



BOILTe PULSE

**STEAM AS AN INGREDIENT: PURITY,
SPEED, SAFETY**

CAPACITY: 120–8000 kg/h
STEAM TEMPERATURE: up to 194°C
OPERATING PRESSURE: 12 bar



Why does every degree matter for food and pharmaceutical production?

In industries where steam directly contacts the product or is part of a sterile process, its quality, stability, and purity become critical factors. Water in a fire-tube boiler stagnates – salts accumulate, and the risk of bacterial contamination rises.

Pulse solves this problem at the design level: water passes through the coil once, turning into steam in a single pass. No stagnation. No secondary contamination.

Pulse's key advantage: clean, dry steam in 3–5 minutes from a cold start. Water volume is 8–10 times less than that of a fire-tube equivalent.

Core feature: vertical coiled heat exchanger made of high-alloy stainless steel. Water under pressure flows through a spiral tube, heats up, and converts to high-quality dry steam in a single pass.

Key Advantages (6 reasons to choose Pulse)

1. Steam in 3–5 minutes – no thermal inertia. Turn it on – get steam. In cyclic operation, fuel savings reach up to 25% compared to a continuously running fire-tube boiler.
2. Steam purity without contamination risk – water doesn't stagnate, doesn't accumulate salts or bacteria. Steam is consistently dry and free of impurities. Ideal for food and pharmaceutical industries.
3. Minimal water volume – 8–10 times less than fire-tube equivalents. Safety risks are significantly lower. Hazard classification is reduced.
4. High-alloy stainless steel coil – corrosion-resistant, withstands cyclic thermal loads. Design life exceeds traditional tube systems.
5. 92–95% efficiency across the entire load range – fully modulating burner. Even at 20% load, efficiency doesn't drop. Fuel savings under variable load.
6. Lifetime warranty on the coil heat exchanger – we are so confident in our materials and welding quality that we guarantee the core component without time limits.

Quality Control: From Tube to Test Run

A boiler operating with clean media and high temperatures requires special quality control.

1. Incoming tube inspection. Every coil tube comes with a certificate verifying chemical composition and mechanical properties. For food and pharmaceutical applications, material purity control is mandatory.
2. Coil bending inspection. Bend radius is at least three tube diameters. A smaller radius risks wall cracks. Every bend is checked.
3. Automatic welding in argon atmosphere. The coil is welded from tubes and sections using robotic systems. Every weld is inspected by dye penetrant testing.
4. 100% radiographic inspection of welded joints. Every weld is X-rayed. The inspection report is attached to the boiler passport.
5. Hydraulic pressure tests. The coil is tested at 1.5 times working pressure. Holds for 10 minutes – no micro-cracks.
6. Thermal cycling tests on the test bench. The completed boiler is started on the test bench, simulating 10–20 heating and cooling cycles. Tightness and control system performance are verified under dynamic conditions.

Applications: Industries and Processes

- Food industry. Sterilization, pasteurization, cooking. Steam comes into direct contact with the product – Pulse guarantees purity and freedom from contamination.
- Pharmaceutical production. Sterile processes. Steam free from impurities and bacteria. Rapid start-up of sterile cycles on demand.
- Chemical industry. Synthesis under pressure. Precise parameter control without overshoot.
- Microelectronics. Clean steam generation for critical processes. No impurities or salts.
- Industrial laundries. Clean steam for ironing equipment. Fast start-up with frequent on/off cycles.

Design: What's Inside and Why It Works

Vertical coiled heat exchanger. Water passes through the coil once, heating gradually without recirculation or mixing.

- "Tube-in-tube" principle. Water under pressure flows through a long, compactly coiled tube. Flame and hot gases surround the coil from all sides, providing maximum heat transfer intensity.
- Instant steam generation. Water turns into steam during its passage through the coil – steam in 3–5 minutes.
- High-alloy stainless steel coil. Multi-pass spiral designed for high temperatures. Wall thickness and material are selected for frequent start-stop operation.
- Minimal water volume. Instead of 1000 liters, only 100–150 liters under pressure. In case of failure, water release is minimal. The energy potential of a hazardous situation is significantly lower.

Gas flow path:

1. First pass – combustion chamber, flame heats the inner coil turns
2. Second pass – gases go around the chamber and flow along the outer coil
3. Third pass – residual heat recovery

Technical specifications

Model, Pulse	Power, kW**	Efficiency, %	Boiler resistance, mbar	Water volume, L	Furnace volume, m ³	Flue gas flow, m ³ /h	H, mm	B, mm	L, mm	Dry weight, kg
120	84	90,1	1,9	20	0,1	110,4	1665	1380	1575	750
200	140	90,2	1,9	30	0,11	183,6	1665	1380	1575	750
300	209	89,2	2,9	30	0,11	274,8	1665	1380	1575	750
400	279	88,4	3,4	40	0,14	304,8	1700	1380	1675	850
500	349	90,1	3,4	40	0,14	453,6	1700	1380	1675	850
600	419	89,5	3,9	80	0,26	554,4	2280	1380	1675	1250
800	558	90,3	3,9	80	0,29	697,2	2280	1380	1675	1250
1000	698	90,4	6,8	120	0,32	920,4	2280	1380	1440	1270
1200	837	90,3	8,8	120	0,32	1104,7	2280	1380	1440	1380
1500	1047	90,1	8,8	190	0,67	1380,4	3290	1600	1900	1550
1800	1256	90,3	8,9	250	0,82	1657,2	3350	1600	2030	2170
2000	1396	90,5	8,9	310	0,82	1836,1	3375	1600	2030	2220
2500	1745	90,1	9,1	390	1,42	2292,2	3680	1600	2115	2890
3000	2093	90,3	9,2	450	1,42	2762,7	4120	1685	2115	2970
3500	2345	90,1	9,2	490	2,21	3084,7	4220	1685	2115	3550
4000	2791	90,3	9,8	570	2,21	3684,5	4350	1870	2080	4090
4500	3021	90,1	9,8	690	4,15	3984,4	4550	1870	2080	5020
5000	3489	90,3	10,7	900	4,15	4595,5	4750	2400	2650	6680
6000	4187	90,5	11,2	1100	5,24	5520,9	5150	2610	2650	7120
7000	4885	90,1	11,8	1250	6,51	6444,1	5400	2610	2650	7890
8000	5582	90,3	12,2	1470	7,78	7368,2	5700	2810	2980	9350

****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: ±0.1–0.2% for all Boilte equipment.

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engineered trust

