



BOILTE MAGMA

**PRECISE HEAT FOR THE MOST DEMANDING
PROCESSES**

POWER: 150 – 10000 kW
TEMPERATURE: up to 300°C,
PRESSURE: 10 bar



Boilte Magma

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

Why does heating above 200°C become a problem for steam?

When your process requires temperatures of 250°C, 300°C, or higher for drying, melting, vulcanisation, or chemical synthesis, steam hits a physical limit. To achieve 300°C with steam, you need 85 bar pressure – this imposes extreme demands on equipment, valves, and operator qualifications. Risks increase, and efficiency drops due to blowdown and condensate losses.

The key advantage of Magma: heating to 300°C at a system pressure of just 6–10 bar. This is 8–14 times safer than a steam system at the same temperature.

The core feature: a coil heat exchanger made of seamless heat-resistant tubes with forced oil circulation. The oil does not boil, does not change phase – it simply heats up and transfers heat.

Key advantages (6 reasons to choose Magma)

1. 300°C at 10 bar – steam would require 85 bar. You get high temperature without severe equipment duty.
2. No water treatment – thermal oil does not form scale, requires no softening, deaeration, or chemical cleaning. The closed circuit is filled once for years.
3. No phase change – water expands 1600 times when turning into steam. Oil remains liquid. No water hammer, steam hammer, or uneven heating.
4. Coil replacement in the field – in the event of failure, you replace only the heat exchanger, not the entire boiler. This is 3–5 times faster and cheaper than full replacement.
5. Small oil volume in the system – coil instead of a drum. In an accident, oil release is minimal. The energy potential of a hazardous situation is drastically lower.
6. No separate boiler house required – compact weight and dimensions allow Magma to be installed directly in the workshop, in a prepared area. Savings on construction.

Quality control: from steel to run-in

A boiler operating at the limits of material capabilities requires a different level of control.

1. Incoming pipe inspection. Each pipe for the coil comes with a certificate confirming chemical and mechanical properties at 300°C. Without a certificate, the pipe does not enter production.
2. Coil bending inspection. The bending radius is at least three times the pipe diameter. A smaller radius risks wall cracking. Every bend is checked.
3. 100% radiographic weld inspection. The coil is welded from pipes and sections. Every weld is X-rayed. The report is included with the boiler passport.
4. Hydraulic pressure tests. The coil is tested at 1.5 times the working pressure (up to 20 bar). Holds for 10 minutes – no micro-cracks.
5. Thermal cycling tests on the test bench. The completed boiler is started on the bench, simulating 10–20 heat-cool cycles. Tightness and automation response are checked dynamically.

Design: what's inside and why it works

- Three-pass once-through design with coil heat exchanger. Once-through means the oil passes through the coil once, heating up gradually, without recirculation or mixing. This eliminates stagnant zones and local overheating.
- Coaxial coils – two circuits in one. The outer coil is heated by the first gas passes. The inner coil by the second and third. Oil flows from bottom to top, gases follow a complex path. This gives maximum temperature difference and best heat extraction.

How gases flow:

- Pass 1 – combustion chamber, flame heats the inner coil turns
- Pass 2 – gases turn around the chamber and flow along the outer coil
- Pass 3 – residual heat recovery

How oil flows:

- The circulation pump pushes oil through the coil at 2–3 m/s. This is critical – if speed drops, oil will overheat locally and start coking. Speed is controlled by the automation system.

Thermal shield – 100 mm insulation:

- Thick basalt wool layer plus a sealed metal casing. Surface heat losses – less than 2%.

Where Magma is applied: industries and processes

- Chemical and petrochemical industry. Reactor and distillation column heating. Temperature maintenance in pipelines for pumping bitumen, fuel oil, resins (these products are solid at room temperature). Polymerisation and synthesis processes.
- Woodworking and panel production. Press and calender heating for particleboard, MDF, and OSB production. Veneer and lumber drying in chambers. Temperature 180–220°C – with steam this is 10–15 bar, with oil the same 6 bar.
- Building materials and metalworking. Asphalt plant heating (bitumen must be kept liquid). Rubber vulcanisation, tyre production. Galvanising lines – bath heating.
- Textile industry. Fabric heat-setting (temperature 200–220°C). Drying drum heating.
- Waste processing plants. Bitumen mixture heating.
- Food industry (high-temperature processes). Drying

of vegetables, fruits, yeast, grain. Coffee, nut, and grain roasting. Industrial bakeries – heating of baking surfaces.

Why choose Boilte Magma?

- Lifetime warranty on the coil heat exchanger and main load-bearing components – an unconditional manufacturer's obligation, legally confirmed.
- Full certification package (GOST, TR EAEU, EN, optionally ASME, PED) – for trouble-free commissioning and inspection by any regulatory authority.
- Engineering support at every stage – selection, site supervision, commissioning, start-up, staff training, and ongoing service.
- Factory-direct pricing – optimised logistics, no intermediaries, no hidden markups.
- No water treatment required – thermal oil systems eliminate the cost and complexity of feedwater treatment.

Technical specifications

Model, Magma	Power, kW**	Efficiency, %	Boiler resistance, mbar	Oil volume, L	Gas consumption (140–180°C), m³/h	Gas consumption (240–280°C), m³/h	H, mm	B, mm	L, mm	Dry weight, kg
150	174	88,2	3,2	46	21,19	22,35	1400	1300	1700	650
250	291	88,4	3,7	51	28,75	37,25	1400	1400	2400	1100
350	407	89,2	4,1	99	50,12	52,31	1600	1400	2400	1200
450	523	89,1	4,4	120	64,72	67,92	1600	1400	2400	1500
550	640	88,5	5,8	152	78,81	81,92	1600	1400	2400	1850
800	930	89,2	8,2	239	115,84	119,53	1750	1650	3350	1980
1000	1160	89,5	8,3	269	144,49	149,1	1750	1650	3350	2010
1250	1453	89,3	8,7	465	180,49	186,64	1850	1700	3750	2800
1500	1745	89,2	9,1	517	216,84	226,7	2000	2100	4000	3250
2000	2320	89,4	9,4	756	284,2	301,16	2200	2350	4300	5150
2500	2900	89,2	10,1	1320	350,4	368,1	2450	2700	5000	6450
3000	3480	90,1	10,5	1530	427,25	451,71	2450	2700	5800	7150
4000	4650	89,5	11,3	1980	579,2	603,5	2450	2700	6200	8300
5000	5810	89,2	12,5	2840	622,82	642,26	2900	3100	6300	12650
6000	6970	89,5	12,9	3200	868,21	895,3	2950	3100	7360	13500
7000	8100	89,3	13,4	3350	1008,98	1040,4	3200	3400	7850	14200

****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.

BOILTE[®]
engineered trust

