

Three-pass furnace (Magma) - two coaxial coils integrated into a three-pass combustion chamber. Flue gases transfer heat sequentially first to the outer and then to the inner circuit, preventing a 'cold' flue-gas outlet and maintaining consistently high efficiency.

Vertical arrangement (Crux) - a radical solution to space constraints. The unit does not require a separate permanent boiler-house building. Floor-space savings reach 40%. The vertical design uses natural convection: if the pumps stop, hot oil rises, providing an additional safety margin.

Forced circulation - high-capacity pumps with variable-frequency drives maintain optimum oil velocity through the coil, preventing local overheating and thermal cracking of the heat-transfer fluid.

Sealed circuit - a completely closed system with an expansion tank blanketed by inert gas (nitrogen), preventing oil contact with oxygen and oxidation.



| HEAT-TRANSFER-FLUID PROTECTION

Thermal oil is a significant operating expense. Degradation caused by overheating leads to major losses. Boilte technology is built around protecting the fluid.

Precise flow-velocity control using sensors and variable-speed pumps prevents stagnation and overheating. Multi-point temperature measurement at the inlet, outlet and critical coil locations transmits real-time data to the controller. If power is lost or pumps stop, emergency cooling circuits automatically start standby cooling to remove residual heat and prevent oil coking.

Hydrodynamic modeling of each circuit ensures there are no stagnant zones - the main cause of oil degradation. Correct heat-transfer-fluid selection increases the service interval from 8,000 to 24,000 hours.

| QUALITY CONTROL AND RELIABILITY

Every Boilte thermal oil boiler passes a multi-stage quality-control system. Incoming material inspection - every coil tube has a certificate confirming chemical composition and mechanical properties at high temperatures.

| QUALITY CONTROL AND RELIABILITY (CONTINUED)

Non-destructive weld inspection - 100% radiographic or ultrasonic examination. Even the smallest weld defect is unacceptable under high-temperature oil circulation.

Hydrostatic and pressure testing - the assembled coil block is tested at pressure significantly above working pressure.

Accelerated thermal-cycling tests - the completed boiler undergoes 25,000 heat-cool cycles in a controlled-atmosphere chamber, simulating real operating cycles and validating equipment life.

| LIFETIME WARRANTY AND DURABILITY

We are so confident in the quality of our materials and the accuracy of our engineering calculations that we provide a lifetime warranty on the coil heat exchanger - the key element operating under maximum thermal load.

Actual service life with correct operation exceeds 15-20 years. This is our responsibility to you and confirmation of Boilte's highest reliability standard.



MAGMA



Parameter	Value
Capacity	≤ 8000 kW
Pressure	≤ 10 bar
Temperature	≤ 300 °C
Efficiency	> 89.0%

| DESCRIPTION

Boilte Magma thermal oil boilers are designed to overcome the temperature limitations of steam systems. They provide heating up to 300 C at system working pressure not exceeding 10 bar, making them substantially safer and more economical than high-pressure steam systems. Output: 150-8,000 kW; efficiency: up to 92%. Designed for processes requiring precise high-temperature heating: drying, melting, vulcanization and chemical synthesis. Service life: more than 15 years.

| SCOPE OF SUPPLY

Main heating module: boiler body with combustion chamber (vertical or horizontal), three-pass gas-path system, internal refractory lining, thermal insulation and protective casing; coil heat exchanger made from seamless heat-resistant-steel tubes.

Basic circulation and expansion system: circulation pump set with packed-gland or mechanical seal, rated for oil up to 300 C and equipped with a variable-frequency drive; thermal-oil valve package (ball valves with packed-gland seals).

| SCOPE OF SUPPLY (CONTINUED)

Control and safety system (basic): local control cabinet (LCC) with PLC, digital operator panel and power-switching components; set of sensors and relays for automatic shutdown on overtemperature, fuel-line pressure drop, flame failure or circulation-pump shutdown; indicating pressure gauge and thermometer on the hot-oil supply line.

Standard equipment: coarse strainer on the pump suction line; air vents at high points of the circuit.

Documentation: boiler passport, installation and operating manual, electrical diagrams, certificates for materials and components.

| DESIGN FEATURES

Seamless-tube coil heat exchanger - made from special heat-resistant steel designed for long-term operation above 300 C and under cyclic loads.

Forced circulation - powerful pumps maintain the specified oil velocity through the coil, preventing local overheating and thermal cracking of the oil - the main cause of its ageing.

Three-pass flue-gas system - gases flow sequentially through three passes, transferring maximum heat and providing efficiency up to 92% even at high temperatures.

Sealed circuit - a completely closed oil-heating and circulation system prevents contact with atmospheric oxygen and therefore oxidation.

| APPLICATIONS

Chemical and petrochemical industries: heating reactors, distillation and fractionation columns; maintaining pipeline temperature for pumping viscous products (fuel oil, bitumen, resins); polymerization, polymer drying and synthesis processes.

Woodworking and pulp-and-paper industry: heating presses and calenders for board production (particleboard, MDF, OSB); drying veneer and lumber in high-temperature chambers; heating paper-machine rolls.

| APPLICATIONS (CONTINUED)

Construction-material production and metalworking: heating asphalt and concrete mixing plants; vulcanization of rubber products and tire manufacturing; electroplating and paint-line equipment; plastic coating of metals.

Food industry: drying vegetables, fruit, yeast and grain in drum and tunnel dryers; roasting coffee, nuts and cereals; heating frying surfaces in industrial bakeries; container sterilization.

Other industries: textiles (heat-setting fabrics, heating drying drums); waste-processing plants (heating bituminous mixtures); shipbuilding (engine preheating).

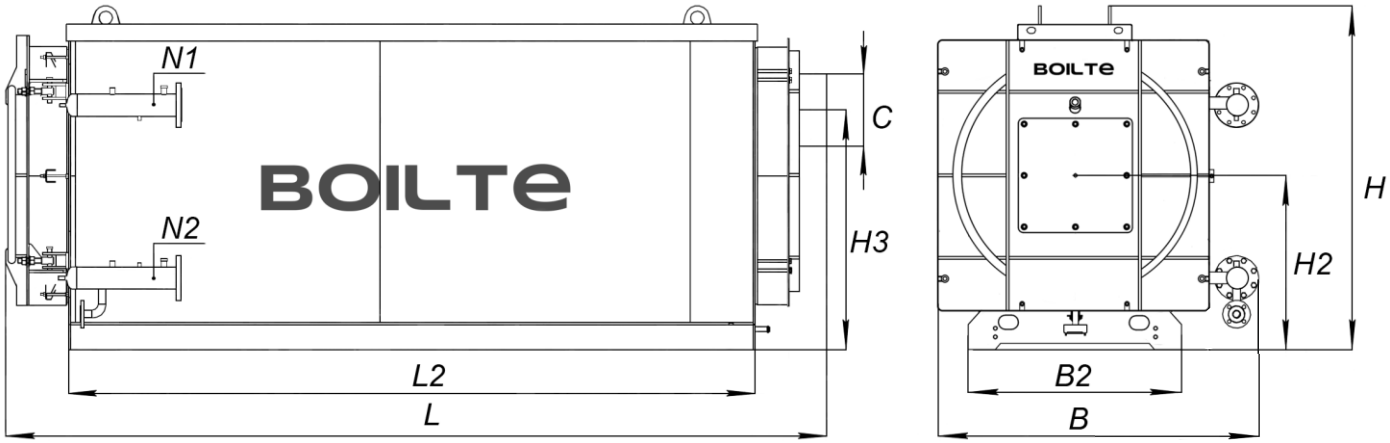
TECHNICAL DATA

Model Magma	Power, kW	Efficiency at 140-180 °C, %	Efficiency at 240-280 °C, %	Pressure, bar	Max. fluid temperature, °C	Boiler resistance, mbar	Oil circuit volume, L	Gas use at 140-180 °C, m³/h	Gas use at 240-280 °C, m³/h	Dry boiler mass, kg
150	174	88,2	86,3	10	300	3,2	46	21,19	22,35	650
250	291	88,4	86,4	10	300	3,7	51	28,75	37,25	1100
350	407	89,2	86,8	10	300	4,1	99	50,12	52,31	1200
450	523	89,1	86,4	10	300	4,4	120	64,72	67,92	1500
550	640	88,5	86,7	10	300	5,8	152	78,81	81,92	1850
800	930	89,2	86,5	10	300	8,2	239	115,84	119,53	1980
1000	1160	89,5	86,1	10	300	8,3	269	144,49	149,1	2010
1250	1453	89,3	86,3	10	300	8,7	465	180,49	186,64	2800
1500	1745	89,2	85,6	10	300	9,1	517	216,84	226,7	3250
2000	2320	89,4	86,4	10	300	9,4	756	284,2	301,16	5150
2500	2900	89,2	86,8	10	300	10,1	1320	350,4	368,1	6450
3000	3480	90,1	86,4	10	300	10,5	1530	427,25	451,71	7150
4000	4650	89,5	86,7	10	300	11,3	1980	579,2	603,5	8300
5000	5810	89,2	86,5	10	300	12,5	2840	622,82	642,26	12650
6000	6970	89,5	86,1	10	300	12,9	3200	868,21	895,3	13500
7000	8100	89,3	86,3	10	300	13,4	3350	1008,98	1040,4	14200

**Power: The stated values correspond to operation on methane (natural gas). When using diesel fuel or fuel oil, output may be adjusted (reduced) in accordance with calculation standards.

OVERALL DIMENSIONS

Model Magma	H, mm	H2, mm	H3, mm	L, mm	L2, mm	B, mm	B2, mm	C, mm	N1, DN	N2, DN
150	1400	830	965	1700	1275	1300	1000	180	32	32
250	1400	830	965	2400	1275	1400	1000	180	50	50
350	1600	760	925	2400	1900	1400	1000	250	65	65
450	1600	760	925	2400	1900	1400	1000	250	65	65
550	1600	760	925	2400	1900	1400	1000	250	65	65
800	1750	930	1130	3350	2900	1650	1250	250	80	80
1000	1750	930	1130	3350	2900	1650	1250	350	100	100
1250	1850	950	1170	3750	3500	1700	1250	350	100	100
1500	2000	940	1200	4000	3600	2100	1520	450	125	125
2000	2200	1000	1500	4300	3800	2350	1800	450	125	125
2500	2450	1375	1850	5000	3800	2700	1600	550	150	150
3000	2450	1170	1620	5800	4200	2700	1600	550	150	150
4000	2450	1400	1800	6200	4000	2700	1600	700	200	200
5000	2900	1450	2050	6300	4000	3100	1800	750	200	200
6000	2950	1450	2050	7360	5000	3100	1800	800	200	200
7000	3200	1550	2200	7850	5400	3400	2000	800	250	250



INSTALLATION PLANNING

Selection guidance

Installation envelope

Use the selected model row together with the drawing. Check overall height, length and width against the delivery route, installation position and available access for service.

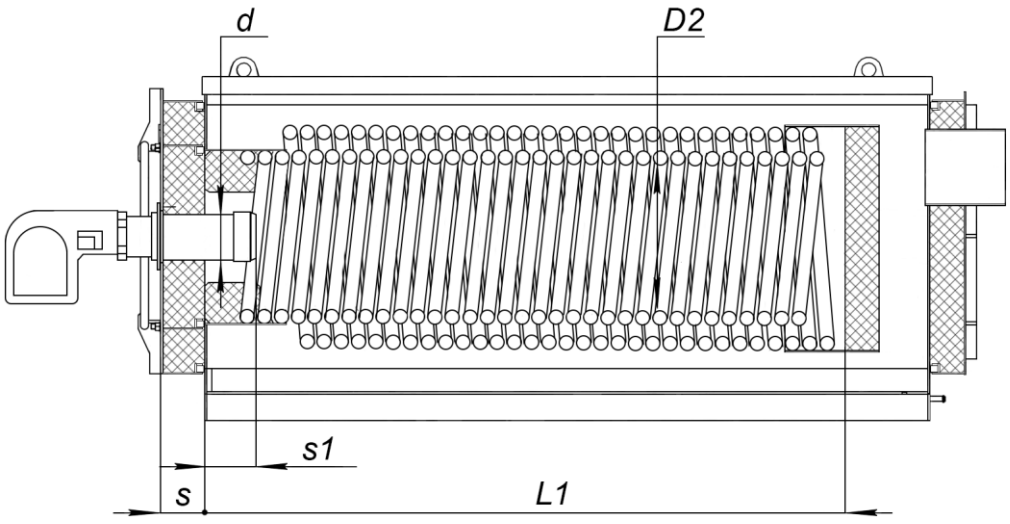
Connection schedule

Confirm connection sizes and locations for the ordered configuration. Coordinate supports and adjacent equipment with project drawings; overall dimensions alone do not define service clearances.

BURNER SELECTION DIMENSIONS

Model Magma	Burner opening diameter d, mm	Front cover thickness s, mm	Burner mounting dimension s1, mm	Furnace tube diameter D2, mm	Furnace tube length L1, mm	Reversal chamber length L2, mm
150	160	200	20–60	390	900	—
250	225	200	20–60	460	1050	—
350	225	200	20–60	480	1390	—
450	280	200	20–60	480	1570	—
550	280	200	20–60	460	1770	—
800	280	220	20–60	620	2340	—
1000	280	220	20–60	620	2340	—
1250	320	220	20–60	650	2750	—
1500	320	220	20–60	770	2900	—
2000	400	260	20–60	1080	3350	—
2500	400	260	20–60	1245	3750	—
3000	400	260	20–60	1245	4200	—
4000	400	285	20–60	1245	4900	—
5000	490	285	20–60	1550	5500	—
6000	490	285	20–60	1715	6200	—
7000	490	285	20–60	1715	6600	—

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



BURNER MATCHING

Selection guidance

Burner interface

Match the selected burner to the opening diameter, mounting dimension and furnace dimensions shown in this section. Use the exact model row rather than the dimensions of a neighbouring size.

Selection information

Provide the fuel type, required operating range and boiler gas-side resistance with the enquiry. Confirm the flame-head arrangement and maintenance access with the boiler and burner documentation before manufacture.

CRUX



Parameter	Value
Capacity	≤ 8000 kW
Pressure	≤ 10 bar
Temperature	≤ 300 °C
Efficiency	> 89.0%

| DESCRIPTION

Boilte Crux vertical thermal-oil boilers (thermal-oil heaters) are specialized units for safe and efficient heating of liquid organic heat-transfer fluid to temperatures up to 300 C at system working pressure not exceeding 10 bar. Output: 150-8,000 kW (0.15-8 MW). Designed for processes requiring uniform high-temperature heat: drying, mold heating, chemical synthesis and heat treatment of materials. Service life: more than 15 years.

| SCOPE OF SUPPLY

Basic configuration (heating module) - ideal for integration into an existing system where some equipment is already installed. Includes: complete heat generator with thermal insulation; heat-resistant-steel coil heat exchanger; circulation pumps (duty + standby) with variable-frequency drive; automation unit with temperature control and emergency protection; base frame with vibration isolators; installation hardware package (flanges, gaskets).

Extended configuration - a complete turnkey solution for new projects. In addition to the basic scope: gas or diesel burner with flame-monitoring system; expansion tank with nitrogen blanket; heat-transfer-fluid deaeration system; fine-filtration station; thermal-oil make-up and filling unit; control cabinet with touch panel; complete shut-off and control-valve piping; instrumentation (flowmeters, pressure sensors).

| SCOPE OF SUPPLY (CONTINUED)

Custom configuration (special solutions) - exclusive arrangements for non-standard applications. Options: flue-gas heat-recovery system (efficiency increase 8-12%); explosion-proof design; Arctic package for operation at -50 C; corrosion-resistant materials; remote monitoring.

| DESIGN FEATURES

Vertical arrangement - unlike horizontal boilers that require substantial length, Crux stacks the heat-exchange system vertically. This saves up to 40% of production floor space and enables installation in confined areas.

Coil-type combustion chamber - the heart of the boiler is a coil heat exchanger made from seamless alloy heat-resistant-steel tubes, located in a high-temperature combustion chamber. Thermal oil circulates through the coil at 6-10 bar, heated by the burner flame and hot combustion gases.

| APPLICATIONS

Chemical and petrochemical industries: heating reactors, distillation and fractionation columns; maintaining pipeline temperature for pumping viscous products (fuel oil, bitumen, resins); polymerization, polymer drying and synthesis processes.

Woodworking and pulp-and-paper industry: heating presses and calenders for board production (particleboard, MDF, OSB); drying veneer and lumber in high-temperature chambers; heating paper-machine rolls.

| APPLICATIONS (CONTINUED)

Construction-material production and metalworking: heating asphalt and concrete mixing plants; vulcanization of rubber products and tire manufacturing; electroplating and paint-line equipment; plastic coating of metals.

Food industry: drying vegetables, fruit, yeast and grain in drum and tunnel dryers; roasting coffee, nuts and cereals; heating frying surfaces in industrial bakeries; container sterilization.

Other industries: textiles (heat-setting fabrics, heating drying drums); waste-processing plants (heating bituminous mixtures); shipbuilding (engine preheating).

