Unical

# BAHR’UNO CB


| LOW PRESSURE STEAM BOILER, THREE PASS REVERSE FLAME<br>EFFICIENCY UP TO 95% | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| OUTPUT RANGE | from 67 kW (100 kg/h) to 671 kW (1000 kg/h) | | | | | | | | |
| TYPE | CB | | | | | | CB HP | | |
| | smooth pipe | | | | | | ESALU pipe<br>(with PolySil nanotechnological treatment) | | |
| FUEL | gas, light & heavy oil | | | | | | gas, light oil | | |
| DESIGN PRESSURE | 1.0 bar | | | | | | | | |
| DESIGN TEMPERATURE | 119.9°C | | | | | | | | |
| MODELS | 100 | 150 | 250 | 300 | 400 | 500 | 600 | 800 | 1000 |

# DESCRIPTION

**Low pressure steam generator, flame inversion type, with wet bottom, efficiency from 91% (STD) to 95% (HP) depending on the type of pipe used.**

The BAHR'UNO CB series is a family of steam generators designed for a maximum safety pressure up to 1.0 bar. The range includes various models with steam production from 100 to 1000 kg/h. In accordance with current legislation, the BAHR'UNO CB family of low-pressure steam generators has been subjected to a conformity assessment by a Notified Body. Compliance with the Essential Safety Requirements of the European Directive 2014/68 / EU of the pressure body is evidenced by the CE P.E.D marking.

## General characteristics:

Designed in compliance with the EN12953-3: 2016 standard the flame inversion generator consists of a cylindrical furnace, with a wet bottom, in which the flame develops and where the inversion of the combustion gases takes place. The fumes then enter the tube bundle at the front tube plate and are conveyed towards the rear tube plate from which they exit through the smoke chamber.
The boiler is sized to ensure low thermal loads.

- **Boiler body:** it consists of cylindrical outer shell, furnace, furnace bottom and flat tube plates in quality steel, in compliance with current technical standards. The materials used are accompanied by manufacturing certificates certifying the chemical and mechanical characteristics and the controls during the production cycle and therefore their suitability for use. Welding is carried out according to procedures approved by suitably qualified personnel and subjected, in accordance with an internal "Manufacturing and Control" plan to non-destructive tests. Once manufacturing is complete, each pressurized body is subjected to testing by carrying out the hydraulic test in accordance with requirement 7.4 - Annex 1 of Directive 2014/68 / EU.
- **The smoke pipes:** making up the quality steel tube bundle, are welded to the tube plates using qualified automatic procedures. Finally, the pipes are headed by counterbore eliminating the protrusions from the plate. The smoke pipes are equipped with turbulators or inserts according to the type of pipe used.
- **Front door:** is built in welded steel sheet, internally lined with a layer of insulating material and a layer of high-thickness refractory material. It is mounted on hinges that allow it to be opened quickly and is equipped with a self-cleaning flame sight glass suitably positioned to check the correctness of the combustion in operation. The burner attachment plate is bolted onto it and can be drilled for the type of burner indicated by the customer.
- **Rear smoke chamber:** made of welded steel sheet, it is fixed to the rear tube plate by means of bolts to allow its removal. Insulated on the bottom, it is equipped with a suitable cleaning inspection door, and a horizontal axis flue pipe with a diameter suitable for the power of the generator.
- **Base:** it consists of a frame in boxed steel profiles, welded to the tube plates.
- **Upper cover:** located in the upper part of the generator, it is made up of a frame in steel sections, covered with sheet metal (not walkable).
- **Insulation of the outer shell and the front upper part:** the thermal insulation is obtained with a 50 mm thick rock wool mattress, bonded with high-density thermosetting resins, supported and covered externally by the 10/10 thick painted steel sheet casing. The front upper part of the boiler is protected externally by a metal box.

## Composition of the standard supply: (2)

- n. 1 steam outlet shut-off flow valve.
- n. 1 weight-lever safety valve
- n. 1 reflective level indicator, with threaded connections and shut-off and drain valves + n. 2 test taps (up to mod. 400)
- no. 2 reflection level indicators, threaded connections, interception and drain valves (starting from mod. 500)
- Electric panel for automatic operation, IP55 400V-3+N-50Hz complete with:
  - n. 1 large dial pressure gauge with 3-way tap for calibration
  - n. 1 safety pressure switch with manual reset, CE PED approved
  - n. 1 limit pressure switch
  - n. 1 pressure transducer for regulation of two-stage burner (high / low flame) or pressure probe for modulating burners
  - n. 2 low water level safety probes, with self-diagnosis, with manual reset on the control panel, CE certified
  - n. 2 water level probes for pump/s ON-OFF
- n. 1 centrifugal electric pump for water loading
- Water loading line circuit with pipes and shut-off valve
- n. 1 group of water drain / sludge discharge with quick opening manual valve
- Upper inspection port with flange of large diameter.
- Moisture separator on the main steam outlet, for high-titer steam without dripping
- Turbulators (for BAHR'UNO CB OR version) or high efficiency inserts (for BAHR'UNO CB HPO, HP versions)
- Standard documentation supplied [3]:
  - EC declaration of conformity of:
  - pressure equipment (boiler body)
  - pressure equipment safety valve(s).
  - pressure equipment safety pressure switch
  - pressure equipment minimum level safety probe
  - electrical panel (if supplied)
  - feed pump/s (if supplied)
  - economizer (if provided)
  - economizer safety valve (if supplied)
  - assembly with assessment according to Modules B+D
  - warranty
  - manufacturer's declaration concerning the operation of the pressure equipment
  - installation, use and maintenance manual for the boiler and any accessories provided
  - drawing of the steam generator completely equipped
  - wiring diagram of the electrical panel (if supplied)

