



BOILTE TRIPASS

SUPER-HIGH PARAMETER GENERATION FOR LARGE-SCALE PRODUCTION

CAPACITY: 1000–16000 kg/h
STEAM TEMPERATURE: up to 202°C,
PRESSURE: 15 bar



Boilte Tripass

FUEL: GAS / DIESEL / HEAVY FUEL OIL / HEATING OIL / WASTE OIL

Super-high parameter generation for large-scale production

When your production scale is measured in tonnes of steam per hour, and process technologies require stable high pressure, what matters is not just power, but the equipment's ability to withstand extreme loads for decades. Industrial steam boilers Boilte Tripass are the engineering answer to the challenges of heavy industry. Designed for uninterrupted operation at rates from 1 to 16 tonnes of steam per hour and pressures up to 15 bar (with the option of up to 25 bar), these units become the energy heart of metallurgical, petrochemical, and large processing plants.

The key advantage: Three-pass architecture – the physics of reliability in action. Three consecutive passes of flue gases (combustion chamber + two convective bundles) ensure maximum heat extraction and parameter stability.

The core feature of Tripass: an unprecedentedly wide steam output range from 1.0 to 16.0 tonnes of steam per hour. This gradation reflects deep modularity of design, allowing the unit to be selected with precision for your actual plant load.

Fuel flexibility: Operation on gas (natural, LPG) and liquid fuels (diesel, heavy fuel oil, light fuel oil, waste oil). Flexibility in energy carrier selection.

Key advantages (6 reasons to choose Tripass)

1. Three-pass design – combustion chamber (first pass) + two convective bundles (second and third passes). Maximum heat extraction.
2. Combustion chamber at the bottom – optimal arrangement for high steam outputs.
3. Gas-tight pressurised shell – eliminates cold air infiltration, stable aerodynamics, reduced NOx emissions.
4. Seamless fire tubes – no weak points.
5. Double expansion bellows – thermal expansion compensation, structural integrity under cyclic loads.
6. Heat-resistant steel for the combustion chamber and tube sheets – resistance to deformation and burn-through.

Three principles: Safety, Reliability, Durability – each with its own mechanism

- Safety through redundancy. Water level is monitored by three independent devices: visual gauge (operator's eyes), electrode sensor (automation), and a separate level relay (emergency protection). Failure of any one does not lead to catastrophe.
- Reliability through process physics. Combustion chamber at the bottom, steam collected at the top of the drum. Natural water circulation does not require powerful pumps. Even during power failure, water continues to move due to density differences – this is passive safety built into the design.
- Durability through maintainability. Removable gas collector, doors opening to either side, direct access to each tube bundle. Scheduled cleaning time – 8 hours instead of 2–3 days on boilers with welded-on covers. Simpler maintenance means it gets done properly, more often – and the boiler lasts longer.

Optimised for cyclic and batch processes

Tripass is engineered to handle the severe thermal cycling typical of batch and seasonal operations. The large water volume and robust natural circulation circuit absorb transient load swings without thermal shock to the pressure parts. This makes the boiler particularly suitable for autoclave operations, sterilisation cycles, and seasonal production peaks where load can vary from 20% to 100% within hours.

Reduced thermal stress through bottom-fired design

The bottom-fired combustion chamber configuration positions the hottest zone at the lowest point of the boiler, allowing the natural circulation of water to carry heat upward uniformly. This design minimises localised overheating of tube sheets and reduces the risk of fatigue cracking – a common failure mode in horizontally fired boilers of similar capacity.

Fields of application

- Oil refining. Steam ejectors for vacuum columns. Requires 15–25 bar pressure and 24/7 stability. Parameter drop stops the separation process.
- Pulp and paper mills. Digester cooking in continuous digesters. Steam consumption reaches 16 tonnes per hour per production line. Pressure drop means batch rejection.

- Aerated concrete production. Autoclaving at 12 bar and 190°C. Cycle lasts 8–12 hours with a strict temperature profile: ramp-up, hold, ramp-down. The boiler must deliver peak loads without failure.
- Industrial CHP plants. Steam extraction for steam turbines and process needs. Equipment must operate in two modes simultaneously.
- Feed mills. Pelletising with steam conditioning. During peak season (autumn–winter), demand is 5–10 tonnes of steam per hour. In summer, load drops significantly – Tripass operates stably at any load percentage.
- Fish and meat processing. Sterilisation of canned products in autoclaves. Steam consumption is cyclic – loading, heating, holding, unloading. The boiler must restore pressure quickly after each peak.
- Sugar refineries. Juice evaporation in multiple-effect evaporators. Requires dry saturated steam without superheat. Superheat destroys the thin tubes of the evaporator apparatus.
- Metallurgy. Humidification of blast furnace gases and steam curtains at furnaces. Steam is needed continuously but in small volumes. Tripass does not overheat during prolonged operation at low load.

Technical specifications

Model, Tripass	Power, kW**	Efficiency, %	Boiler resistance, mbar	Water volume, L	Steam space volume, L	Flue gas flow, m ³ /h	H, mm	B, mm	L, mm	Dry weight, kg
1000	700	90,8	3,7	2530	1260	992	2178	2000	3537	4900
1250	875	90,8	3,6	2930	1460	1234	2178	2000	3781	5200
1500	1050	90,1	5,7	3060	1530	1488	2178	2000	3931	5400
1750	1200	90,8	4,5	3400	1700	1730	2178	2000	4229	5800
2000	1400	90,1	6,3	3530	1760	1984	2178	2000	4327	6000
2500	1750	90,5	4,2	3740	1830	2532	2306	2138	4446	7700
3000	2100	90,8	6,6	4030	2010	3038	2306	2138	4633	8000
3500	2450	90,7	9,5	4330	2160	3534	2306	2138	4929	8600
4000	2800	90,8	8,5	5280	2640	3968	2466	2317	4993	10300
4500	3150	90,1	8,5	5530	2760	4468	2466	2317	5131	10600
5000	3500	90,8	6,4	5760	2880	4967	2466	2317	5291	10900
5500	3800	90,1	8,1	6200	3100	5423	2466	2317	5611	11600
6000	4200	90,3	5,8	6670	3330	5880	2466	2317	5916	12200
7000	4900	90,3	8,4	8400	4200	6850	2796	2600	6546	18100
8000	5600	90,8	11,8	8860	4430	7816	2796	2600	6831	20000
9000	6300	90,8	10,2	8400	4280	8796	2796	2600	6831	20700
10000	7000	90,3	13,3	8800	4400	9752	2796	2600	7129	21800
12000	8400	90,4	13,3	11800	5900	11664	3296	3110	7533	27200
14000	9800	90,9	13,7	12870	6430	13690	3296	3110	7726	28600
15000	10500	90,9	18,9	13270	6640	15635	3296	3110	7901	29100
16000	11200	90,7	18,9	13750	6870	15640	3296	3110	8246	29900

****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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