TECHNICAL DATA

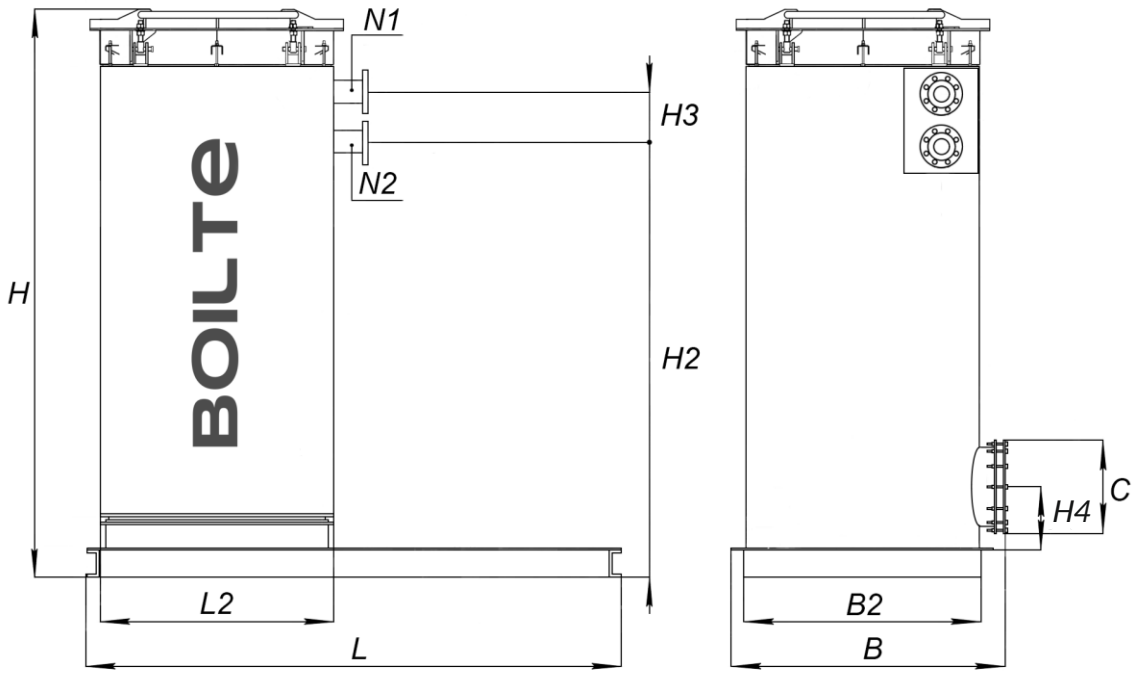
Model Crux	Power, kW	Efficiency at 140-180 °C, %	Efficiency at 240-280 °C, %	Pressure, bar	Max. fluid temperature, °C	Boiler resistance, mbar	Oil circuit volume, L	Gas use at 140-180 °C, m³/h	Gas use at 240-280 °C, m³/h	Dry boiler mass, kg
150	174	88,2	86,3	10	300	3,2	46	21,19	22,35	650
250	291	88,4	86,4	10	300	3,7	51	28,75	37,25	1100
350	407	89,2	86,8	10	300	4,1	99	50,12	52,31	1200
450	523	89,1	86,4	10	300	4,4	120	64,72	67,92	1500
550	640	88,5	86,7	10	300	5,8	152	78,81	81,92	1850
800	930	89,2	86,5	10	300	8,2	239	115,84	119,53	1980
1000	1160	89,5	86,1	10	300	8,3	269	144,49	149,1	2010
1250	1453	89,3	86,3	10	300	8,7	465	180,49	186,64	2800
1500	1745	89,2	85,6	10	300	9,1	517	216,84	226,7	3250
2000	2320	89,4	86,4	10	300	9,4	756	284,2	301,16	5150
2500	2900	89,2	86,8	10	300	10,1	1320	350,4	368,1	6450
3000	3480	90,1	86,4	10	300	10,5	1530	427,25	451,71	7150
4000	4650	89,5	86,7	10	300	11,3	1980	579,2	603,5	8300
5000	5810	89,2	86,5	10	300	12,5	2840	622,82	642,26	12650
6000	6970	89,5	86,1	10	300	12,9	3200	868,21	895,3	13500
7000	8100	89,3	86,3	10	300	13,4	3350	1008,98	1040,4	14200

****Power:** The stated values correspond to operation on methane (natural gas). When using diesel fuel or fuel oil, output may be adjusted (reduced) in accordance with calculation standards.

OVERALL DIMENSIONS

Model Crux	H, mm	H2, mm	H3, mm	L, mm	L2, mm	B, mm	B2, mm	C, mm	N1, DN	N2, DN
150	1530	1332	280	995	850	1150	850	180	32	32
250	1530	1332	280	995	850	1340	850	180	50	50
350	1840	1580	310	1170	1000	1340	1000	250	65	65
450	2080	1900	340	1170	1000	1340	1000	250	65	65
550	2400	2100	350	1200	1000	1340	1000	250	65	65
800	3040	2750	360	1340	1250	1440	1250	250	80	80
1000	3300	3150	380	1500	1250	1500	1250	350	100	100
1250	3740	3550	380	1530	1350	1620	1350	350	100	100
1500	3830	3650	410	1530	1350	1620	1350	450	125	125
2000	3740	3550	465	2090	1850	2090	1850	450	125	125
2500	3730	3560	465	2250	2160	2350	2160	550	150	150
3000	5150	4960	465	2250	2160	2350	2160	550	150	150
4000	5700	5510	550	2350	2200	2350	2200	700	200	200
5000	6120	5850	550	2500	2350	2500	2350	750	200	200
6000	6530	6150	550	2500	2350	2500	2350	800	200	200
7000	6750	6500	650	2750	2500	2750	2500	800	250	250

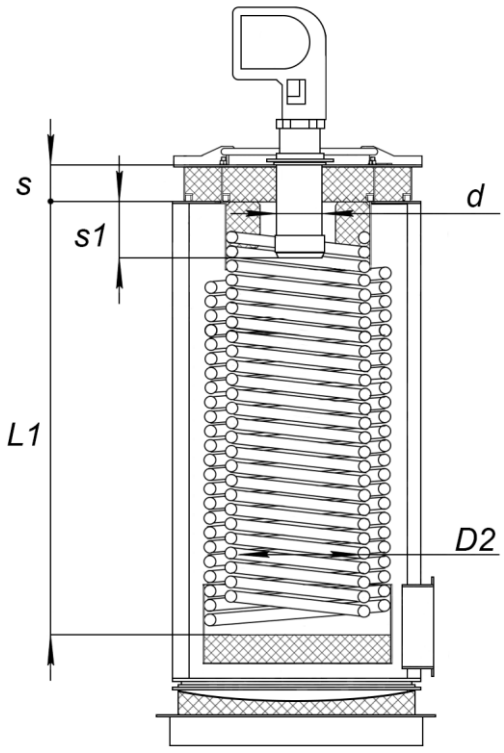
We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



BURNER SELECTION DIMENSIONS

Model Crux	Burner opening diameter d, mm	Front cover thickness s, mm	Burner mounting dimension s1, mm	Furnace tube diameter D2, mm	Furnace tube length L1, mm	Reversal chamber length L2, mm
150	160	200	20–60	390	900	—
250	225	200	20–60	460	1050	—
350	225	200	20–60	480	1390	—
450	280	200	20–60	480	1570	—
550	280	200	20–60	460	1770	—
800	280	220	20–60	620	2340	—
1000	280	220	20–60	620	2340	—
1250	320	220	20–60	650	2750	—
1500	320	220	20–60	770	2900	—
2000	400	260	20–60	1080	3350	—
2500	400	260	20–60	1245	3750	—
3000	400	260	20–60	1245	4200	—
4000	400	285	20–60	1245	4900	—
5000	490	285	20–60	1550	5500	—
6000	490	285	20–60	1715	6200	—
7000	490	285	20–60	1715	6600	—

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



CONTROL T75



Parameter	Value
Type	PLC (extended)
Protection rating	IP 54
Power supply	380 V, 50 Hz
Control circuits	220 V / 24 V

| DESCRIPTION

The control cabinet is designed for automatic control of a thermal-oil boiler (diathermic-oil heater), safe operation and monitoring of heat-transfer-fluid parameters. The cabinet controls the burner and oil circulation pump and implements multi-level temperature and pressure protection. It is based on relay logic with the capability to integrate external sensors and alarm systems.

The control cabinet is suitable for thermal-oil boilers operating on gas, diesel fuel or dual fuel.

| MAIN FUNCTIONS

Automatic temperature maintenance - the PLC controls burner output according to the control-thermostat signal.

- Temperature protection - emergency burner shutdown when the safety thermostat trips.

Oil-flow protection - differential-pressure monitoring prevents pump operation without flow.

- Oil-level protection - minimum oil level in the expansion tank is monitored.
- Burner control - burner start/stop and output switching (1/2 flame).
- Visual and audible alarm - indication of normal operation, alarm and burner lockout.

| MAIN FUNCTIONS (CONTINUED)

- Pump control - automatic pump start and stop.
- Emergency stop - external latching pushbutton.

| FUNCTIONAL CAPABILITIES

Automatic temperature maintenance. Burner output is controlled by the control-thermostat signal. When the setpoint is reached, the burner shuts down or switches to reduced output.

Overtemperature protection. The safety thermostat shuts down the burner if the maximum temperature is exceeded. Manual reset is required.

Oil-flow protection. A differential-pressure sensor monitors circulation. If flow drops (pump stops), the burner shuts down immediately.

Oil-level protection. A minimum-level sensor in the expansion tank shuts down the burner if the oil level falls below the permissible value.

Circulation-pump control. Automatic pump start and stop. A contactor with thermal overload relay protects the pump against overload.

Burner control. Complete cycle: ignition, flame monitoring, output switching (1/2 flame), emergency shutdown.

Visual and audible alarm. A red indicator and siren signal an alarm. The indication remains active until the fault is cleared.

Pushbutton emergency stop. An external latching pushbutton immediately shuts down the burner. The state remains latched until reset.

- **Pump thermal-overload protection.** Shuts down the pump in case of overload or seizure.
- **Galvanic isolation.** Protects the PLC against interference from power circuits.
- **Operating-mode indication. Panel LEDs:** power, pump running, burner running, alarm, lockout.

Functional expansion. Spare PLC inputs/outputs for additional sensors and supervisory integration (Modbus).

- **Manual mode (optional).** Pump and burner control from the touch panel for servicing.

| ADVANTAGES

Safety. Separation of power circuits (380 V) and control circuits (24 V). Safety thermostat with manual reset. Signal galvanic isolation.

| ADVANTAGES (CONTINUED)

Reliability. Industrial components from leading brands. Pump contactor with thermal overload relay. Fuses on all circuits.

- **Easy installation.** Standardized labeled terminal block. Cable glands. DIN rails for rapid assembly.

Easy operation. LED indication (power, pump/burner operation, alarm). Audible alarm siren.

- **Versatility.** Compatible with most burners and pumps. Inputs for all standard sensors.

Economy. Low cost. Simple maintenance by in-house personnel. Components readily available on the market.

Thermal-oil boiler protection. Oil-flow, overtemperature and level monitoring. Prevention of oil coking and degradation.

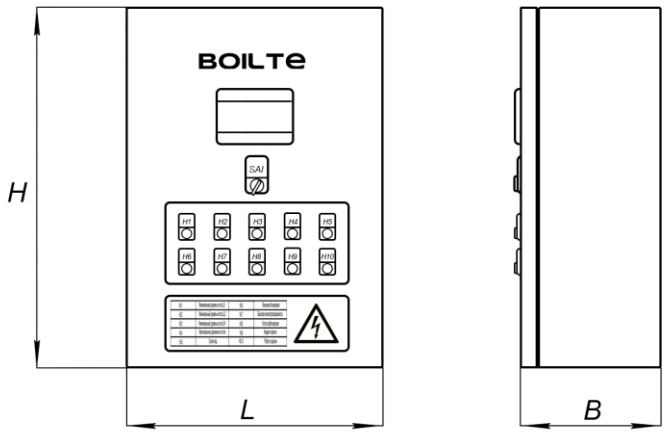
Expansion capability. Additional sensors can be connected (pressure, flow). Options: touch panel, Modbus, GSM, Wi-Fi, UPS.

- **Documented quality. Complete document package:** schematic, specification and manual.
- **Standards compliance.** Hardware burner shutdown independent of the PLC.

TECHNICAL DATA

Model	Emergency shutdown	Alarm indication	Operating temperature, °C	Dry mass, kg	H, mm	L, mm	B, mm
Control T75	Yes	Yes	+5....+40	22	600	600	220

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Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



EXPAND



Parameter	Value
Volume	≤ 3000 L
Pressure	≤ 5 bar
Temperature	≤ 300 °C
Nitrogen pressure	≤ 4 bar

| DESCRIPTION

Boilte Expand expansion tanks are designed for diathermic-oil circulation systems and compensate for thermal expansion of the oil during heating. Depending on the maximum heat-transfer-fluid temperature, the tanks can operate in open (atmospheric) or closed (nitrogen-blanketed) systems. Tank capacities range from 100 to 3,000 liters. The shell is made of Steel 20. Pressure ranges from 1 bar with cold oil to 4 bar with oil at 300 C. Design pressure: 5 bar. Horizontal or vertical versions are available.

| FUNCTIONAL CAPABILITIES

Compensation of oil thermal expansion. The tank receives the excess volume of diathermic oil generated during heating, preventing pressure rise in piping and equipment and eliminating the risk of system-component rupture or deformation.

Removal of released gases. Dissolved gases are released when the oil is heated. In open systems they are vented to atmosphere through the vent pipe. In closed nitrogen-blanketed systems, gases are discharged through the safety valve when its pressure setting is reached.

| FUNCTIONAL CAPABILITIES (CONTINUED)

Oil oxidation protection (closed systems). At operating temperatures of 260-300 C, the nitrogen blanket prevents hot oil from contacting atmospheric oxygen, preventing premature ageing, oxidation and coking. Oil service life increases by 1.5-2 times.

Prevention of oil boiling (closed systems). Nitrogen overpressure raises the oil boiling point, preventing vaporization and circulation-pump cavitation during high-temperature operation

Static-pressure generation (open systems). The tank is installed at the highest point of the system, at least 6 meters above the uppermost point, creating the required static oil head for stable pump operation.

Visual parameter monitoring. The tank is equipped with a pressure gauge, oil thermometer and visual oil-level indicator.

Low-level alarm. The minimum oil-level sensor generates an alarm if the level falls below the permissible value.

Drain, overflow and oil connection. Nozzles with shut-off valves provide complete tank drainage, discharge of excess volume through the overflow, and connection to the pump circulation system.

Overpressure relief (closed systems). The safety valve automatically relieves excess nitrogen pressure, ensuring equipment and personnel safety.

| APPLICATION

- Thermal-oil boiler plants and boilers
- Industrial heating installations (bitumen, asphalt, chemicals, petrochemicals, pharmaceuticals)
- Woodworking (drying chambers, particleboard/MDF/OSB presses)
- Food industry (drying vegetables, fruit and grain; roasting coffee and nuts; bakeries)
- Construction materials (asphalt mixing plants, ceramics, brick)

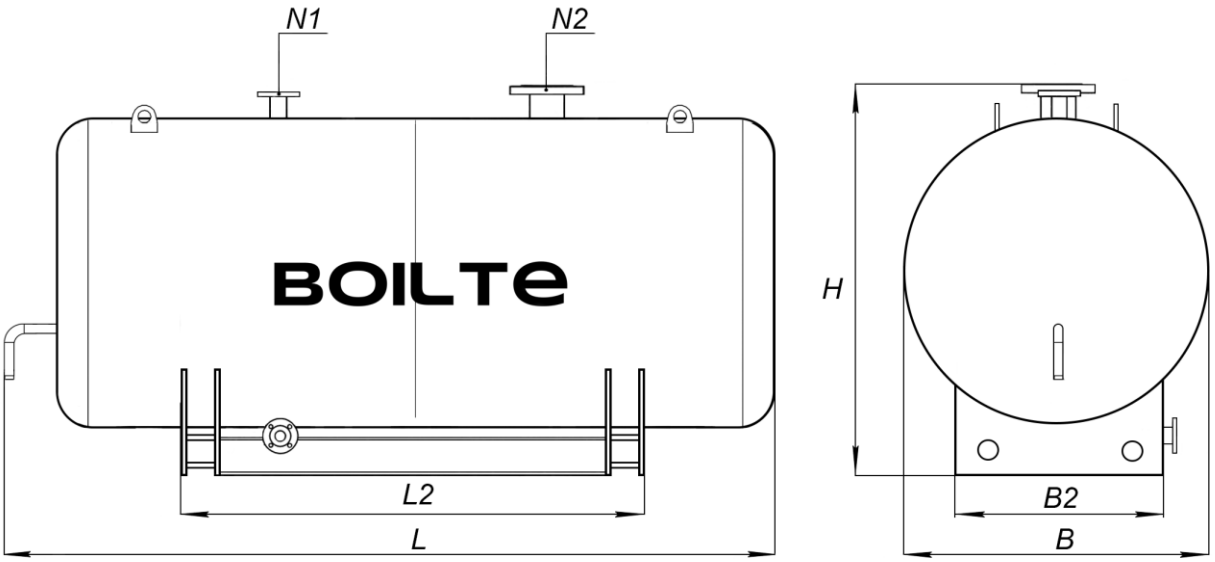
| APPLICATION (CONTINUED)

- Textile industry (fabric heat-setting, calenders, coating lines)
- Oil and gas industry (heating fuel oil, vacuum residue and bitumen; oil and gas preparation)
- Marine systems (heating fuel, oils, viscous cargoes; offshore drilling platforms)
- Alternative energy (waste-heat boilers, biogas installations)
- Utilities (heating shopping centers, warehouses and hangars; DHW via heat exchangers)

TECHNICAL DATA

Model Expand	Tank volume, L	Pressure, bar	Design temperature, °C	Dry mass, kg	H, mm	H2, mm	L, mm	L2, mm	B, mm	B2, mm
100	100	5	300	127	1090	890	1090	880	400	300
200	200	5	300	146	1120	950	1320	880	550	400
300	300	5	300	255	1270	1110	1570	880	550	400
500	500	5	300	294	1350	1150	1650	1050	650	520
600	600	5	300	303	1390	1110	1890	1090	650	520
800	800	5	300	315	1370	1170	1670	1020	800	650
1000	1000	5	300	345	1390	1110	2110	1510	800	650
1500	1500	5	300	381	1480	1220	2420	1680	950	700
2000	2000	5	300	415	1750	1550	2450	1650	1100	910
3000	3000	5	300	726	1780	1650	2550	1650	1270	970

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



STORE



Parameter	Value
Volume	≤ 5000 L
Pressure	≤ 0.2 bar
Type	Atmospheric
Material	Steel

| DESCRIPTION

The Boilte Store diathermic-oil storage tank is designed to hold a reserve of diathermic oil or receive emergency drainage from the circulation system and boiler. The tank is atmospheric type (no overpressure operation). The range covers 500-5,000 liters. Internal gauge pressure at oil temperatures up to 300 C does not exceed 0.2 kg/cm2 (0.02 MPa).

| FUNCTIONAL CAPABILITIES

Storage of the complete oil volume. The tank is sized to contain the entire volume of diathermic oil circulating in the heating system and boiler.