## Options:

- "Second boiler water feed pump" kit
- "Feed water inlet filter" kit
- "Maximum level safety" kit
- "TDS" kit (from mod. 300)
- "Automatic bottom drain" kit
- Burner plate drilled according to burner requirements
- Burner

## Special versions

**BAHR'UNO CB 24 hr:**

- equipped with dedicated panel board and "24 hr KIT" to obtain the certification to operate "without continuous supervision" up to a maximum of 24 hours

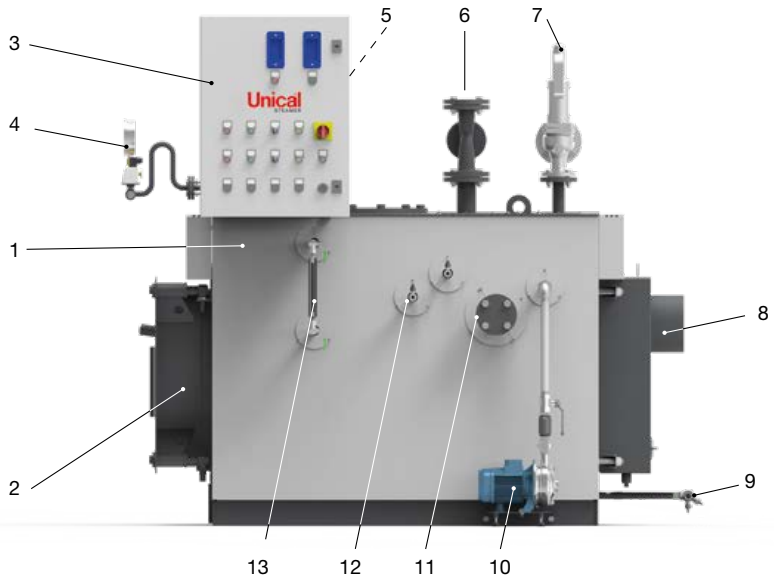
**BAHR'UNO CB 72 hr:**

- equipped with dedicated panel board and "72 hr KIT" to obtain certification to operate "without continuous supervision" up to a maximum of 72 hours (from mod. 300)

(1) This value is intended as an economizer and may vary according to the operating pressure and load.
(2) Quantities, types or models may vary according to the configuration offered.
(3) The above documentation will be provided in electronic format, except for the use and maintenance manual which will be supplied in paper format together with the equipment

## MAIN COMPONENTS

1. Boiler body
2. Front door
3. Electric panel board
4. Instruments assembly
5. Level safety sensors
6. Steam valve
7. Safety valve
8. Rear smoke chamber
9. Drain
10. Pump feeding group
11. TDS connection
12. Test taps
13. Level gauge




## TECHNICAL DATA

| Model | Steam production | Nominal output (*) | Inlet power CB (**) | Inlet power CB HP (**) | Water content at level | Total volume | ΔP smoke side CB | ΔP smoke side CB HP | Burner head min. length |
|---|---|---|---|---|---|---|---|---|---|
| | kg/h | kW | kW | kW | l | l | mbar | mbar | mm |
| **100** | 100 | 67 | 75 | 70.5 | 253 | 298 | 1.32 | 1.50 | 290 |
| **150** | 150 | 101 | 112 | 106 | 383 | 501 | 1.22 | 1.81 | 330 |
| **250** | 250 | 168 | 186 | 176 | 383 | 501 | 1.50 | 2.94 | 330 |
| **300** | 300 | 201 | 224 | 212 | 553 | 718 | 1.66 | 2.78 | 340 |
| **400** | 400 | 268 | 298 | 282 | 553 | 718 | 2.54 | 3.53 | 340 |
| **500** | 500 | 335 | 373 | 353 | 786 | 1199 | 1.67 | 2.77 | 350 |
| **600** | 600 | 402 | 447 | 424 | 786 | 1199 | 1.50 | 2.50 | 350 |
| **800** | 800 | 537 | 597 | 565 | 1137 | 1670 | 1.46 | 2.70 | 370 |
| **1000** | 1000 | 671 | 746 | 706 | 1137 | 1670 | 2.78 | 4.00 | 370 |

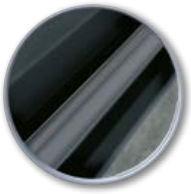
*with feeding water temperature = 70°C and pressure = 1 bar ** in function of the thermal load and working pressure

