

Unical

SŪHR'



SUPERHEATED WATER BOILER, THREE PASS REVERSE FLAME, AT MEDIUM AND HIGH PRESSURE, VERSIONS WITH SPECIAL TUBES - EFFICIENCY UP TO 95%

OUTPUT RANGE	from 140 to 2900 kW						
TYPE	OR	HPO		HP			
	smooth pipe	HEXALOBULAR pipe		BIMETALLIC pipe			
FUEL	gas / LPG / light & heavy oil		gas / LPG / light & heavy oil		gas / LPG		
WORKING PRESSURE	5 bar (SŪHR'5) / 10 bar (SŪHR'10)						
WORKING TEMPERATURE	158.1°C (SŪHR'5) / 183.2°C (SŪHR'10)						
MODELS	140	210	270	370	465	580	700
	1000	1160	1400	1750	2050	2300	2900

DESCRIPTION

Medium and high pressure superheated water generator, flame inversion, with wet bottom and special high efficiency pipes, efficiency 90-95% ⁽¹⁾.

The SÜHR series is a family of superheated water generators designed for a pressure up to 5 bar (SÜHR'5) or 10 bar (SÜHR'10) (higher pressure on request). The range includes various models with output from 140 to 2900 kW. According to current legislation, the SÜHR superheated water generator family 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.

The generators are monobloc type, complete with all the accessories necessary for operation. The supply includes the following auxiliary components pre-assembled on the generator:

- regulation and safety equipment;
- valves and accessories

General characteristics:

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 to the rear smoke chamber from which they exit to the chimney.

■ **Boiler body:** consists of cylindrical 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.

The welds are carried out according to procedures approved by suitably qualified personnel and subjected, in accordance with an internal "Manufacturing and Control" plan, to Non-Destructive Testing. Upon completion of manufacturing, each pressure carrying part is subjected to testing by carrying out the hydraulic test in accordance with requirement 7.4 - Annex 1 of Directive 2014/68 / EU (PED).

■ **The smoke pipes:** making up the quality steel tube bundle, are welded to the tube plates by means of qualified automatic procedures. Finally, the pipes are headed by counterbore eliminating the protrusions from the plate. The smoke pipes are equipped with spiral turbulators or special inserts, designed to increase the efficiency of the generators (depending on the version).

■ **Front door:** can be opened from both sides by means of hinges on pivots and fixing bolts. It is made of steel sheet, internally lined with refractory insulating concrete, equipped with self-cleaning sight flame, suitably positioned for checking the correctness of combustion in operation, equipped with flange for burner connection, which can be prepared for the type of burner indicated by the customer.

■ **Rear smoke chamber:** made of steel sheet and equipped with a suitable cleaning door and flue gas connection with horizontal axis (vertical on request), with a diameter suitable for the power of the generator, without flange.

■ **Outer shell insulation.** The thermal insulation of the outer shell is ensured by a mineral wool mattress, protected externally by aluminum foil.

Composition of the standard supply: ⁽²⁾

- n. 1 or 2 safety valves, according to the output
- n. 1 discharge group consisting of a flow-started valve and plug cock
- n. 1 control panel complete with:
 - n. 1 thermometer
 - n. 2 service thermostats
 - n. 1 safety thermostat with manual reset
 - n. 1 pressure gauge
 - n. 1 pressure gauge
- Document envelope containing:
 - Declaration of Conformity by the Manufacturer, in accordance with Annex VII of the PED Directive and related annexes, of the checks and tests performed on each individual pressure carrying part during the manufacturing process.
 - Installation, Use and Maintenance Manual.
 - Certifications relating to the installed safety components (PED declarations of conformity, instruction booklets)
 - Electrical diagram of the panel board and relative Declaration of Conformity.
 - Instruction cards and electrical / functional diagrams of the installed regulation components and of the burner (installed on request).
 - Data sheet relating to the quality of the operating water, with the parameters that must be subjected to periodic checks, maximum and minimum limits of acceptability, frequency of checks and required interventions (information contained in the manual).

(1) This value is to be intended without economizer and may vary according to the temperature and the operating load.

(2) Quantities, types or models may vary according to the configuration offered.