Emergency system drainage. During repair, maintenance or prolonged shutdown, the tank provides rapid and complete drainage of oil from the entire circulation circuit and boiler.

Gravity drainage without a pump. By installing the tank in a concrete pit below floor level, oil drains from the system by gravity without additional pumps.

Compensation of thermal expansion. As diathermic oil heats up, its volume increases. Excess oil from the system flows to the storage tank, preventing pressure rise in the circulation circuit and eliminating emergency conditions.

| FUNCTIONAL CAPABILITIES (CONTINUED)

System oil filling. Oil is supplied from the storage tank to the circulation circuit through a supply nozzle with shut-off valve.

Removal of dissolved gases. During heating, dissolved gases are released from diathermic oil. The tank is fitted with an atmospheric vent that removes these gases, preventing gas corrosion and ensuring stable system operation.

Overflow protection. An overflow nozzle with shut-off valve prevents the oil level from exceeding the permissible value during reverse drainage from the system, eliminating oil spills.

Complete tank drainage. A valve at the tank bottom allows all oil to be drained for tank cleaning, oil replacement or equipment removal.

| INSTALLATION

The Boilte Store diathermic-oil storage tank is installed in a concrete pit below floor level to provide gravity drainage from the system and boiler. The pit must be waterproofed and equipped with explosion-proof ventilation and lighting. A minimum clearance of 600-800 mm around the tank is required for access to the manway, nozzles and valves. Before installation, the tank integrity, coating and weld tightness are checked. The tank is grounded to dissipate static electricity.

| APPLICATION

Diathermic-oil circulation systems (thermal-oil boilers) - storage of the full oil volume for filling the boiler, piping and heat consumers.

Emergency oil drainage - rapid and safe draining from the system during repair, component replacement or prolonged shutdown.

Industrial heating installations - bitumen and asphalt plants, chemical and petrochemical industry, woodworking (presses, drying chambers), food industry (drying, roasting).

| APPLICATION (CONTINUED)

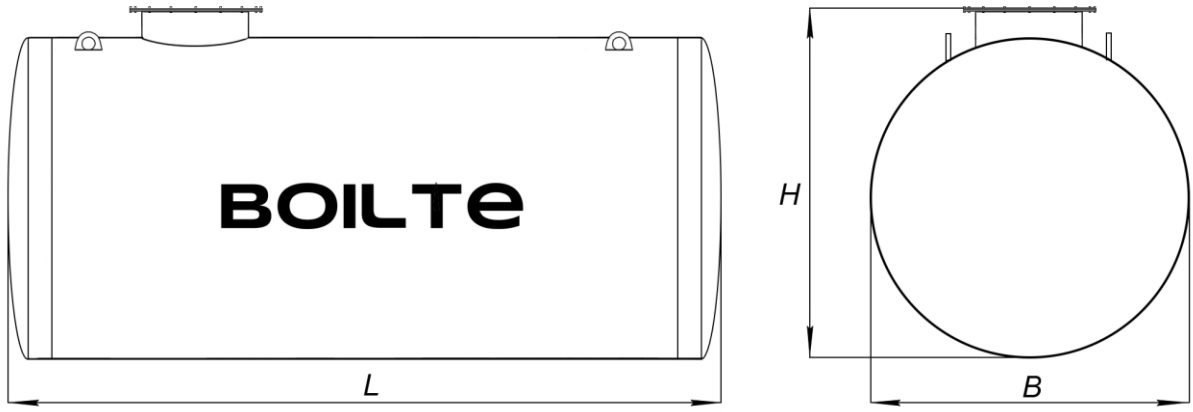
Construction-material production - heating molds and presses, vulcanization of rubber products, tire manufacturing.

- Textile industry - fabric heat-setting, heating drying drums.
- Pharmaceutical industry - heating reactors and sterilization equipment.
- Marine heating systems - heating fuel (fuel oil, diesel) on vessels, heating tanks and pipelines.
- Reserve oil storage - maintaining a make-up reserve for normal losses or leaks.

TECHNICAL DATA

Model Store	Tank volume, L	Pressure, bar	Storage temperature, °C	Dry mass, kg	H, mm	L, mm	B, mm
500	500	0,2	300	160	740	1600	700
1000	1000	0,2	300	270	940	1930	900
1500	1500	0,2	300	370	1370	1420	1270
2000	2000	0,2	300	420	1370	1740	1270
2500	2500	0,2	300	510	1370	2200	1270
3000	3000	0,2	300	554	1530	2070	1430
5000	5000	0,2	300	823	1530	3340	1430

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



TECHNICAL SELECTION NOTES

Selection guidance

Model selection

Use the project operating point - capacity, pressure and temperature - and verify it against the selected model row. Do not substitute data from a neighbouring model size.

Project data

Confirm fuel, utilities, control requirements and installation conditions with the enquiry. Final equipment scope and interfaces are defined by the approved technical documentation.

STANDBY PUMP



Parameter	Value
Type	Centrifugal
Temperature	≤ 300 °C
Head	≤ 25 bar
Automatic standby	Automatic

| DESCRIPTION

The pump is designed for forced circulation of diathermic oil in a closed heating-system circuit. It provides continuous oil flow through the boiler and heat consumers. The pump design is optimized for high heat-transfer-fluid temperatures (up to 300 C and above).

| DESIGN FEATURES

- **Pump type:** single-stage centrifugal, radially split
- **Installation orientation:** horizontal
- **Casing:** volute, with integrally cast support feet for stable mounting on a foundation or frame

  Casing wear rings: replaceable, for compensation of thermal expansion and maintenance of operating clearances
- **Impeller:** closed radial type with curved blades - provides high efficiency and stable oil delivery
- **Pump bearings:** sleeve bearings (designed for prolonged high-temperature operation)
- **Motor bearings:** rolling-element bearings

| ADVANTAGES

- Versatility - single or double mechanical seal can be installed
- Reliability - sleeve bearings designed for high-temperature operation
- Long service life - replaceable wear rings allow clearances to be restored after wear
- Stable delivery - closed radial impeller with curved blades

  Redundancy (optional) - a two-pump set with valves provides uninterrupted circulation if the duty pump fails

| APPLICATION

- Diathermic-oil circulation in thermal-oil boilers
- High-temperature heat-transfer fluids (up to
- Industrial heating systems (bitumen plants, drying chambers, reactors)

PROJECT CHECKPOINT Selection guidance

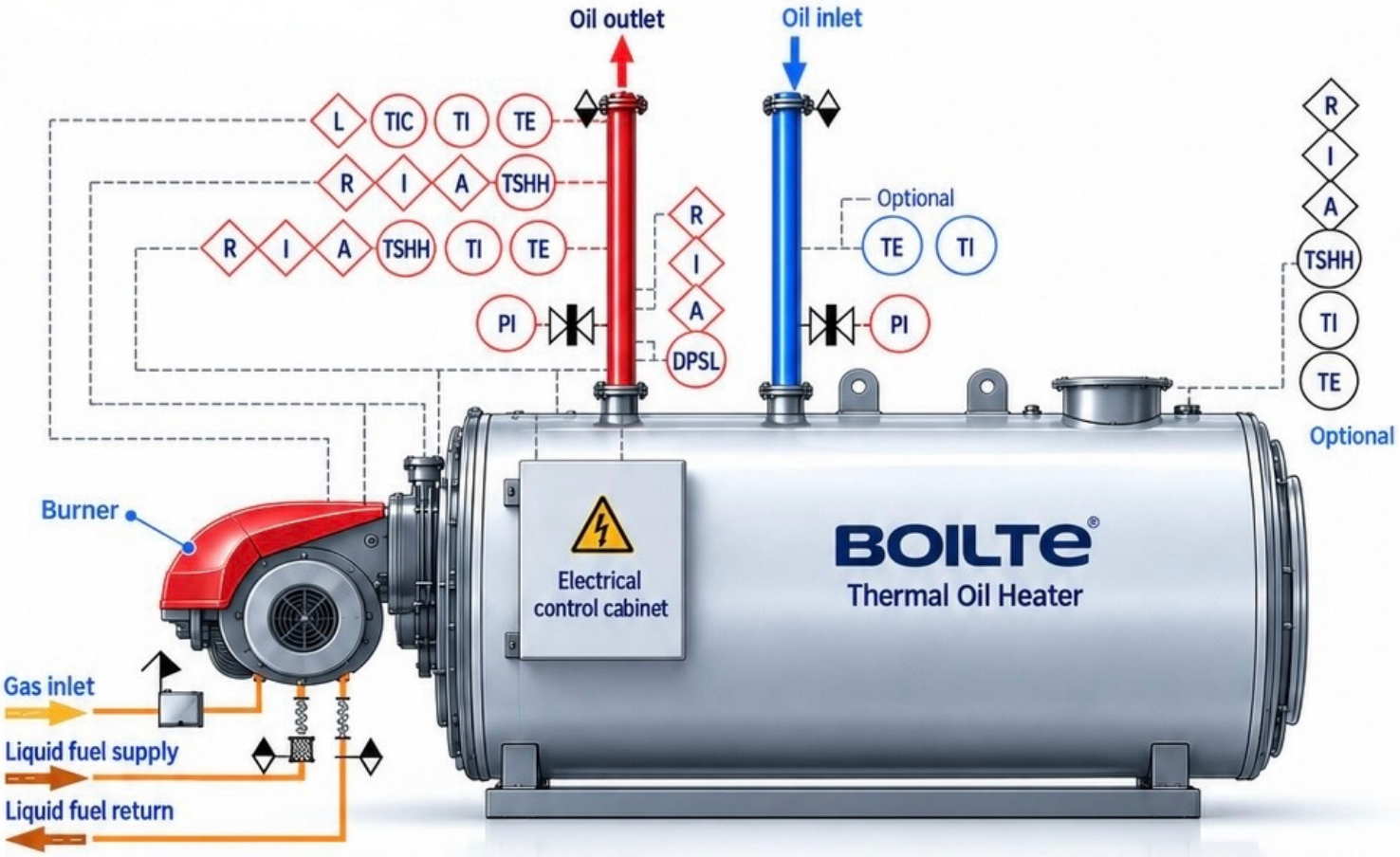
Selection data

Coordination

BOILTE®
engineered trust

RELIABLE SOLUTIONS FOR THERMAL ENERGY

THERMAL OIL HEATER – STANDARD PIPING AND INSTRUMENTATION DIAGRAM



INSTRUMENTS AND FUNCTIONAL DESIGNATIONS

TAG	NAME	FUNCTION
A	Alarm	Alarm signal
R	Manual reset	Manual reset
I	Interlock	Interlock function
L	Logic control	Automatic control logic
PI	Pressure indicator	Indicates system pressure
TSHH	High-high temperature switch	Safety shutdown (high temperature)
TI	Temperature indicator	Indicates oil temperature
TIC	Temperature indicator controller	Controls oil temperature
TE	Temperature element	Temperature sensor
DPSL	Differential pressure switch low	Low differential pressure alarm

CONVENTIONAL SYMBOLS

SYMBOL	DESCRIPTION	DESIGNATION
	Flexible hose	FLEXIBLE HOSE
	Diesel oil strainer	DIESEL OIL STRAINER
	Ball valve	BALL VALVE
	Needle valve	NEEDLE VALVE
XXX	Instrument mounted locally	LOCAL MOUNTING
XXX	Instrument mounted on control panel	CONTROL PANEL MOUNTING

LINE TYPES

- Thermal oil line (supply)
- Thermal oil line (return)
- Gas and liquid fuel
- Electrical / signal line

WASTE HEAT BOILERS

| TURN WASTE HEAT INTO ENERGY

Boilte manufactures a broad range of waste-heat boilers designed to convert heat from industrial exhaust gases into useful energy - steam, high-temperature water or diathermic-oil heating. Our equipment enables industrial facilities to reduce energy costs, increase overall process efficiency and lower their carbon footprint.

Boilte waste-heat boilers use 'free' fuel - hot gases from gas-engine and gas-turbine units, process furnaces, reactors, diesel generators, kilns and waste-incineration plants. The recoverable gas-temperature range is 250-600 C.

| MAIN TYPES OF WASTE-HEAT BOILERS

Depending on your process requirements, we offer three types of waste-heat boilers:

Steam waste-heat boilers - convert exhaust-gas heat into saturated or superheated steam for process needs, heating or turbine drives. Capacity: up to 15,000 kg of steam per hour. Pressure: up to 15 bar. Temperature: up to 550

Thermal-oil waste-heat boilers - heat diathermic oil for high-temperature processes (drying, reactor heating, pressing). Output: up to 10,000 kW. Pressure: up to 10 bar. Temperature: 400 C.

Hot-water waste-heat boilers - produce hot water for heating systems, DHW and process needs. Output: up to 30,000 kW. Pressure: up to 25 bar. Temperature: up to 550 C.

| DESIGN FEATURES

Custom design for your gas stream. The chemical composition, temperature, dust loading and moisture content of flue gases are unique for every application.

| DESIGN FEATURES (CONTINUED)

We design each waste-heat boiler from the ground up for your parameters, calculating areas at risk of low-temperature corrosion and selecting materials up to and including stainless steels for critical components.

Modular heating-surface construction. Equipment is supplied as high-factory-readiness blocks. This ensures high assembly quality, minimizes site installation work and enables transportation by any mode of transport.

- **Gas-tight construction.** Eliminating air infiltration increases efficiency and reduces emissions.

Low-temperature corrosion protection. Multi-section economizers with adjustable tube spacing and material selection based on flue-gas dew point prevent sulfuric-acid condensation and destruction of heating surfaces.

| KEY ADVANTAGES

Economic efficiency and rapid payback

A waste-heat boiler converts heat losses into useful energy, replacing expensive steam or hot water from the main boiler. Fuel savings reach 15-30%. Average payback period is 8-24 months depending on operating mode and energy tariffs.

Higher overall efficiency of the power system

Recovering exhaust-gas heat from gas-engine and gas-turbine units increases overall energy-system efficiency from 40-45% to 80-90%. This is critical for meeting ESG requirements and reducing environmental charges.

Custom design for aggressive environments

Suitable for high-sulfur gases (SO2 content up to 3.5%), dusty streams and high-moisture gases. Alloy and stainless steels are used in zones of potential corrosion.



Standards compliance

The equipment complies with EAEU TR and GOST requirements and can also be manufactured to ASME, PED (EU) and TUV standards for export projects.

| APPLICATIONS

Power generation and cogeneration - recovery of exhaust heat from gas-engine and gas-turbine units to produce steam and hot water.

Oil, gas and petrochemical industry - recovery of heat from process furnaces, reactors and flare systems.

Metallurgy - recovery of exhaust heat from blast furnaces, open-hearth furnaces and reheating furnaces.

- Pulp and paper - recovery of heat downstream of biomass boilers and drying systems.

Construction-material production - recovery of heat from rotary cement kilns and tunnel kilns for ceramics and glass.

Waste-incineration plants - recovery of waste-combustion heat for electricity and heat generation.

| LIFETIME WARRANTY AND DURABILITY

Every Boilte waste-heat boiler is designed and manufactured to serve for decades. That is why we provide a lifetime warranty on the main heat exchanger - the heart of the unit operating under the most severe temperature conditions.

Design service life: more than 15 years of continuous service when operating regulations are followed.

PHOENIX



Parameter	Value
Capacity	≤ 30000 kW
Pressure	≤ 25 bar
Temperature	≤ 600 °C
Material	Steel / AISI 316

| DESCRIPTION

Boilte Phoenix hot-water waste-heat boilers are heat generators that require no separate fuel. Their 'fuel' is the hot gas your main process already discharges to atmosphere. Flue gases from a furnace, exhaust from a gas-engine or gas-turbine unit, hot air from process operations - all of these are valuable energy resources at temperatures from 200 C and above.

Installing a waste-heat boiler is a strategic decision that reduces product cost through savings on primary energy sources (gas, fuel oil, coal), raises total energy-system efficiency to 90% or more, lowers the facility's carbon footprint and gives part of your process energy independence. Service life: more than 15 years.

| SCOPE OF SUPPLY

Main heat-exchange module: structural-steel base frame with corrosion-resistant coating; boiler drum/chamber made of Steel 20K or 16GS, matching the working-medium parameters; tube-system package (economizer and evaporator heating surfaces) assembled by shielded welding; thermal insulation using high-density mineral-wool mats at least 150 mm thick; casing of painted galvanized steel or aluminum sheets.

| SCOPE OF SUPPLY (CONTINUED)

Basic safety and monitoring system: direct-acting safety valves set to system working pressure; pressure gauges and thermometers at critical points (water inlet/outlet, gas inlet); test points for water sampling and metal-temperature measurement; blowdown system for maintaining salt balance in the circuit.

Piping and shut-off valves: gate or ball valves at heating-medium inlet and outlet nozzles; thermal-expansion joints in the gas path; flanged connections for integration with your systems (stack, water circuit).

Documentation and support: product passport with detailed diagrams; conformity certificates for main materials; non-destructive examination reports.

| DESIGN FEATURES

Custom gas-stream design - Phoenix is created from the ground up for your flue-gas parameters: chemical composition, temperature and dust loading. This ensures consistently high efficiency throughout the life cycle without risk of corrosion or fouling.

Calculation of low-temperature-corrosion risk zones and selection of materials up to stainless steels in critical areas prevents tube burn-through after 2-3 years.