## PRODUCT PLUS VALUES

- **EXCELLENT EFFICIENCY**
  up to 95% with special ESALU
- **EFFICIENT THERMAL INSULATION** given by:
  - high total thickness, made by joining two rock wool layers with aluminium foil
  - insulation between the casing and the hot parts of the boiler body for thermal bridges elimination
- **REVERSIBLE OPENING DOOR**
  hinges and closing bolts adjustment in all directions
- **SIMPLIFIED ELECTRICAL CONNECTION**
  terminal board
- **ELECTRIC PANEL BOARD**
  electromechanical or electronic, expandible (optional)
- **POSSIBLE COMBINATION**
  with one, two, three stage or modulating burners
- **IMPLEMENTABLE FUNCTIONS**
  design to integration with 24/72h kit

## TYPE OF PIPES

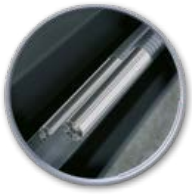
### SMOOTH PIPES



The smooth smoke pipes, suitable for gas, light and heavy oil operation, constituting the tube bundle, increase the thermal exchange and allow the removal of the residual combustion products. They are formed by pipes with, inside, helical turbulators.

**Efficiency up to 90%,**
in function of working pressure of the boiler.

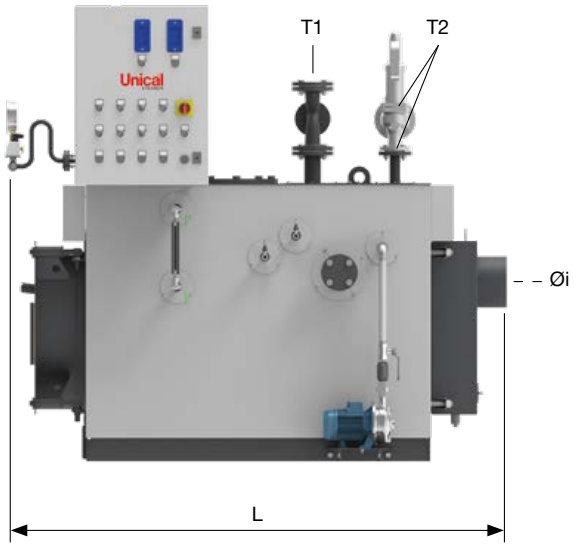
### HP PIPES

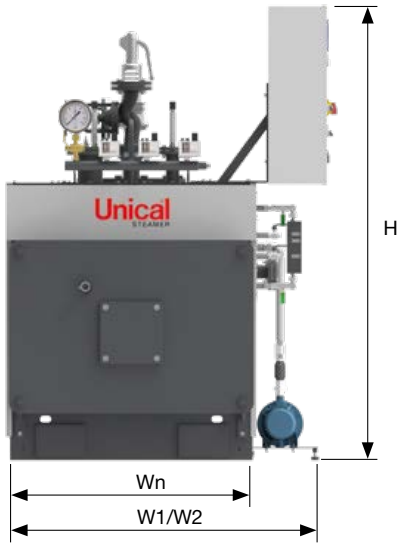


The HP smoke pipes suitable for gas and HP with PolySil nanotechnological treatment suitable for light oil fuel, constituting the tube bundle, allow to reach a very high thermal exchange. They are formed by pipes with, inside, special inserts of different types and shapes. The adoption of the HP pipes allowed to reach high performances in terms of efficiency, with important reduction in terms of running costs, fuel consumption and polluting emissions..

**Efficiency up to 95% with gas and 93% with Light oil fuel**, in function of working pressure of the boiler.

## DIMENSIONS




| Model | Wn | W1/W2 | L | H | Øi | T1 | T2 IN/OUT | Empty weight | Total weight |
|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | | DN | kg | kg |
| **100** | 875 | 1200 | 1630 | 1840 | 204 | 1" 1/4 | 25/40 | 715 | 968 |
| **150** | 995 | 1300 | 1950 | 1880 | 204 | 2" | 32/50 | 1015 | 1398 |
| **250** | 995 | 1300 | 1950 | 1880 | 204 | 2" | 32/50 | 1015 | 1398 |
| **300** | 1124 | 1450 | 2220 | 1975 | 254 | DN65 | 40/65 | 1450 | 2003 |
| **400** | 1124 | 1450 | 2220 | 1975 | 254 | DN65 | 40/65 | 1450 | 2003 |
| **500** | 1246 | 1550 | 2425 | 2080 | 254 | DN80 | 50/80 | 1680 | 2466 |
| **600** | 1246 | 1550 | 2425 | 2080 | 254 | DN80 | 50/80 | 1680 | 2466 |
| **800** | 1400 | 1700 | 2790 | 2040 | 254 | DN100 | 65/100 | 2393 | 3530 |
| **1000** | 1400 | 1700 | 2790 | 2040 | 254 | DN100 | 65/100 | 2393 | 3530 |

The company reserves the right to modify / adapt the technical and dimensional information of the products included in this catalog, even without notice, in order to improve the quality of the products themselves.