



BOILTE QUANTUM

**POWER AND RELIABILITY FOR
HIGH-TEMPERATURE PROCESSES**

POWER: 1000–20000 kW
TEMPERATURE: up to 190°C
PRESSURE: 15 bar



Professional equipment for the most demanding tasks

When both power and stable delivery of high-temperature heat transfer fluid under pressure are critical, standard solutions are not sufficient. Three-pass high-temperature boilers Quantum are professional equipment created for the most demanding tasks. The series provides water heating up to 190°C at operating pressures up to 15 bar and power outputs from 1000 to 20,000 kW. This is the ideal solution for uninterrupted supply of superheated water to process units and for heating large industrial complexes.

The key advantage: Stable delivery of high-temperature heat transfer fluid under pressure. The Quantum boiler is not just heat – it is guaranteed stability for your process operations.

The core feature of Quantum: an engineering philosophy that creates value through superiority in details. The boiler's efficiency is embedded in its architecture. The three-pass flue gas flow path is a carefully designed route where thermal energy is sequentially extracted in three independent circuits, allowing efficiency approaching the theoretical maximum.

Fuel flexibility and environmental performance: The design ensures minimum harmful emissions (NO_x, CO), meeting the strictest environmental standards.

Key advantages (6 reasons to choose Quantum)

1. High heat transfer fluid parameters – water heating up to 190°C at pressures up to 15 bar (up to 18 bar in specialised modifications). Unique characteristics for the most demanding process applications.
2. High-temperature steel of special grades – use of materials designed for prolonged operation at high temperatures and pressures.
3. Cylindrical shape of the drum and tube sheets – uniform distribution of thermal and mechanical loads. Enhanced fatigue strength.
4. 100% weld inspection – automated welding under digital system control. Radiographic and ultrasonic testing of every critical joint. Protocols included with the supply.
5. Fast start-up – design features ensure rapid attainment of operating temperature and pressure. Minimised downtime during start-up.
6. Ease of maintenance – design provides simple access to key components. Reduced time and cost of scheduled maintenance.

Engineering philosophy: superiority in details

- Efficiency embedded in the architecture. The three-pass flue gas flow path is a carefully designed route where thermal energy is sequentially extracted in three independent circuits. This allows efficiency approaching the theoretical maximum, ensuring significant energy cost savings.
- Reliability as a result of calculation. The cylindrical shape of the drum and tube sheets, combined with the use of special-grade boiler steel, ensures uniform distribution of thermal and mechanical loads.
- Structural durability. Use of high-quality materials, automated welding, and 100% inspection of critical joints guarantee a service life measured in decades. This is an investment protected against premature wear.

Advanced thermal stress management for high-temperature duty

Quantum's cylindrical drum design and specially selected high-temperature steel grades are specifically engineered to manage the severe thermal gradients encountered during rapid start-up and load changes. The uniform expansion characteristics of the materials minimise differential thermal stresses, reducing the risk of fatigue cracking in tube-to-tube sheet joints – a common failure mode in conventional high-temperature water boilers.

Optimised for demanding process control

The Quantum's three-pass design and large water volume provide exceptional thermal stability, making it ideal for processes requiring precise temperature control. The boiler's thermal inertia dampens fluctuations in heat demand, ensuring that downstream equipment receives a consistent temperature input even during upstream variations. This is particularly valuable in chemical synthesis, pharmaceutical production, and food processing where temperature deviations can affect product quality.

Fields of application

- Oil refining (refineries). Process applications requiring high-parameter superheated water.
- Chemical industry. Reactor heating, autoclaves, distillation columns. Support for exothermic and endothermic reactions.
- Food industry. Sterilisation, pasteurisation, cooking, drying, evaporation.
- Pharmaceutical industry. Equipment and product sterilisation. Precise temperature control for sensitive processes.
- Power generation. Support for heating networks, heat transfer fluid supply to industrial facilities, peak-load boilers at CHP plants.
- Pulp and paper industry. Pulp digestion, paper drying.

Technical specifications

Model, Quantum	Power, kW**	Efficiency, %	Boiler resistance, mbar	Water volume, L	Flue gas flow, m ³ /h	Gas consumption, m ³ /h	H, mm	B, mm	L, mm	Dry weight, kg
1000	1000	93,4	5,4	2030	0,46	102	1842	1550	3091	3204
1500	1500	93,1	5,1	2980	0,66	161	1842	1550	3491	3605
2000	2000	93,1	4	2980	0,87	218	2126	1800	3829	4860
2200	2200	92,9	5,1	3160	0,96	239	2126	1800	3929	5060
2500	2500	93,6	7	3380	1,09	271	2126	1800	4229	6350
3000	3000	94,0	6,4	4410	1,31	327	2346	2000	4529	6720
3200	3200	94,4	7,6	4740	1,4	352	2346	2000	4729	7030
3500	3500	94,8	9,8	5590	1,42	382	2346	2000	4929	7220
4000	4000	94,4	7,6	6280	1,81	438	2610	2230	5128	8870
4500	4500	94,1	10	6680	2,03	491	2610	2230	5130	9845
5000	5000	92,2	5	6850	2,13	549	2690	2300	5088	10515
5500	5500	93,2	9,5	7250	2,32	606	2690	2300	5328	10847
6000	6000	92,8	7,7	7990	2,58	658	2690	2300	5528	12515
6500	6500	92,4	4,8	8250	2,83	711	3073	2640	5580	13573
7000	7000	92,5	5,8	8470	3,01	771	3073	2640	5790	13580
7500	7500	92,4	7,9	8990	3,23	822	3073	2640	5990	14302
8000	8000	92,4	7,4	9870	3,41	879	3140	2780	6067	16443
8500	8500	92,9	8,1	10850	3,72	933	3140	2780	6160	17302
9000	9000	92,5	9,8	11840	4,04	987	3200	2780	6460	18031
10000	10000	94,4	12,1	12880	4,25	1112	3200	2780	6867	20357
11000	11000	93,7	8,4	14120	4,99	1208	3565	3060	6770	20843
12000	12000	93,8	10,3	16730	5,27	1321	3565	3060	6970	21028
13000	13000	93,9	12,5	17940	5,73	1433	3565	3060	7170	21989
14000	14000	93,8	10,8	18570	6,05	1544	3600	3100	7760	22889
15000	15000	93,9	12,8	20890	6,52	1648	3600	3100	7960	26751
16500	16500	95,1	16,1	21630	7,19	1811	3600	3100	8265	28051
18000	18000	93,8	15,6	24790	7,59	1982	3850	3320	8570	29398
20000	20000	94,5	14,8	25930	8,47	2211	3850	3320	8670	31227

****Power:** The values shown correspond to operation on methane (natural gas). When using diesel fuel or heavy fuel oil (mazut), a power adjustment (reduction) may be required in accordance with design standards and fuel-specific calculations.

Boilte reserves the right to modify dimensions and design without prior notice.

Dimensional tolerance: $\pm 0.1-0.2\%$ for all Boilte equipment.

BOILTE[®]
engineered trust