The modular heating-surface design allows alloy and stainless steels to be used in zones with lower metal temperatures (where sulfuric-acid corrosion may occur), optimally arranges economizer and evaporator surfaces to keep tube-wall temperature above the flue-gas dew point, and provides easy access for mechanical or pulse cleaning of soot and deposits.

Modularity and maintainability - if a tube bundle or another component must be replaced, the entire boiler does not need to be dismantled. Key assemblies are replaceable modules, allowing rapid repair or replacement and minimizing production downtime.

| QUALITY CONTROL

Engineering - modern CFD (computational fluid dynamics) modeling is used to optimize gas dynamics and temperature distribution, preventing local overheating and wear.

Manufacturing - key welds are produced by automatic submerged-arc welding, providing exceptional penetration depth and uniformity. All critical joints undergo 100% radiographic and ultrasonic examination.

Materials - each batch of tube steel is supplied with manufacturer certificates; selective metallographic examination is performed to verify composition.

| QUALITY CONTROL (CONTINUED)

Testing - the completed tube-system block is tested for strength and tightness (hydrostatic/pneumatic pressure); where required, it is fully assembled and tested on a test stand.

| APPLICATIONS

Power generation and cogeneration: recovery of exhaust heat from gas-turbine (GTU) and gas-engine (GEU) power plants to increase overall plant efficiency; bioenergy - recovery of heat from combustion of biogas, wood waste or straw.

Metallurgy and heavy industry: flue gases from sintering, roasting or open-hearth furnaces, often above 500 C; cement and lime production with exhaust-gas temperatures of 300-400 C.

Oil, gas and chemical industry: process furnaces and reactors (pyrolysis, cracking, reforming); flare systems for associated petroleum gas combustion.

Processing and food industries: glass and ceramic plants (annealing and firing furnaces); food-processing plants, sugar factories, oils-and-fats production.

Waste-processing plants: waste-heat boilers are the heart of municipal solid-waste incineration plants, converting heat into hot water for district heating.

PROJECT INPUT DATA

Selection guidance

Flue-gas conditions

Confirm the heat-source type, gas-temperature profile and operating range for the actual process.

Composition and cleaning

Provide gas composition, including sulfur or chlorine where applicable, and the required cleaning access for the heating surfaces.

ECHO



Parameter	Value
Capacity	≤ 15000 kg/h
Pressure	≤ 15 bar
Temperature	≤ 600 °C
Material	Steel / AISI 316

| DESCRIPTION

Boilte Echo steam waste-heat boilers convert waste heat from exhaust gases (from 250 C) into high-quality steam for process needs, heating or power generation. Heat sources can include gas-engine and gas-turbine units, diesel generators, process furnaces, reactors and other equipment discharging hot gases.

Installing a waste-heat boiler can replace expensive steam from the main boiler with virtually free steam, reducing fuel costs. Overall energy-system efficiency rises to 90-95%, which is critical for meeting ESG requirements and reducing environmental charges. Capital expenditure is also reduced - often there is no need to purchase an additional steam generator for new capacity; existing waste heat can simply be recovered.

| SCOPE OF SUPPLY

Heat-exchange block: reinforced drum made from seamless hot-rolled tube with wall thickness 15-20% above the calculated requirement, equipped with a multi-stage separation system to produce steam with moisture content below 0.5%; gas-tight heating-surface package made from alloy steels selected for the chemical composition of your gases; load-bearing frame with integrated ladders and platforms providing access to all service points.

| SCOPE OF SUPPLY (CONTINUED)

Gas-dynamic system: isothermal gas ducts with expansion joints for uniform gas-flow distribution; bypass module with servo-actuated damper, positioner and limit switches.

Factory piping of the primary circuit: pre-installed piping systems assembled and pressure-tested at the factory; direct-acting redundant safety valves; thermocouple wells and pressure-gauge impulse lines at all critical points.

Passive energy-saving system: two-layer variable-density insulation (inner layer - high-temperature mats rated to 750 C; outer layer - hydrophobically treated boards), designed for a casing-surface temperature no higher than 45 C; removable painted-steel cladding panels allow insulation inspection without damage.

Commissioning package: technical passport with calculation sheet (ready package for Rostechnadzor); digital boiler model in STEP format for integration into the general arrangement; interactive weld map linking each weld to its non-destructive examination reports.

| DESIGN FEATURES

Custom design for your gases - chemical composition, dew-point temperature and aggressive components (sulfur, chlorine) are unique to every source. We model the behavior of your specific gases along the entire heating surface to prevent acid condensation and destructive low-temperature corrosion.

Intelligent layout - the sequence and geometry of zones are optimized for your temperature profile to obtain maximum efficiency without risking the metal.

Protection of key components - special solutions are used in areas of maximum thermal and erosive impact: alloy tubes, protective screens and special piping arrangements. This increases service life by 2-3 times compared with standard solutions.

Anti-corrosion architecture - multi-section economizers with adjustable tube pitch prevent sulfuric-acid condensation even under variable loads.

| QUALITY CONTROL

Engineering stage - all strength and hydraulic calculations are performed in licensed software and certified by an in-house expert. Documentation is prepared from the outset for Rostechnadzor approval.

| QUALITY CONTROL (CONTINUED)

Materials stage - every batch of tubes, sheet metal and castings is accompanied by manufacturer certificates. Incoming inspection of chemical composition and mechanical properties is performed.

Manufacturing stage - every main weld (longitudinal, circumferential and tee joints) undergoes 100% non-destructive examination (ultrasonic testing and radiography). Results are recorded in the product passport.

Final stage - factory hydrostatic testing at pressure 25% above working pressure. This is the main verification before shipment.

| APPLICATIONS

Power generation and cogeneration (GEU/GTU) - recovery of exhaust-gas heat (350-550 C), increasing energy-complex efficiency from 40-45% to 80-90%.

Metallurgy - recovery of heat from converter, blast-furnace and furnace gases. Lower cost per tonne of metal through internal steam generation.

Petrochemical industry - recovery of heat from APG combustion, process furnaces and reactors (pyrolysis, reforming, cracking), and gas-compressor-unit exhaust.

Pulp-and-paper and woodworking industries - heat recovery downstream of biomass boilers and drying systems. Maximum utilization of biofuel energy potential (bark, wood chips, husks).

DESIGN COORDINATION

Selection guidance

Corrosion basis

Use the specified gas composition and dew-point conditions to confirm material selection and low-temperature corrosion protection.

Maintainability

Provide access for mechanical or pulse cleaning and for replacement of modular heating-surface assemblies.

OUTDOOR BOILERS

| READY-TO-USE TURNKEY MINI BOILER HOUSE

Boilte manufactures outdoor heating boilers - fully weatherproof systems consisting of fire-tube hot-water boilers installed in an insulated framed enclosure. This is not merely equipment, but a complete mini boiler house that only needs to be placed on a pad beside a building or on a roof and connected to utilities. Our solutions eliminate the costly construction of a separate boiler-house building, reducing commissioning time from months to days.

Need autonomous and economical heat supply without capital construction? Boilte outdoor boilers are specialized units designed for outdoor installation in any climatic conditions. We offer a broad range from 100 to 2,000 kW, capable of meeting any requirement - from heating a small administrative building to supplying heat to a residential complex, school, hospital or production workshop. Boiler service life: more than 15 years.

| MAIN OUTDOOR BOILER SERIES

Ward series - outdoor heating boilers based on the Core fire-tube hot-water boiler in an insulated sandwich-panel framed enclosure. Output: 100-2,000 kW. Heating medium: water up to 115 C. Efficiency: up to 93%. Working pressure: up to 6 bar. An ideal solution for heating residential buildings, schools, hospitals, kindergartens, industrial and commercial buildings.

Rook series - combined turnkey boilers for outdoor installation with dual-fuel independence, based on the Core Duo boiler. Output: 140-2,000 kW. Heating medium: water up to 115 C. Working pressure: up to 6 bar. Features a horizontal reverse-flame combustion chamber and operation on gas and liquid fuel (diesel, heating oil) with automatic changeover.

| KEY FEATURES AND ADVANTAGES

All-weather design - the insulated 50 mm sandwich-panel enclosure is designed for extreme temperatures, precipitation and humidity. The design ensures stable operation across most CIS regions at temperatures from -40 C to +40 C.

Gas-tight construction - the boiler operates under positive pressure. Forced removal of combustion products avoids the need for a tall stack, simplifying installation and reducing costs.

Easy maintenance - clear zoning: controls and burner are accessed from the front panel, while the thermal-mechanical section (pumps, valves) is accessed from the rear. The boiler front door opens in either direction, which is especially convenient in confined installations.

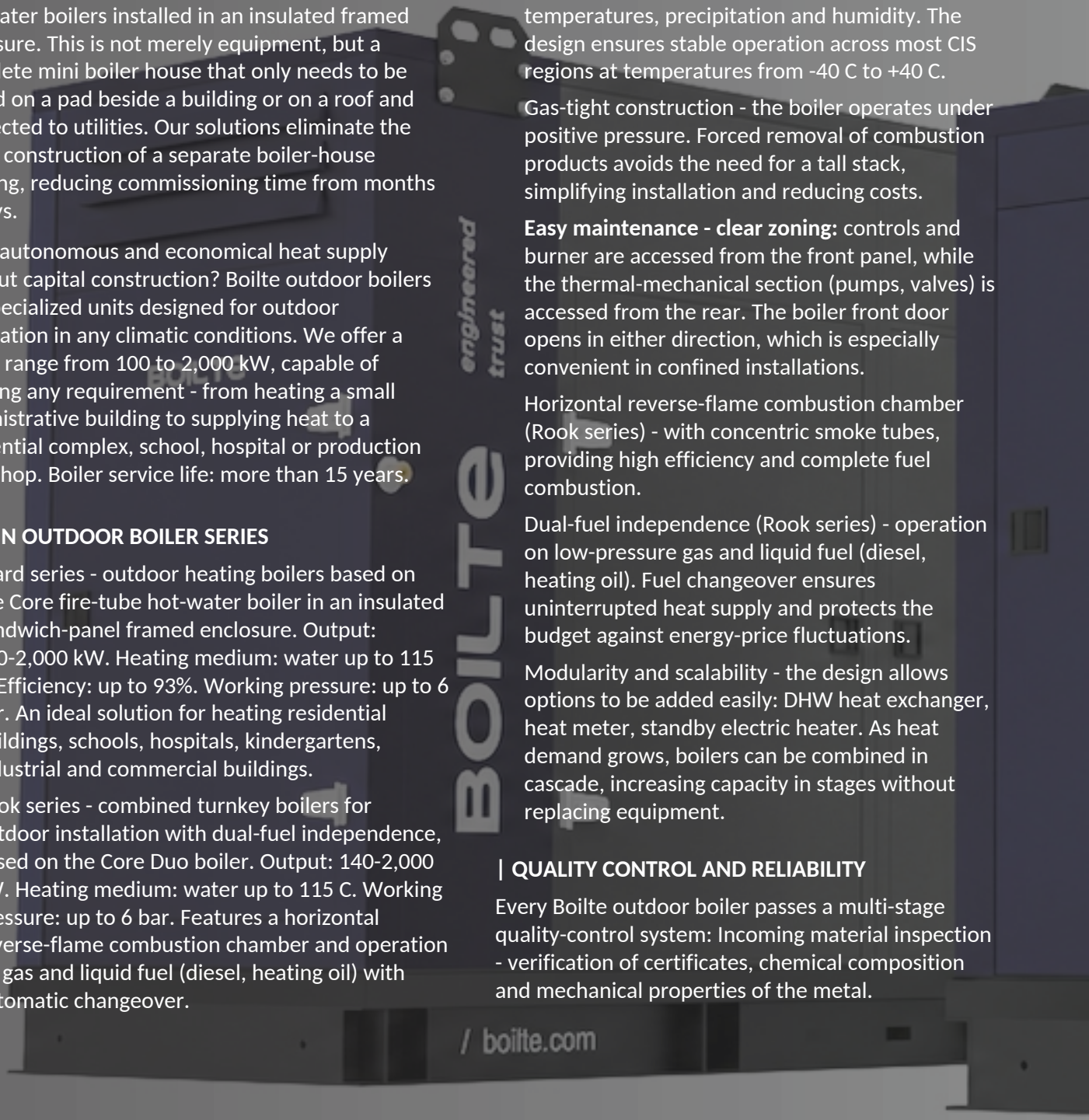
Horizontal reverse-flame combustion chamber (Rook series) - with concentric smoke tubes, providing high efficiency and complete fuel combustion.

Dual-fuel independence (Rook series) - operation on low-pressure gas and liquid fuel (diesel, heating oil). Fuel changeover ensures uninterrupted heat supply and protects the budget against energy-price fluctuations.

Modularity and scalability - the design allows options to be added easily: DHW heat exchanger, heat meter, standby electric heater. As heat demand grows, boilers can be combined in cascade, increasing capacity in stages without replacing equipment.

| QUALITY CONTROL AND RELIABILITY

Every Boilte outdoor boiler passes a multi-stage quality-control system: Incoming material inspection - verification of certificates, chemical composition and mechanical properties of the metal.



- Hydrostatic testing - at 25-50% above working pressure.
- Final functional tests - checking automation, safety systems, burner and pumping equipment.

| KEY ADVANTAGES

Out-of-the-box readiness and zero building costs. You receive a complete mini boiler house in a protected enclosure. There is no need to separately design a room or purchase pumps, valves or an automation panel - everything is assembled, connected and factory-tested. Expensive boiler-house construction and utility-routing work are eliminated. Installation is reduced to preparing a pad, positioning the module and connecting it to gas, water and electrical networks.

All-weather performance and climate independence. The insulated sandwich-panel enclosure is designed for extreme temperatures (down to -40 C), precipitation, wind and humidity.

High energy efficiency. Boiler efficiency reaches 93% thanks to smoke-tube turbulators and optimized aerodynamics. Weather-compensated control with an outdoor temperature sensor and cascade-control capability reduce gas consumption by up to 15-20%.

Intelligent control and safety. The electrical control cabinet with weather-compensated automation provides autonomous operation, automatic ignition and temperature maintenance. The safety system includes flame monitoring, gas-leak protection, emergency shutdown on pressure loss or overheating, safety valves and thermal shut-off valves. Security alarm and heat meter with remote module expand functionality.

| KEY ADVANTAGES (CONTINUED)

Easy maintenance. Clear zoning: controls and burner are accessed from the front panel, while the thermal-mechanical section (pumps, valves) is accessed from the rear.

Fuel flexibility (Rook series). Dual-fuel independence - operation on gas and liquid fuel with automatic changeover capability. You are protected against gas-supply interruptions and can select the more economical energy source according to market conditions.

Standards compliance. The equipment is certified and meets safety requirements. A complete permitting-document package ensures trouble-free commissioning under regulatory supervision.

| APPLICATIONS

Social facilities - schools, kindergartens, hospitals, sports centers. Reliable uninterrupted heat supply, remote monitoring and freeze protection.

Residential complexes and apartment buildings - autonomous heating without a separate boiler house. Installation beside a wall or on a roof saves usable site area.

Industrial and warehouse facilities - heating workshops, logistics centers, hangars and production sites. Outdoor installation without routing utilities to a separate building.

Retail and office buildings - rooftop or wall-side installation, freeing basements for rental use. Low noise level, cascade connection for staged capacity expansion.

Remote and hard-to-access sites - operation on gas or liquid fuel (Rook series), minimal maintenance staffing and autonomous operating mode.

WARD



Parameter	Value
Capacity	≤ 2000 kW
Pressure	≤ 6 bar
Temperature	≤ 115 °C
Operating limit	≤ −40 °C

| DESCRIPTION

Boilte Ward outdoor heating boilers are complete weatherproof systems consisting of a Core-series fire-tube hot-water boiler in an insulated framed enclosure. This is not merely equipment but a complete mini boiler house that only needs to be placed on a pad beside a building and connected to utilities. Output: 100-2,000 kW. Heating medium: water up to 115 C. Efficiency: up to 93%. System working pressure: up to 0.6 MPa (6 bar). An ideal solution for heating homes, schools, hospitals, kindergartens, industrial and commercial buildings. Service life: more than 15 years.

| SCOPE OF SUPPLY

Main enclosure and structural components: sectional thermally insulated body with access doors; burner (gas, liquid-fuel or dual-fuel); circulation/system pump(s) and safety group; removable front cover on adjustable hinges (opens either direction); rear smoke box.

2. **Installation and service package:** lifting device for safe handling.

   Hydraulic and gas-path connections: heating supply and return connections, system drain connection, flanged stack connection, condensate drain connection; stainless-steel flue.

| SCOPE OF SUPPLY (CONTINUED)

Monitoring, control and safety instruments: electrical control cabinet; thermometer; temperature-monitoring tapping; control and safety thermostats; flame sight glass with heat-resistant glass; weather-compensated control with outdoor temperature sensor; security alarm; heat meter with remote module.

5. **Efficiency package:** complete set of smoke-tube turbulators (swirlers).

| DESIGN FEATURES

All-weather design - the insulated sandwich-panel enclosure is designed for extreme temperatures, precipitation and humidity. The design ensures stable operation across most CIS regions.

Gas-tight construction - the boiler operates under positive pressure. Forced removal of combustion products eliminates the need for a tall stack.

Easy maintenance - clear zoning: controls and burner are accessed from the front panel, while the thermal-mechanical section (pumps, valves) is accessed from the rear. The boiler front door opens in either direction.

| ADVANTAGES

Buying a Ward outdoor boiler means avoiding the expensive and time-consuming construction of a separate boiler house. It is a fully equipped station that only needs to be installed on a prepared pad and connected to utilities. Construction savings reach 60% - you need no permanent building, design projects or permits. Commissioning takes days rather than months. Installation beside a wall, on a roof or directly adjacent to a building requires no additional indoor floor space. Ward works where you need it and starts heating immediately.

| APPLICATIONS

Residential complexes and apartment buildings - autonomous heating without construction of a separate boiler house.

Social facilities (schools, kindergartens, hospitals, sports centers) - reliable uninterrupted heat supply through dual fuel (gas + diesel).

Industrial and warehouse facilities - autonomous heating of workshops, logistics centers and hangars.

Temporary and seasonal facilities - rapid one-day installation, with the option to dismantle and relocate.

TECHNICAL DATA

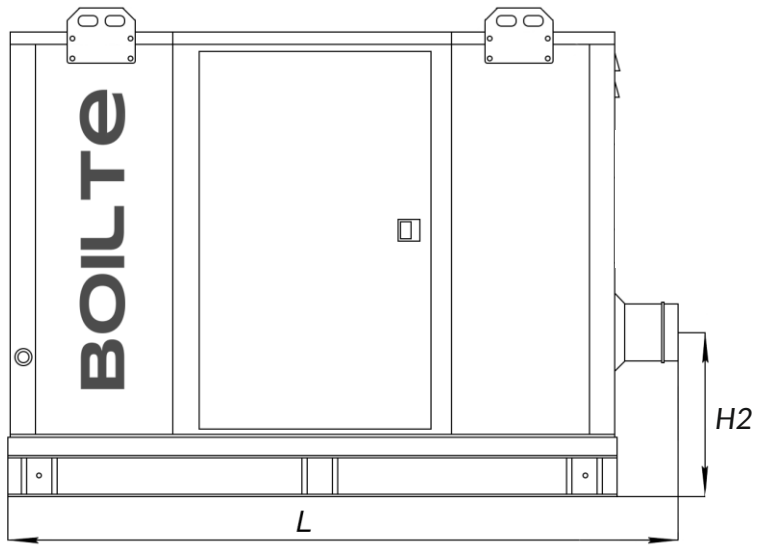
Model Ward	Power, kW	Efficiency, %	Pressure, bar	Max. fluid temperature, °C	Min. fluid temperature, °C	Boiler resistance, mbar	Boiler water volume, L	Flue-gas flow, m³/h	Gas consumption, m³/h	Dry boiler mass, kg*
100	100	92,12	6	115	60	0,4	140	171,55	11,55	1520
150	150	92,02	6	115	60	1,2	107	257,03	16,56	1590
200	200	92,14	6	115	60	2,5	200	340,67	21,95	1720
250	250	92,11	6	115	60	4,6	320	427,33	27,34	1880
300	300	92,13	6	115	60	3,1	360	512,78	32,81	2360
350	350	92,11	6	115	60	4,6	450	597,35	38,51	2450
400	400	92,11	6	115	60	5,6	490	716,84	43,9	2550
500	500	92,12	6	115	60	4,8	530	854,70	54,69	2930
600	600	92,12	6	115	60	6,9	640	1011,57	65,47	3200
700	700	92,12	6	115	60	5,7	850	1203,33	77,03	3370
800	800	92,12	6	115	60	3,9	890	1411,72	88,58	4520
900	900	92,11	6	115	60	5,1	950	1588,66	98,59	4650
1000	1000	92,11	6	115	60	6,7	1200	1730,81	109,38	4960
1100	1100	92,12	6	115	60	4	1400	1917,25	120,55	5370
1200	1200	92,12	6	115	60	5,2	1500	2050,02	131,72	5670
1300	1300	92,09	6	115	60	6,3	1600	2221,12	142,50	5850
1400	1400	92,15	6	115	60	7,6	1610	2401,41	154,05	6070
1500	1500	92,11	6	115	60	5,1	1700	2597,32	164,45	6920
1600	1600	92,13	6	115	60	6	1750	2771,42	175,62	7160
1700	1700	92,11	6	115	60	7	1800	2991,34	186,41	7350
1800	1800	92,11	6	115	60	8,1	1850	3019,62	197,19	7570
2000	2000	92,12	6	115	60	8	2000	3457,16	219,53	8700

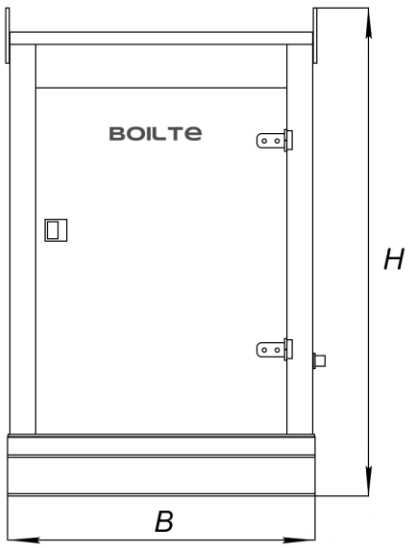
**Power: The stated values correspond to operation on methane (natural gas). When using diesel fuel or fuel oil, output may be adjusted (reduced) in accordance with calculation standards.

OVERALL DIMENSIONS

Model Ward	H, mm	H2, mm	L, mm	B, mm	C, mm	N1, DN	N2, DN
100	1500	651	2900	1100	200	50	50
150	1500	651	3000	1100	200	50	50
200	1500	651	3200	1100	250	50	50
250	1500	651	3500	1100	250	50	50
300	1700	711	3600	1200	250	65	65
350	1700	711	3700	1200	250	65	65
400	1700	711	3900	1200	250	65	65
500	1800	795	4000	1300	300	80	80
600	1800	795	4400	1300	300	80	80
700	1800	795	4600	1300	300	100	100
800	2200	1093	4500	1600	400	100	100
900	2200	1093	4600	1600	400	100	100
1000	2200	1093	4900	1600	400	125	125
1100	2200	1093	5100	1600	400	125	125
1200	2200	1093	5400	1600	400	125	125
1300	2200	1093	5500	1600	400	125	125
1400	2200	1093	5700	1600	400	150	150
1500	2400	1224	5500	1750	400	150	150
1600	2400	1224	5700	1750	400	150	150
1700	2400	1224	5800	1750	400	150	150
1800	2400	1224	5900	1750	400	150	150
2000	2500	1337	6100	1850	500	200	200

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.





OUTDOOR BOILERS

BOILTE

ENGINEERED FOR A WARMER WORLD

WARD

RELIABLE HEAT FOR A SUSTAINABLE TOMORROW



All-weather enclosure

Designed for outdoor installation in harsh climatic conditions.

High efficiency

Up to 93%.

Compact turnkey solution

Minimum installation time and space requirements.

Reliable operation

Service life more than 15 years.

100–2,000 kW
OUTPUT

UP TO 115 °C
HEATING MEDIUM TEMPERATURE

UP TO 0.6 MPa (6 bar)
WORKING PRESSURE

UP TO 93%
EFFICIENCY

IDEAL FOR
RESIDENTIAL COMPLEXES, SCHOOLS, HOSPITALS, INDUSTRIAL AND COMMERCIAL BUILDINGS.

FUEL OPTIONS
NATURAL GAS, DIESEL FUEL, FUEL OIL, HEATING OIL, WASTE OIL.

SERVICE LIFE
MORE THAN 15 YEARS (ON NATURAL GAS).

ROOK



Parameter	Value
Capacity	≤ 2000 kW
Pressure	≤ 6 bar
Temperature	≤ 115 °C
Operating limit	≤ 40 °C

| DESCRIPTION

Boilte Rook combined outdoor boilers are a ready turnkey solution comprising a gas-and liquid-fuel boiler plant in a compact all-weather enclosure. The equipment is intended for outdoor installation beside a wall or on a roof. Output: 140-2,000 kW. Heating medium: water up to 115 C. System working pressure: up to 0.6 MPa (6 bar). An ideal solution for heating residential complexes, schools, hospitals, industrial and commercial buildings. Service life: more than 15 years.

| SCOPE OF SUPPLY

Main enclosure and structural components: sectional thermally insulated body with access doors; burner (gas, liquid-fuel or dual-fuel); circulation/system pump(s) and safety group; removable front cover on adjustable hinges (opens either direction); rear smoke box.

2. **Installation and service package:** lifting device for safe handling.

   Hydraulic and gas-path connections: heating supply and return connections, system drain connection, flanged stack connection, condensate drain connection; stainless-steel flue.

| SCOPE OF SUPPLY (CONTINUED)

Monitoring, control and safety instruments: electrical control cabinet; thermometer; temperature-monitoring tapping; control and safety thermostats; flame sight glass with heat-resistant glass; weather-compensated control with outdoor temperature sensor; security alarm; heat meter with remote module.

5. **Efficiency package:** complete set of smoke-tube turbulators (swirlers).

| DESIGN FEATURES

Horizontal reverse-flame combustion chamber with concentric smoke tubes provides high efficiency.

Reinforced thermal and moisture insulation is designed for operation from -40 C to +40 C. The boiler withstands precipitation, wind and temperature variations.

Dual-fuel independence - operation on low-pressure gas and liquid fuel (diesel, heating oil). Fuel changeover ensures uninterrupted operation and protects the budget against price fluctuations.

Modularity and scalability - the design allows options to be added easily: DHW heat exchanger, heat meter, standby electric heater. As load grows, boilers can be connected in cascade.

| ADVANTAGES

Buying a Rook outdoor boiler means avoiding the expensive and time-consuming construction of a separate boiler house. It is a fully equipped station that only needs to be installed on a prepared pad and connected to utilities. Construction savings reach 60% - you need no permanent building, design projects or permits. Commissioning takes days rather than months. Installation beside a wall, on a roof or directly adjacent to a building requires no additional indoor floor space. Rook works where you need it and starts heating immediately.

| APPLICATIONS

Residential complexes and apartment buildings - autonomous heating without construction of a separate boiler house.

Social facilities (schools, kindergartens, hospitals, sports centers) - reliable uninterrupted heat supply through dual fuel (gas + diesel).

Industrial and warehouse facilities - autonomous heating of workshops, logistics centers and hangars.

Temporary and seasonal facilities - rapid one-day installation, with the option to dismantle and relocate.

TECHNICAL DATA

Model Rook	Power, kW	Efficiency, %	Pressure, bar	Max. fluid temperature, °C	Min. fluid temperature, °C	Boiler resistance, mbar	Boiler water volume, L	Flue-gas flow, m^3/h	Gas consumption, m^3/h	Dry boiler mass, kg*
140	140	92,12	6	115	60	0,30	302,82	0,24	16,66	1580
200	200	92,12	6	115	60	0,40	343,10	0,28	23,10	1660
300	300	92,12	6	115	60	1,20	514,06	0,34	33,12	1813
400	400	92,12	6	115	60	2,50	681,34	0,40	43,90	1953
500	500	92,12	6	115	60	4,60	854,66	0,64	54,68	2265
600	600	92,12	6	115	60	3,10	1025,56	0,72	65,62	3178
700	700	92,12	6	115	60	4,60	1217,35	0,87	75,62	3345
800	800	92,12	6	115	60	5,60	1433,68	0,98	87,80	3515
1000	1000	92,12	6	115	60	4,80	1709,40	1,06	109,38	4230
1200	1200	92,12	6	115	60	6,90	2023,14	1,24	130,94	4835
1400	1400	92,12	6	115	60	5,70	2406,66	1,70	154,06	5268
1600	1600	92,12	6	115	60	3,90	2823,44	1,81	177,16	6978
1800	1800	92,12	6	115	60	5,10	3177,32	2,00	197,18	7263
2000	2000	92,12	6	115	60	6,70	3430,81	2,43	209,38	7863

****Power:** The stated values correspond to operation on methane (natural gas). When using diesel fuel or fuel oil, output may be adjusted (reduced) in accordance with calculation standards.

TECHNICAL SELECTION NOTES

Selection guidance

Model selection

Use the project operating point - capacity, pressure and temperature - and verify it against the selected model row. Do not substitute data from a neighbouring model size.

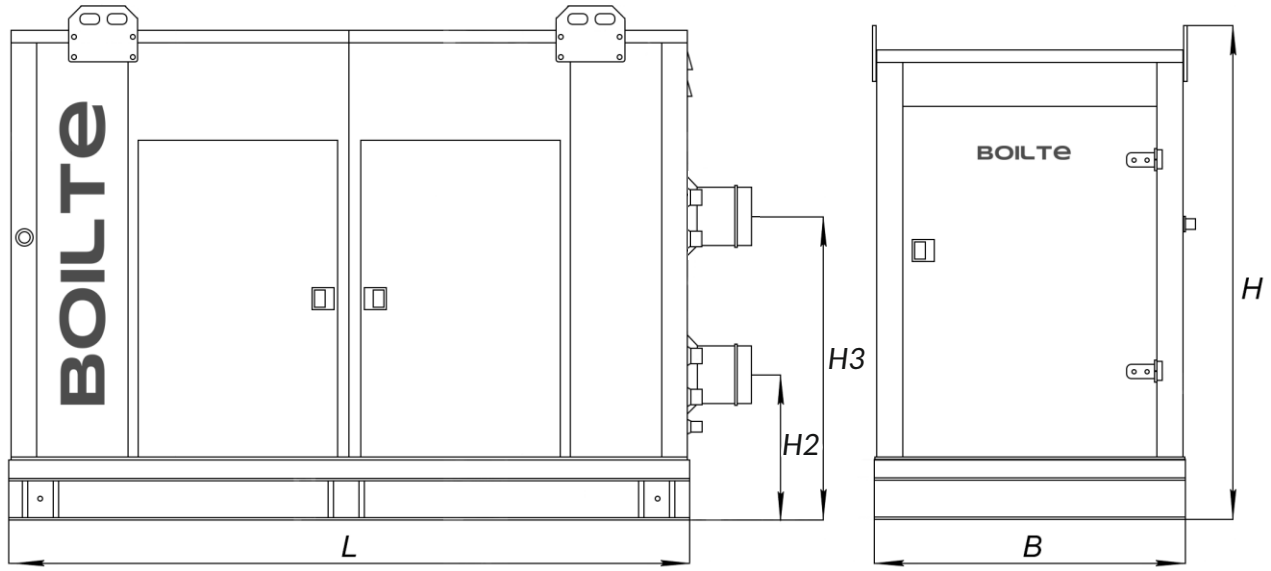
Project data

Confirm fuel, utilities, control requirements and installation conditions with the enquiry. Final equipment scope and interfaces are defined by the approved technical documentation.

OVERALL DIMENSIONS

Model Rook	H, mm	H2, mm	H3, mm	L, mm	B, mm	C, mm	N1, DN	N2, DN
140	2400	651	1603	2900	1300	200/200	50	50
200	2400	651	1603	3000	1300	200/200	50	50
300	2400	651	1603	3300	1300	200/200	50	50
400	2400	651	1603	3400	1300	250/250	50	50
500	2400	651	1603	3800	1300	250/250	50	50
600	2700	711	1782	3800	1500	250/250	65	65
700	2700	711	1782	3900	1500	250/250	65	65
800	2700	711	1782	4300	1500	250/250	65	65
1000	2900	795	1985	4500	1600	300/300	80	80
1200	2900	795	1985	4900	1600	300/300	80	80
1400	2900	795	1985	5100	1600	300/300	100	100
1600	3700	1093	2640	5000	1800	400/400	100	100
1800	3700	1093	2640	5100	1800	400/400	100	100
2000	3700	1093	2640	5400	1800	400/400	125	125

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



INSTALLATION PLANNING

Selection guidance

Installation envelope

Use the selected model row together with the drawing. Check overall height, length and width against the delivery route, installation position and available access for service.

Connection schedule

Confirm connection sizes and locations for the ordered configuration. Coordinate supports and adjacent equipment with project drawings; overall dimensions alone do not define service clearances.


RELIABLE HEAT
IN ANY CONDITIONS
ALL-WEATHER
DESIGN
MAXIMUM
RELIABILITY
HIGH
EFFICIENCY
BOILTE

HEAT GENERATORS

| RELIABLE HEAT FOR YOUR FACILITIES

Boilte manufactures a broad range of industrial air heaters and heat generators designed to provide rapid, efficient and autonomous air heating for production workshops, warehouse complexes, construction sites, agricultural facilities and other large-volume spaces. Our equipment combines proven design solutions with modern engineering calculations, ensuring long service life and stable operation in any climatic conditions.

Need a powerful and reliable heat source for large air volumes? Boilte industrial air heaters are specialized direct-or indirect-fired units generating hot air at temperatures up to 100 C and above. We offer a broad range from 50 to 2,000 kW, capable of meeting any requirement - from heating a small repair bay to supplying heat to a drilling installation in Arctic conditions.

| MAIN OUTDOOR BOILER SERIES

- Mobile heat generators (Modul series)

  Trailer-mounted mobile units up to 300 kW. Designed for temporary heating of construction sites, rapid space warm-up and emergency heat supply. Operate on diesel fuel and waste oil. Efficiency above 94%. Operable at temperatures down to -60 C.

- Containerized air heaters (series

). Stationary heat-generation stations in protective containerized enclosures with output up to 2,000 kW. Designed for heating drilling rigs, worker camps and remote facilities. Air flow up to 32,000 m3/h. Operate on gas, diesel, fuel oil, crude oil and waste oil.

Gust

- Air heaters for greenhouses and agriculture

| MAIN OUTDOOR BOILER SERIES (CONTINUED)

(Keno series) . Specialized units up to 1,160 kW with a sealed closed-type combustion chamber. Prevent combustion products from entering the heated space. Air flow up to 70,000 m3/h. Efficiency up to 92%. Weather-compensated automation provides fuel savings up to 30%.

- Industrial recuperative air heaters

(Zephyr series)

High-efficiency units with a dual-circuit heat exchanger, output up to 1,500 kW. Recover heat from exhaust gases, providing efficiency up to 92%. Air flow up to 70,000 m3/h.

- Universal heat generators (Rock series)

  Waste-oil-fired units up to 1,160 kW. Savings up to 80% compared with gas or electric systems. Air flow up to 70,000 m3/h.

| KEY FEATURES AND ADVANTAGES

Economic efficiency. High efficiency up to 94% and direct-heating technology deliver maximum useful heat per liter of fuel. Operation on waste oil or associated gas can reduce operating costs by up to

Mobility and rapid deployment. Trailer-mounted and containerized models are ready to operate immediately after delivery to site. Start-up time is reduced from weeks to hours. No boiler-house construction is required.

Operation in extreme conditions. The equipment operates at temperatures down to -60 C. Frost-resistant materials, silicone insulation and special start-up algorithms ensure starting in any weather.

- **Fuel flexibility.** Operation on natural gas, diesel fuel, fuel oil, crude oil, heating oil and waste oil.

  Safety and automation. A multi-level protection system ensures safe operation without continuous personnel attendance.

Easy maintenance. Key components (heat exchanger, burner, fans, filters) are readily accessible without dismantling adjacent systems. Standardized components simplify repair and replacement.

| QUALITY CONTROL

Every Boilte air heater passes a multi-stage quality-control system: Incoming material inspection - verification of certificates, chemical composition and mechanical properties of the metal.

- Manufacturing control - automated welding with visual and instrumental weld inspection.
- Assembly control - checking tightness, electrical connections and installation quality.

  Load testing - every unit is run on a test stand for several hours at rated output, with all operating modes checked and sensors calibrated.
- Final acceptance - acceptance certificate signed by the plant chief engineer.

| APPLICATIONS

Oil and gas industry and drilling rigs. Heating drilling sites, worker camps, gas-treatment units, oil gathering stations and pumping stations. Containerized version and operation down to -60

| APPLICATIONS (CONTINUED)

Industrial facilities and production workshops. Heating workshops for mechanical engineering, metalworking, woodworking, light industry and food production.

Construction industry. Drying construction sites in winter. Heating site cabins and temporary structures. Heating concrete and construction mixes.

Warehouse and logistics complexes. Heating warehouses, hangars and logistics centers. Maintaining above-freezing temperatures for product storage.

Agriculture and agro-industrial complexes. Heating greenhouses, livestock farms, poultry houses, grain stores and vegetable stores. Sealed combustion chamber prevents combustion products from entering the heated space.

Vehicle service centers. Heating repair bays, car washes and tire shops. Rapid reheating when doors are opened.

- **Emergency and temporary heating.** Backup heating during repair of the main system.

Retail, entertainment and sports facilities. Heating shopping centers, exhibition pavilions, indoor sports complexes and swimming pools.

ZEPHYR



Parameter	Value
Capacity	≤ 1500 kW
Air pressure	≤ 750 Pa
Airflow	≤ 70000 m^3/h
Temperature	≤ 100 °C

| DESCRIPTION

Boilte Zephyr industrial gas-fired recuperative air heaters are a ready investment solution for air heating and process-air heating in industrial workshops, warehouses, agricultural complexes and vehicle service centers. Unlike conventional systems, Zephyr does not discharge heat to atmosphere with flue gases, but recovers it, providing efficiency up to 92%. Thermal output: up to 1,500 kW. Air flow: up to 50,000 m3/h. Fuels: natural gas, diesel fuel, fuel oil, heating oil, waste oil. Design service life: 15 years (on natural gas).

| SCOPE OF SUPPLY

Main air-heater module: assembled and insulated steel body with powder anti-corrosion coating; dual-circuit recuperative heat exchanger made of heat-resistant steel; in-line centrifugal fan with external rotor; control board with PID controller and basic algorithms; safety-sensor package (flame, gas pressure, flue-gas temperature and heated-air temperature monitoring).

Wall-or floor-mounting kit: universal structural-steel support bracket; set of vibration-isolating mounts; sealing gaskets for air-duct connections.

| SCOPE OF SUPPLY (CONTINUED)

Operating-document package: product passport with serial number and test parameters; installation, commissioning and operating manual; warranty certificate; certificates of conformity.

| DESIGN FEATURES

Dual-circuit recuperative heat exchanger made of heat-resistant steel. Burner flue gases pass through the internal channels and transfer heat to the walls. Outdoor air forced by the fan passes over the heated walls externally, absorbing up to 92% of the thermal energy. Wall material and thickness are designed for the full service life.

Combustion chamber without flame reversal. Calculated aerodynamics and design completely prevent dangerous flame breakthrough into the mixing zone. This extends burner and heat-exchanger service life and guarantees safety and stable output in all operating modes.

Adaptive belt-driven fan section. Centrifugal fans generate the high pressure required to deliver air through complex duct and filter systems. Belt drive simplifies maintenance, protects the motor against overload and allows flexible capacity adjustment.

Energy-efficient modulating gas burner. The burner automatically adjusts flame output according to heat demand (30-100%), eliminating cycling and further saving fuel.

Two-level temperature-protection system. Two independent thermostats provide intelligent control and absolute safety: the control thermostat optimizes fan operation, improving heat-transfer efficiency; the emergency thermostat immediately shuts off gas supply under any abnormal condition, completely eliminating overheating risk.

| APPLICATIONS

Facilities with high air-exchange requirements: paint shops and spray booths; chemical and pharmaceutical plants; facilities with 'wet' processes.

| APPLICATIONS (CONTINUED)

High-ceiling, large-volume buildings: aircraft and helicopter hangars; exhibition pavilions and conference halls; churches and other high-vaulted religious buildings.

Processes requiring clean hot air: food industry; construction-material production; textile and leather industries.

Social and infrastructure facilities: indoor swimming pools and water parks; railway/bus stations and repair depots; large retail warehouses.

Next-generation agriculture: hydroponic and aquaponic farms; hatcheries and broiler houses; grain and grass drying.

TECHNICAL DATA

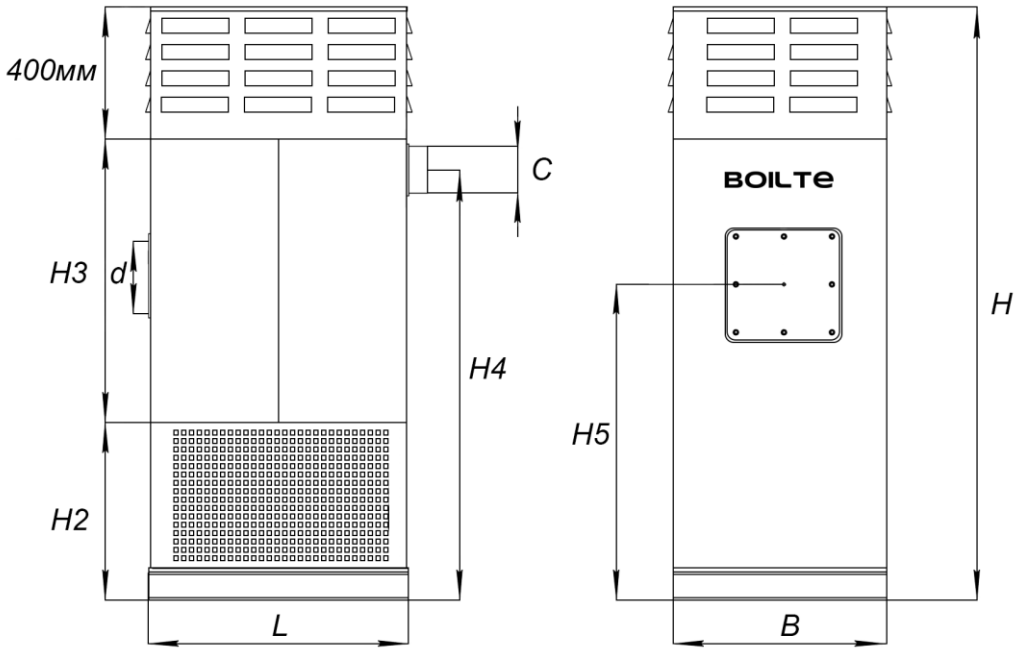
Model ~~Zephyr~~	Power, kW	Efficiency, %	Flue-gas resistance, Pa	Max. heated-air temperature, °C	Min. inlet-air temperature, °C	Air temperature rise, °C	Gas consumption, m^3/h	Diesel consumption, kg/h	Fan air flow, m^3/h	Generator mass, kg
50	50	92,1	4	80	-50	40	6,1	4,5	3500	360
75	75	91,8	6	80	-50	40	9,2	7,84	5600	370
100	100	91,2	2	80	-50	42	12,3	9,2	6600	460
150	150	92,2	4	80	-50	63	18,5	13,8	6600	470
200	200	92,3	6	80	-50	33*	24,7	18,5	12500	480
250	250	91,5	8	80	-50	44	30,8	21	12500	700
300	300	92,2	16	80	-50	55	37	27	12500	850
400	400	92,5	22	80	-50	41	40,3	36	17600	1250
500	500	92,3	28	80	-50	46	61,7	45	30000	1550
600	600	92,4	30	80	-50	41	74	54	40000	1750
700	700	92,3	31	80	-50	48	86,4	63	40000	1790
800	800	92,1	32	80	-50	55	98,7	72	40000	1830
900	900	92,3	33	80	-50	50	111,1	81	50000	1990
1000	1000	91,9	34	80	-50	55	123,4	91	50000	2100
1500	1500	92,1	32	80	-50	42	185,1	140	100000	3500

***Power:** The stated values correspond to operation on methane (natural gas). When using diesel fuel or fuel oil, output may be adjusted (reduced) in accordance with calculation standards.

OVERALL DIMENSIONS

Model Zephyr	H, mm	H2, mm	H3, mm	H4, mm	H5, mm	L, mm	B, mm	C, mm	d, mm
50	2150	1100	1050	1850	1400	1100	750	150	140
75	2150	1100	1050	1850	1400	1100	750	150	140
100	2350	1100	1250	1950	1450	1280	800	200	140
150	2350	1100	1250	1950	1490	1350	800	200	160
200	2350	1100	1250	1950	1570	1450	900	250	160
250	2350	1100	1250	1950	1600	1700	1200	250	160
300	2400	1100	1300	2000	1620	1700	1200	250	170
400	2450	1100	1350	2050	1680	2100	1250	300	170
500	2550	1100	1450	2150	1750	2500	1500	300	190
600	2650	1100	1550	2250	1790	2650	1500	350	190
700	2750	1100	1650	2350	1850	2900	1550	350	200
800	2900	1100	1800	2500	1880	3200	1550	400	250
900	3500	1100	2400	3100	1950	3500	1600	400	250
1000	3600	1100	2500	3200	1990	3600	1600	400	250
1500	4500	1100	3400	4000	2300	4200	2000	500	300

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



INSTALLATION PLANNING

Selection guidance

Installation envelope

Use the selected model row together with the drawing. Check overall height, length and width against the delivery route, installation position and available access for service.

Connection schedule

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HEAT GENERATORS

PEOPLE.
HEAT.
A BRIGHTER
TOMORROW.

ZEPHYR

Efficient air heating for industrial spaces

The BOILTE ZEPHYR is a high-performance air heat generator designed for industrial and commercial facilities. Engineered for efficiency, durability and reliable operation, it delivers clean, consistent heat to create comfortable and productive environments even in the most demanding conditions.



- **Recuperative technology**
- **Energy efficiency**
- **Reliable performance**
- **Industrial duty**

GROWING
POSSIBILITIES
WITH HEAT

Warehouses
CONSISTENT HEAT
FOR LARGER SPACES

Workshops
COMFORTABLE
WORK ENVIRONMENTS

Agriculture
HEALTHY SPACES
ALL YEAR ROUND

BOILTE

boilte.com

A CLEANER
WARMER
TOMORROW

LUMO



Parameter	Value
Capacity	≤ 1500 kW
Air pressure	≤ 750 Pa
Airflow	≤ 70000 m^3/h
Temperature	≤ 100 °C

| DESCRIPTION

The Lumo industrial air heater is an advanced solution for heating production areas, construction sites and agricultural complexes. Designed for outdoor operation in harsh climatic conditions. Thermal output: up to 1,500 kW. Air flow: up to 70,000 m3/h. Air pressure: up to 750 Pa. Efficiency: up to 92% (direct-heating technology provides heat-transfer efficiency up to 100%). Fuel: natural gas, diesel fuel. Installation: outdoor, all-weather design. Design service life: 15 years (on natural gas).

| SCOPE OF SUPPLY

Main power module in protective enclosure: combustion chamber with ceramic insulator; supply fan with dynamically balanced impeller; all components factory-integrated and synchronized. The unit is ready for immediate operation after installation, flue connection and electrical power supply.

Control unit with climate-control function: electronic controller with built-in thermostat allows the operator to set and precisely maintain the target indoor temperature; operate in several preset output modes; monitor the status of main systems using status codes; provide smooth start and stop to extend burner service life.

| SCOPE OF SUPPLY (CONTINUED)

Product operating dossier: technical passport with individual serial number, warranty certificate and connection diagram; operating manual with first-start procedure, troubleshooting table and maintenance schedule; certificate of conformity with technical-regulation requirements.

| DESIGN FEATURES

Direct-heating technology. Room air is drawn in by the fan, passes through the combustion chamber where it is instantly heated by the burner flame, and is supplied directly to the heated zone. Efficiency reaches 100% because all heat from fuel combustion is transferred to the air. The technology provides rapid attainment of rated output and immediate room warm-up.

All-weather enclosure. The unit is housed in a robust steel enclosure with powder anti-corrosion coating. It resists moisture, temperature fluctuations and mechanical impact. All main components - burner, combustion chamber, fan and control unit - are integrated into a single monoblock, simplifying installation and improving reliability.

Combustion-product exhaust system. A flue connection is provided for safe discharge of exhaust gases outside the working area. The enclosure is sealed to prevent flue gases from entering the room.

Autonomy. Lumo requires only an electrical supply for the fan and automation plus fuel. An ideal solution for facilities without permanent heating or gas supply.

| APPLICATIONS

Construction industry: heating concrete and construction mixes for strength development; heating site cabins and work areas; drying and finishing work inside facilities; thawing soil and materials. Enables year-round work and compliance with construction schedules.

| APPLICATIONS (CONTINUED)

Industry and logistics: heating warehouses and hangars (protecting products from freezing); heating production workshops and service areas; vehicle service centers; agricultural complexes (livestock buildings, greenhouses, grain storage). Prevents cold-related downtime and protects inventory.

Emergency and temporary heating: standby heat during boiler-house repairs; heating new facilities before permanent systems are commissioned; heating temporary structures (exhibition pavilions, tents); drying premises after flooding. Business-continuity protection and rapid deployment.

Municipal and road services: heating garages for special-purpose machinery (road and cleaning equipment); heating garages, depots and dispatch centers.

TECHNICAL DATA

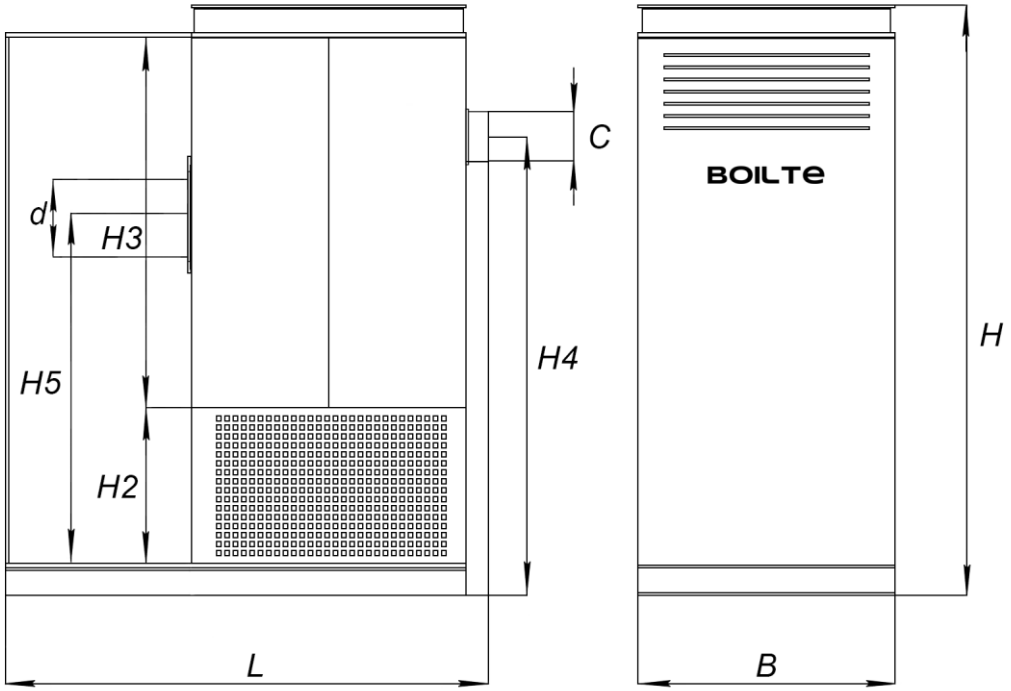
Model Lumo	Power, kW	Efficiency, %	Flue-gas resistance, Pa	Max. heated-air temperature, °C	Min. inlet-air temperature, °C	Air temperature rise, °C	Gas consumption, m³/h	Diesel consumption, kg/h	Fan air flow, m³/h	Generator mass, kg
50	50	92,1	4	80	-50	40	6,1	4,5	3500	460
75	75	91,8	6	80	-50	40	9,2	7,84	5600	490
100	100	91,2	2	80	-50	42	12,3	9,2	6600	590
150	150	92,2	4	80	-50	63	18,5	13,8	6600	600
200	200	92,3	6	80	-50	33*	24,7	18,5	12500	620
250	250	91,5	8	80	-50	44	30,8	21	12500	820
300	300	92,2	16	80	-50	55	37	27	12500	950
400	400	92,5	22	80	-50	41	40,3	36	17600	1450
500	500	92,3	28	80	-50	46	61,7	45	30000	1650
600	600	92,4	30	80	-50	41	74	54	40000	1850
700	700	92,3	31	80	-50	48	86,4	63	40000	1910
800	800	92,1	32	80	-50	55	98,7	72	40000	1930
900	900	92,3	33	80	-50	50	111,1	81	50000	2190
1000	1000	91,9	34	80	-50	55	123,4	91	50000	2300
1500	1500	92,1	32	80	-50	42	185,1	140	100000	3900

***Power:** The stated values correspond to operation on methane (natural gas). When using diesel fuel or fuel oil, output may be adjusted (reduced) in accordance with calculation standards.

OVERALL DIMENSIONS

Model Lumo	H, mm	H2, mm	H3, mm	H4, mm	H5, mm	L, mm	B, mm	C, mm	d, mm
50	2150	1100	1050	1850	1400	1850	750	150	140
75	2150	1100	1050	1850	1400	1850	750	150	140
100	2350	1100	1250	1950	1450	2080	800	200	140
150	2350	1100	1250	1950	1490	2150	800	200	160
200	2350	1100	1250	1950	1570	2250	900	250	160
250	2350	1100	1250	1950	1600	2500	1200	250	160
300	2400	1100	1300	2000	1620	2500	1200	250	170
400	2450	1100	1350	2050	1680	2900	1250	300	170
500	2550	1100	1450	2150	1750	3300	1500	300	190
600	2650	1100	1550	2250	1790	3550	1500	350	190
700	2750	1100	1650	2350	1850	3650	1550	350	200
800	2900	1100	1800	2500	1880	4200	1550	400	250
900	3500	1100	2400	3100	1950	4350	1600	400	250
1000	3600	1100	2500	3200	1990	4350	1600	400	250
1500	4500	1100	3400	4000	2300	4950	2000	500	300

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Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



INSTALLATION PLANNING

Selection guidance

Installation envelope

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HEAT GENERATORS

PEOPLE.
HEAT.
A BRIGHTER
TOMORROW.

LUMO

Outdoor heat built for demanding conditions

The BOILTE LUMO is a high-performance heat generator designed for outdoor installation. It delivers reliable, efficient direct air heating for industrial and commercial applications, even in the most demanding environments.



- **Outdoor installation**
- **Direct air heating**
- **High air flow**
- **Durable enclosure**

GROWING
POSSIBILITIES
WITH HEAT

Production areas
COMFORTABLE
WORK ENVIRONMENTS

Construction sites
RELIABLE HEAT
ON DEMAND

Agriculture
HEALTHY ENVIRONMENTS
ALL YEAR ROUND

BOILTE

boilte.com

A CLEANER
WARMER
TOMORROW

ROCK



Parameter	Value
Capacity	≤ 1500 kW
Air pressure	≤ 750 Pa
Airflow	≤ 70000 m^3/h
Temperature	≤ 100 °C

| DESCRIPTION

Boilte Rock air-heating heat generators are a complete technology for recovering waste oil to produce low-cost, efficient heat. The equipment lets you use a waste product as free fuel for heating production areas. Savings can reach 80% compared with conventional energy sources. Thermal output: up to 1,500 kW. Air flow: up to 70,000 m3/h. Air pressure: up to 750 Pa. Efficiency: up to 92%. Fuels: waste oil, natural gas, diesel fuel, fuel oil, heating oil. Design service life: 15 years (on natural gas).

| OPERATING PRINCIPLE

The Rock heat generator uses a dual-combustion (gasification) principle. Waste oil is heated in a specially prepared vessel and converted into combustible vapors. The vapors are mixed with air in the optimum ratio and burned in an insulated AISI 310 heat-resistant-steel chamber. A clean high-temperature flame heats air in the heat exchanger, which is then delivered directly to the room by a powerful fan. The result is efficiency up to 92%, minimal soot and complete absence of odor and harmful emissions in the heated space.

| SCOPE OF SUPPLY

Main heat-generator module: unit body with heat-resistant-steel combustion chamber (lifetime warranty); burner with dual-gasification system (nozzle, fuel supply and preheating system); mixing and afterburning chamber.

Control and automation unit: industrial controller with digital display for setting and monitoring outlet-air temperature, operating modes and fault codes; control panel with start/stop button; safety-sensor set (flame monitoring, overtemperature protection, air-pressure monitoring); automatic ignition system.

Air and heat system: high-capacity centrifugal fan; primary-and secondary-air channels with adjustable dampers; heat-resistant air duct with flange for flue connection.

Electrical section: distribution box with terminal block for 380 V mains connection; protective switchgear (main circuit breaker, contactors); set of power and control cables.

Documentation and transportation: product passport, installation and commissioning manual; transport lifting lugs for safe loading, unloading and handling by crane or forklift.

For the heating enquiry, state the required output, air flow, operating schedule and installation conditions. Identify the air inlet, warm-air delivery and combustion-product routes. Confirm the fuel, control functions, connection boundaries and service access for the selected configuration.

| DESIGN FEATURES

AISI 310 heat-resistant-steel combustion chamber with wall thickness from 4 mm. In low-cost models, the chamber is made from ordinary structural steel and burns through quickly (within 1-2 seasons). Boilte Rock uses special heat-resistant steel.

Burner with dual-gasification system. A fully prepared and factory-adjusted unit for efficient waste-oil combustion, including nozzle and fuel supply/preheating system. The mixing and afterburning chamber ensures complete combustion of fuel vapors, minimizing emissions and increasing efficiency.

Preheating and multi-stage filtration system. Enables efficient operation even on waste oil with impurities and heavy contamination, which is critical under real operating conditions.

| DESIGN FEATURES (CONTINUED)

High-capacity centrifugal fan. Generates the airflow required for supply to the combustion chamber and withdrawal of heated air from the heat exchanger. Primary-and secondary-air channels are equipped with adjustable dampers for precise combustion tuning.

| APPLICATIONS

Vehicle service centers, repair shops and car washes - where waste oil is continuously generated and becomes free heating fuel.

- Production workshops and service areas - economical heating of large spaces.
- Warehouses and hangars - maintaining above-freezing temperature for product storage.
- Agricultural complexes - heating livestock buildings and greenhouses.

TECHNICAL DATA

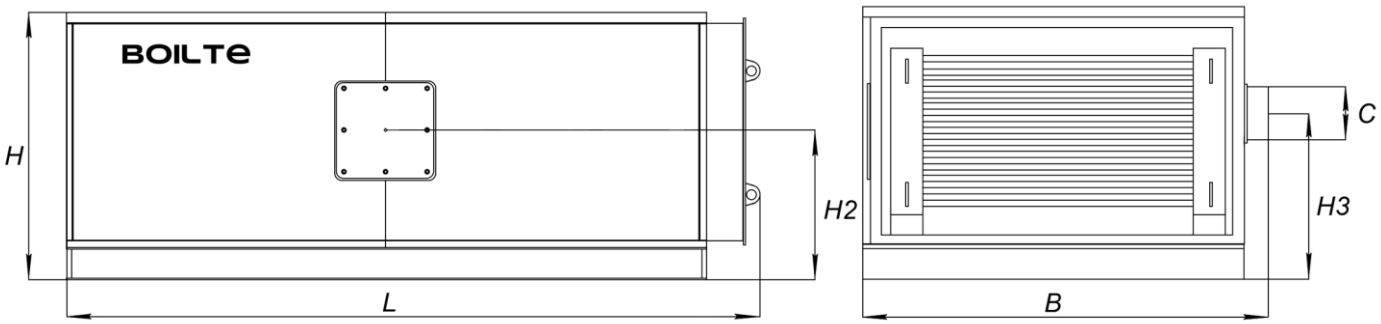
Model Rock	Power, kW	Efficiency, %	Flue-gas resistance, Pa	Max. heated-air temperature, °C	Min. inlet-air temperature, °C	Air temperature rise, °C	Gas consumption, m³/h	Diesel consumption, kg/h	Fan air flow, m³/h	Generator mass, kg
50	50	92,1	4	80	-50	40	6,1	4,5	3500	360
75	75	91,8	6	80	-50	40	9,2	7,84	5600	370
100	100	91,2	2	80	-50	42	12,3	9,2	6600	460
150	150	92,2	4	80	-50	63	18,5	13,8	6600	470
200	200	92,3	6	80	-50	33*	24,7	18,5	12500	480
250	250	91,5	8	80	-50	44	30,8	21	12500	700
300	300	92,2	16	80	-50	55	37	27	12500	850
400	400	92,5	22	80	-50	41	40,3	36	17600	1250
500	500	92,3	28	80	-50	46	61,7	45	30000	1550
600	600	92,4	30	80	-50	41	74	54	40000	1750
700	700	92,3	31	80	-50	48	86,4	63	40000	1790
800	800	92,1	32	80	-50	55	98,7	72	40000	1830
900	900	92,3	33	80	-50	50	111,1	81	50000	1990
1000	1000	91,9	34	80	-50	55	123,4	91	50000	2100
1500	1500	92,1	32	80	-50	42	185,1	140	100000	3500

**Power: The stated values correspond to operation on methane (natural gas). When using diesel fuel or fuel oil, output may be adjusted (reduced) in accordance with calculation standards.

OVERALL DIMENSIONS

Model Rock	H, mm	H2, mm	H3, mm	L, mm	L2, mm	B, mm	B2, mm	C, mm	d, mm
50	1100	550	850	2150	—	1100	—	150	140
75	1100	550	850	2150	—	1100	—	150	140
100	1200	600	900	2350	—	1280	—	200	140
150	1200	600	900	2350	—	1350	—	200	160
200	1200	600	900	2350	—	1450	—	250	160
250	1200	600	950	2400	—	1700	—	250	160
300	1200	600	950	2400	—	1700	—	250	170
400	1250	650	1000	2400	—	2100	—	300	170
500	1500	750	1200	2550	—	2500	—	300	190
600	1500	750	1200	2550	—	2650	—	350	190
700	1550	800	1250	2750	—	2900	—	350	200
800	1550	800	1250	2900	—	3200	—	400	250
900	1600	850	1300	3500	—	3500	—	400	250
1000	1600	850	1300	3500	—	3600	—	400	250
1500	2000	1000	1600	4500	—	4200	—	500	300

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.



INSTALLATION PLANNING

Selection guidance

Installation envelope

Use the selected model row together with the drawing. Check overall height, length and width against the delivery route, installation position and available access for service.

Connection schedule

Confirm connection sizes and locations for the ordered configuration. Coordinate supports and adjacent equipment with project drawings; overall dimensions alone do not define service clearances.

HEAT GENERATORS

PEOPLE.
HEAT.
A BRIGHTER
TOMORROW.

ROCK

Powerful heat from recovered energy

The BOILTE ROCK is a high-performance heat generator that converts waste oil into reliable, clean heat for industrial and commercial applications. Engineered for efficiency, durability and low operating costs, it delivers sustainable heat where it's needed most.

- **Waste-oil heat recovery**
- **High efficiency**
- **Robust industrial design**
- **Low operating cost**



GROWING
POSSIBILITIES
WITH HEAT

Workshops
RELIABLE HEAT
FOR DAILY OPERATIONS

Garages
COMFORTABLE
WORKING CONDITIONS

Industrial spaces
SUSTAINABLE HEAT
FOR DEMANDING USE

BOILTE

boilte.com

A CLEANER
WARMER
TOMORROW

KENO



Parameter	Value
Capacity	≤ 1500 kW
Air pressure	≤ 750 Pa
Airflow	≤ 70000 m^3/h
Temperature	≤ 100 °C

| DESCRIPTION

The Keno gas-fired air heater is a specialized climate-control system designed for commercial greenhouses. The equipment provides a guaranteed microclimate and maximum crop yield with minimum operating costs. Thermal output: up to 1,500 kW. Air flow: up to 70,000 m3/h. Air pressure: up to 750 Pa. Efficiency: up to 92%. Fuels: natural gas, diesel fuel, fuel oil, heating oil, waste oil. Design service life: 15 years (on natural gas).

| INTELLIGENT AUTOMATION

Weather-compensated automation. The controller receives data from an outdoor temperature sensor and independently determines the required output. When outdoor temperature drops, the system increases heating in advance, before indoor temperature falls. This eliminates heating-system lag and maintains a stable microclimate. Fuel savings reach 25%.

Cyclic fan purge. After the burner stops, the fan continues operating for another 2-3 minutes, recovering residual heat and preventing heat-exchanger overheating. Unit life increases, the risk of metal deformation due to local overheating is eliminated, and heat loss through the casing after shutdown is reduced.

| INTELLIGENT AUTOMATION (CONTINUED)

Freeze protection. If room temperature falls below the set threshold, the system starts automatically, preventing process media, products or equipment from freezing. The facility remains protected even in your absence - the automation prevents emergency cooling.

| SCOPE OF SUPPLY

Complete main unit: body with high-alloy-steel heat exchanger; fan unit with multi-speed motor protected against overheating; standard mounting points for wall or suspended installation.

Control and monitoring system: electronic thermostat with digital display and freeze protection; sensor set (air-temperature sensor); power cable (1.5 m with plug).

Gas burner system: burner with multi-stage flame modulation; standard gas valve with electric ignition system; gas-main connection kit.

Operating documentation: product passport in Russian; installation and operating manual; warranty certificate. Terminal block for connection to 380 V mains; protective switchgear (main circuit breaker, contactors); set of power and control cables.

| DESIGN FEATURES

High-alloy-steel heat exchanger. The heart of the air heater is resistant to corrosion and burn-through. Steel is 20% thicker than in comparable units, guaranteeing service life for dozens of seasons. This directly saves the cost of replacing the most expensive component.

Sealed closed-type combustion chamber (100% separation of air streams). Burner combustion air is taken from outdoors, while clean heated air circulates in a separate circuit. Combustion products cannot enter the heated space under any circumstances. Safety of personnel and equipment is assured.

Multi-stage modulating gas burner. Burner output is smoothly adjusted from 30% to 100% according to current heat demand. The result is gas savings up to 30% and stable temperature without fluctuations.

| DESIGN FEATURES (CONTINUED)

Fan unit with multi-speed motor protected against overheating. Provides efficient air circulation, preventing stagnant humid air and condensation in the room.

| APPLICATIONS

- Industrial facilities and production workshops
- Agriculture and agro-industrial complexes.
- Warehouse and logistics complexes
- Retail, entertainment and sports facilities
- Social-infrastructure facilities
- Oil and gas facilities
- Temporary and seasonal facilities

TECHNICAL DATA

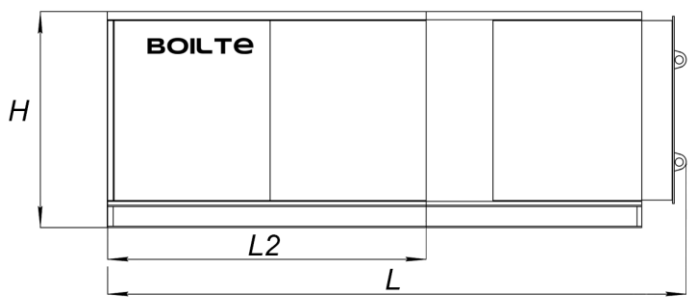
Model Keno	Power, kW	Efficiency, %	Flue-gas resistance, Pa	Max. heated-air temperature, °C	Min. inlet-air temperature, °C	Air temperature rise, °C	Gas consumption, m³/h	Diesel consumption, kg/h	Fan air flow, m³/h	Generator mass, kg
50	50	92,1	4	80	-50	40	6,1	4,5	3500	360
75	75	91,8	6	80	-50	40	9,2	7,84	5600	370
100	100	91,2	2	80	-50	42	12,3	9,2	6600	460
150	150	92,2	4	80	-50	63	18,5	13,8	6600	470
200	200	92,3	6	80	-50	33*	24,7	18,5	12500	480
250	250	91,5	8	80	-50	44	30,8	21	12500	700
300	300	92,2	16	80	-50	55	37	27	12500	850
400	400	92,5	22	80	-50	41	40,3	36	17600	1250
500	500	92,3	28	80	-50	46	61,7	45	30000	1550
600	600	92,4	30	80	-50	41	74	54	40000	1750
700	700	92,3	31	80	-50	48	86,4	63	40000	1790
800	800	92,1	32	80	-50	55	98,7	72	40000	1830
900	900	92,3	33	80	-50	50	111,1	81	50000	1990
1000	1000	91,9	34	80	-50	55	123,4	91	50000	2100
1500	1500	92,1	32	80	-50	42	185,1	140	100000	3500

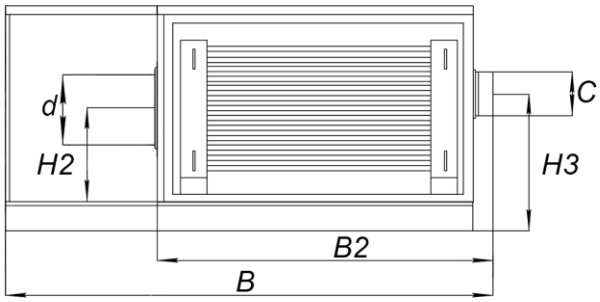
**Power: The stated values correspond to operation on methane (natural gas). When using diesel fuel or fuel oil, output may be adjusted (reduced) in accordance with calculation standards.

OVERALL DIMENSIONS

Model Keno	H, mm	H2, mm	H3, mm	L, mm	L2, mm	B, mm	B2, mm	C, mm	d, mm
50	1100	550	850	2150	1100	1800	1100	150	140
75	1100	550	850	2150	1100	1800	1100	150	140
100	1200	600	900	2350	1280	1900	1280	200	140
150	1200	600	900	2350	1350	2050	1350	200	160
200	1200	600	900	2350	1450	2150	1450	250	160
250	1200	600	950	2400	1700	2400	1700	250	160
300	1200	600	950	2400	1700	2400	1700	250	170
400	1250	650	1000	2400	2100	2800	2100	300	170
500	1500	750	1200	2550	2500	3200	2500	300	190
600	1500	750	1200	2550	2650	3350	2650	350	190
700	1550	800	1250	2750	2900	3600	2900	350	200
800	1550	800	1250	2900	3200	3900	3200	400	250
900	1600	850	1300	3500	3500	4200	3500	400	250
1000	1600	850	1300	3500	3600	4300	3600	400	250
1500	2000	1000	1600	4500	4200	4900	4200	500	300

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.





INSTALLATION PLANNING

Selection guidance

Installation envelope

Use the selected model row together with the drawing. Check overall height, length and width against the delivery route, installation position and available access for service.

Connection schedule

Confirm connection sizes and locations for the ordered configuration. Coordinate supports and adjacent equipment with project drawings; overall dimensions alone do not define service clearances.

BOILTE

CLIMATE
FOR A BRIGHTER
TOMORROW

GREENHOUSE
HEATING SOLUTIONS

KENO

Greenhouse Heat Generator

POWERING A HEALTHIER GROWING TOMORROW

PLANTS
PEOPLE
A BRIGHTER
TOMORROW

Optimized for greenhouses
Designed for stable and ideal growing conditions.

High efficiency
Maximum heat output with low energy consumption.

Reliable operation
Built for continuous, long-term performance.

Compact design
Powerful performance in a space-saving form.

Uniform heat distribution
Consistent climate throughout your greenhouse.



Efficient climate control
for greenhouse applications.

HEALTHY CROPS | SUSTAINABLE GROWTH | PROVEN TECHNOLOGY | A GREENER TOMORROW

MODUL



Parameter	Value
Capacity	≤ 300 kW
Air pressure	≤ 200 Pa
Airflow	≤ 17000 m^3/h
Temperature	≤ 100 °C

| DESCRIPTION

The Boilte Modul mobile heat generator is a complete direct-air-heating unit designed for rapid and efficient heating of production workshops, warehouses, construction sites and other facilities. Thermal output: up to 300 kW. Air flow: up to 17,000 m3/h. Air pressure: up to 200 Pa. Efficiency: above 92%. Fuels: natural gas, diesel fuel, fuel oil, heating oil, waste oil. Design service life: 15 years (on natural gas).

| SCOPE OF SUPPLY

1. Main thermal module: profile-steel body-frame with anti-corrosion coating, integrated lifting lugs and reinforced braked wheels; heat-resistant-steel combustion chamber (heat exchanger) with extended service life; burner with multi-stage ignition and output modulation; air/fan unit (centrifugal fan in vibration-isolated enclosure).

Control and safety unit: control panel with digital controller displaying outlet temperature, operating mode and fault code; safety-sensor set (flame monitoring, overtemperature thermostat, tip-over sensor, airflow switch); automatic shutdown system with restart lockout until the cause is eliminated.

| SCOPE OF SUPPLY (CONTINUED)

Flue-gas exhaust and combustion-air intake system: combustion-product exhaust kit (thermally insulated flexible pipes, clamps, adapter); combustion-air intake kit (unit with air filter and nozzles).

Operating documentation: product passport with serial number, technical data and connection diagram; operating manual with first-start procedure, maintenance schedule and fault-code table; copies of conformity certificates.

5. **Installation and first-start kit:** set of rigging slings; essential tools for flue assembly.

| DESIGN FEATURES

Mobile modular construction. A single profile-steel load-bearing platform/frame with anti-corrosion coating is designed for repeated transportation and operation on uneven surfaces. All systems (thermal, air and electrical) are integrated at the design stage, eliminating vibration, misalignment and the need for site modifications. The unit has integrated lifting lugs for rigging and braked wheels for safe movement.

Special heat exchanger (combustion chamber) made from heat-resistant steel. Channel geometry and material thickness are selected so that the condensation point of aggressive substances remains outside the operating zone, radically reducing corrosion rate. The heat exchanger operates not at its limit but in an optimum regime, forming the basis for extended overhaul life. Lifetime warranty provided.

Burner. Industrial burner with multi-stage ignition and smooth output modulation for efficient fuel use. Matched to the selected fuel type.

Air/fan unit. A belt-driven centrifugal fan generates the high static pressure required to overcome resistance in long air ducts. The belt drive and special blade geometry damp noise and vibration, providing low noise levels.

| APPLICATIONS

Industrial facilities and production workshops. Rapid warm-up and temperature maintenance in workshops.

Construction industry. Drying screeds, plaster, concrete floors and finishing materials. Heating construction sites in winter.

Warehouse and logistics complexes. Heating large warehouses, hangars and logistics centers. Maintaining above-freezing temperature for storage of cold-sensitive products.

Emergency and temporary heating. Backup heating during repair of the main system. Heating new facilities before permanent systems are commissioned. Drying premises after flooding.

Oil and gas sector. Heating gas-treatment units, oil gathering stations, pumping stations and operator rooms. Operable at temperatures down to -50 C.

TECHNICAL DATA

Model ~~Modul~~	Power, kW	Efficiency, % 92,1	Flue-gas resistance, Pa	Max. heated-air temperature, °C	Min. inlet-air temperature, °C	Air temperature rise, °C	Gas consumption, m³/h	Diesel consumption, kg/h	Fan air flow, m³/h	Generator mass, kg
50	50	91,8	4	80	-50	40	6,1	4,5	3500	360
75	75	91,2	6	80	-50	40	9,2	7,84	5600	370
100	100	92,2	2	80	-50	42	12,3	9,2	6600	460
150	150	92,3	4	80	-50	63	18,5	13,8	6600	470
200	200	91,5	6	80	-50	33*	24,7	18,5	12500	480
250	250	92,2	8	80	-50	44	30,8	21	12500	700
300	300	92,5	16	80	-50	55	37	27	12500	850

****Power:** The stated values correspond to operation on methane (natural gas). When using diesel fuel or fuel oil, output may be adjusted (reduced) in accordance with calculation standards.

TECHNICAL SELECTION NOTES

Selection guidance

Model selection

Use the project operating point - capacity, pressure and temperature - and verify it against the selected model row. Do not substitute data from a neighbouring model size.

Project data

Confirm fuel, utilities, control requirements and installation conditions with the enquiry. Final equipment scope and interfaces are defined by the approved technical documentation.

OVERALL DIMENSIONS

Model Modul	H, mm	H2, mm	H3, mm	L, mm	L2, mm	B, mm	B2, mm	C, mm	d, mm
50	1100	550	850	2150	2150	1800	1100	150	140
75	1100	550	850	2150	2150	1800	1100	150	140
100	1200	600	900	2350	2350	1900	1280	200	140
150	1200	600	900	2350	2350	2050	1350	200	160
200	1200	600	900	2350	2350	2150	1450	250	160
250	1200	600	950	2400	2400	2400	1700	250	160
300	1200	600	950	2400	2400	2400	1700	250	170

We reserve the right to modify the dimensions and design of Boilte boilers without prior notice.
Permissible overall-dimension tolerance: 0.1-0.2% for Boilte equipment.

| HEAT GENERATOR OPERATING PRINCIPLE

The Modul mobile heat generator uses direct air heating with separation of combustion air and room-heating air streams. This is the key difference from improvised direct-fired heaters, where combustion products may enter the room. In Modul, the streams are completely separated and never mix.

- **Combustion-air intake.** The burner fan draws outdoor air through a separate sealed duct. This air is used solely to support fuel combustion and never contacts the air being heated for the room.
- **Fuel supply and ignition.** The fuel pump delivers fuel from the integrated tank through coarse and fine filters to the burner. The automatic ignition system ignites the fuel-air mixture in the combustion chamber.
- **Combustion in the chamber.** The burner burns fuel inside the heat-resistant-steel combustion chamber (heat exchanger). The flame heats the chamber walls to a high temperature. Chamber geometry provides uniform heat distribution and prevents local overheating. Combustion products are discharged outdoors through the flue.
- **Room-air heating.** A powerful centrifugal fan draws air from the room and passes it around the outside of the combustion chamber. The air flows over the heated heat-exchanger walls, instantly absorbing thermal energy, and exits the opposite side hot. Combustion air and heating air move in separate, completely isolated circuits and never mix. Only clean heated air enters the room, free from combustion products, carbon monoxide, soot and fuel odor.
- **Hot-air delivery to the room.** Heated air is supplied directly into the room through the outlet connection. High fan capacity and the option to connect air ducts distribute hot air evenly throughout the volume, providing rapid warm-up.
- **Automatic temperature maintenance.** The digital controller continuously receives data from the outlet-air temperature sensor. When the set temperature is reached, the system automatically reduces burner output or switches it to standby. When temperature falls, heating resumes. This maintains a stable microclimate without overheating and saves fuel.

| HEAT GENERATOR SAFETY SYSTEM

During operation, the control system continuously monitors several critical parameters. Sensors monitor flame presence - if the flame fails, fuel supply stops immediately. The overtemperature safety thermostat monitors heat-exchanger temperature and shuts down the burner if the permissible temperature is exceeded. A pressure switch monitors airflow from the fan - if airflow is absent, the burner is locked out. A tip-over sensor immediately shuts off fuel if the unit position changes. The controller also monitors outlet-air temperature and adjusts burner output. If any safety sensor trips, the unit enters emergency shutdown with restart lockout until the cause is eliminated.

| OPERATING MODES

- **Full-output mode.** Used for rapid warm-up of a cold room. The burner operates at 100% output and the fan at maximum capacity.
- **Modulating mode.** Burner output is smoothly adjusted from 30% to 100% according to heat demand, providing stable temperature and saving fuel.
- **Ventilation mode (no heating).** With the burner off, the fan continues operating to circulate air in the room. Useful during transitional seasons.
- **Freeze-protection mode.** If room temperature falls below a set threshold (for example +5 C), the system starts automatically to prevent freezing of water piping, equipment or products. It operates without operator attendance.

GUST



Parameter	Value
Capacity	≤ 2000 kW
Air pressure	≤ 1500 Pa
Airflow	≤ 32000 m^3/h
Temperature	≤ 100 °C

| DESCRIPTION

The Boilte Gust containerized air heater is a completely autonomous, safe and ready-to-operate heat-generation station in a protective enclosure based on a standard 20-foot shipping container. The equipment is designed to heat drilling rigs, worker camps, mobile control stations and other facilities in remote and hard-to-access regions. Thermal output: up to 2,000 kW. Air flow: up to 32,000 m3/h. Air pressure: up to 1,500 Pa. Efficiency: above 90%. Fuels: natural gas, diesel fuel, fuel oil, crude oil, heating oil, waste oil. Design service life: 15 years (on natural gas).

| SCOPE OF SUPPLY

Protected heat-generation module: reinforced frame based on a 20-foot shipping container with corner castings for handling and stacking; double layer of non-combustible basalt-wool thermal insulation; galvanized-steel inner lining and weather-resistant polymer-coated steel outer skin resistant to corrosion and mechanical damage; sealed service door openings with gaskets; ventilation grilles for air circulation in the technical compartment.

| SCOPE OF SUPPLY (CONTINUED)

Combustion chamber and heat-exchange block: cylindrical combustion chamber made from heat-resistant AISI 316 stainless steel; flanged connections for tightness and service access.

Air preparation and distribution system: variable-speed high-pressure centrifugal fan; air-intake connection with insect screen; galvanized-steel guide ducts; outlet flange for connection to the main air duct.

Fuel and burner system: liquid-fuel burner; explosion-proof fuel module (fine filter, pump, solenoid valves, regulator, pressure gauges); standard fuel piping for diesel operation.

Electrical control and monitoring cabinet: programmable-logic-controller-based control cabinet; sensor set (outlet temperature, combustion-chamber temperature, air pressure, flame monitoring); power section with circuit breakers, contactors and motor-protection devices; frost-resistant silicone-insulated wiring rated to -60 C.

Safety system: dual flame-monitoring system; maximum-temperature thermostat with emergency shutdown; fan-motor and fuel-pump protection relays; low-air-pressure interlock; visual and audible alarm on the control panel.

| DESIGN FEATURES

Protective all-weather container. The unit is installed in a reinforced insulated metal enclosure based on a standard 20-foot shipping container with corner castings. Double layer of non-combustible basalt-wool insulation. Galvanized-steel inner lining; weather-resistant polymer-coated steel outer skin. The design protects against weather and makes transportation, stacking and handling as simple as possible by any mode of transport.

Special stainless-steel heat exchanger. Cylindrical combustion chamber with flat ends, made from heat-resistant steel. The design has a double strength margin and withstands critical thermal loads that may occur during emergency fan shutdowns or voltage surges. The risk of deformation or burn-through - the main cause of conventional air-heater failure in field conditions - is completely eliminated.

Direct air-heating technology. Cold air is drawn from outdoors or the served space, heated by the flame of a high-efficiency burner in the combustion chamber, then passes through the heat exchanger and transfers heat to clean air supplied to the heated zones. All fuel energy is converted into useful heat without unnecessary intermediate stages.

Full operability in Arctic climates down to -60 C. All critical elements, from silicone-insulated power wiring to sealing materials, are selected to retain elasticity and functionality at extremely low temperatures. The start and ignition system is guaranteed to operate even in Siberian winter conditions.

Fan section based on low-noise centrifugal fans. Drive: belt transmission that damps loads and allows easy speed changes. Overtemperature thermostats are integrated and automatically shut down the burner if air temperature becomes excessive.

| QUALITY CONTROL

Every Gust air heater undergoes multi-stage quality control. Design and component-selection control - only certified components from proven manufacturers are used. Assembly and painting control - welds, electrical connections and installation tightness undergo visual and instrumental inspection. The enclosure receives anti-corrosion treatment and coating resistant to aggressive environments. Load testing - every assembled Gust is run on a test stand for several hours at rated output, with all operating modes checked, sensors calibrated and safety systems tested. The unit is delivered to the customer already run-in and ready for operation.

| APPLICATIONS

Oil and gas industry and drilling rigs. Heating drilling sites, worker camps, mobile control stations, gas-treatment units, oil gathering stations, pumping stations and operator rooms. Operable down to -60 C and capable of operating on associated gas.

Industrial enterprises and production workshops. Heating facilities in mechanical engineering, metalworking, woodworking, light industry and food production. Containerized design allows outdoor placement without construction of a boiler house.

Construction industry. Drying construction sites in winter. Heating site cabins and temporary structures.

Warehouse and logistics complexes. Heating large warehouses, hangars and logistics centers. Maintaining above-freezing temperature for product storage.

Agriculture. Heating livestock farms, poultry houses, greenhouses, grain stores and vegetable stores.

Emergency and standby heating. Backup heating during repair of the main system. Heating new facilities before permanent systems are commissioned.

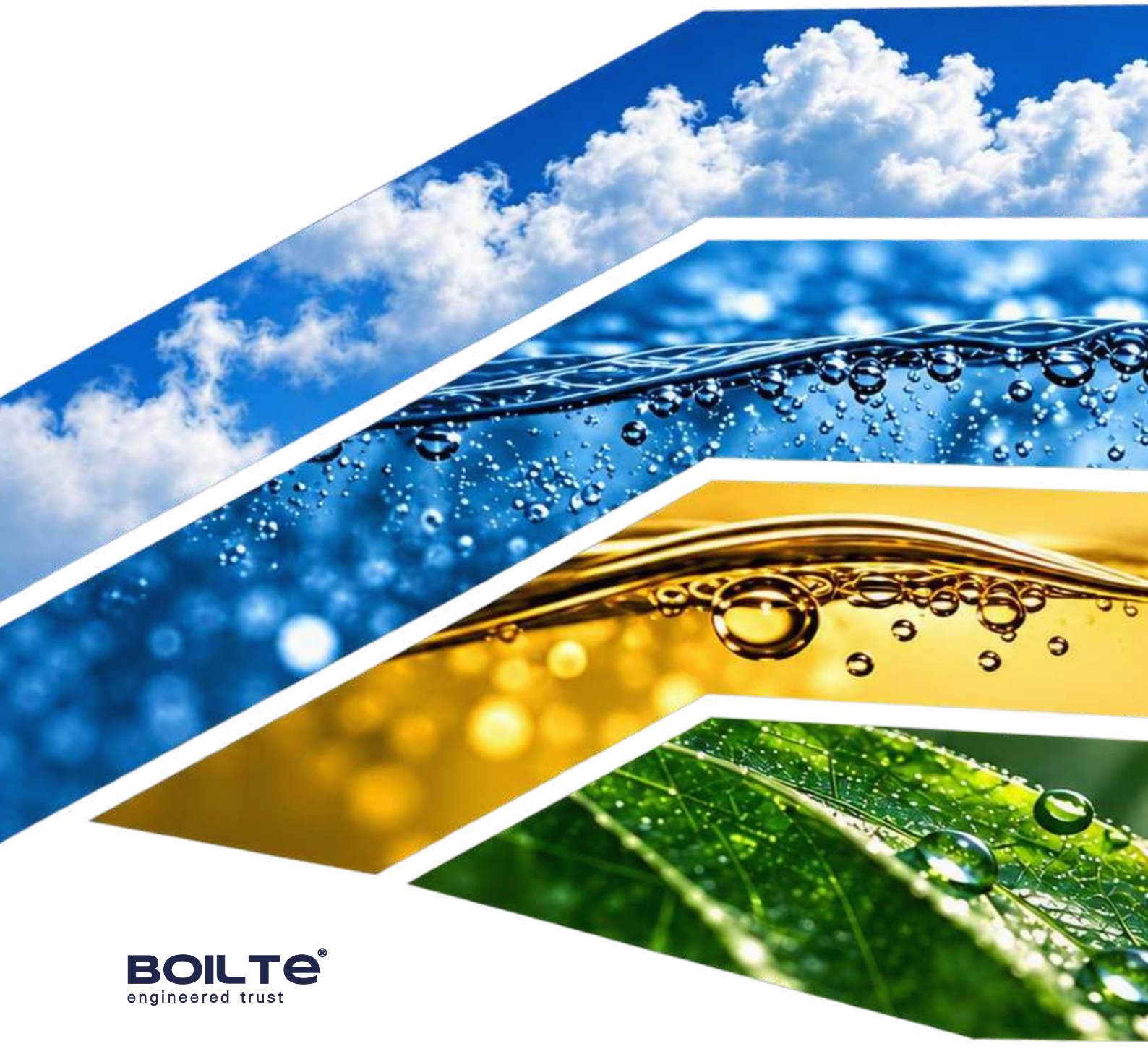
PROJECT CHECKPOINT Selection guidance

Selection data

Coordination

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ENERGY FOR A BETTER
TOMORROW

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