MAIN COMPONENTS

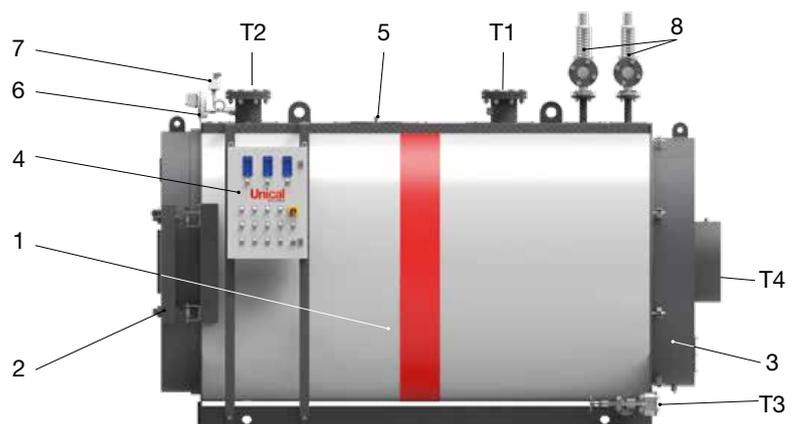
1. Boiler body
2. Front door
3. Rear smoke chamber
4. Electric panel board
5. Man hole for inspection
6. Safety pressure switch
7. Manometer with 3 way cock
8. Safety valves

T1. Flow

T2. Return

T3. Boiler drain

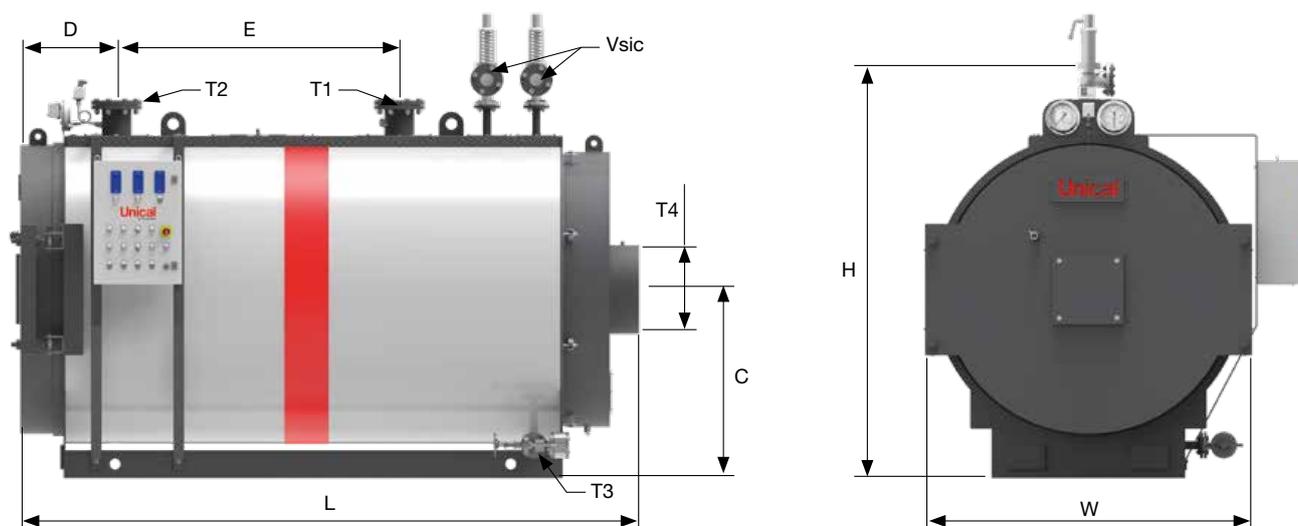
T4. Chimney connection



TECHNICAL DATA

Model	Nominal output kW	Nominal input mod. OR kW	Nominal input mod. HPO kW	Nominal input mod. HP kW	ΔP smoke side OR mbar	ΔP smoke side HPO mbar	ΔP smoke side HP mbar	Water content lt	Water side pressure drop (ΔT 15°C) mbar	Empty weight SÜHR'5 kg	Empty weight SÜHR'10 kg
140	140	155.6	151.4	147.4	2.0	2.6	3	335	3.7	798	963
210	210	233.3	227.0	221.1	2.5	3.25	3.75	549	8	1135	1375
270	268	297.8	289.7	282.1	3.0	3.9	4.5	549	13	1135	1375
370	372	413.3	402.2	391.6	4.2	5.45	6.3	690	11	1615	1955
465	465	516.7	502.7	489.5	4.5	5.85	6.75	690	17	1615	1955
580	581.5	646.1	628.6	612.1	5.0	6.5	7.5	1143	12	1760	2130
700	700	777.8	756.8	736.8	6.0	7.8	9	1143	18	2165	2625
1000	1000	1111	1081.0	1052.6	7.0	9.1	10.5	1625	22	2760	3330
1160	1160	1288.9	1254.1	1221.1	5.5	7.15	8.25	1625	20	2760	3330
1400	1395	1550	1508.1	1468.4	6.0	7.8	9	1950	22	3425	4135
1750	1745	1938.9	1886.5	1836.8	7.0	9.1	10.5	2575	25	5030	6070
2050	2035	2261.1	2200.0	2142.1	8.2	10.65	12.3	2575	30	5030	6070
2300	2325	2583.3	2513.5	2447.4	9.0	11.7	13.5	3015	40	6165	7440
2900	2900	3222.2	3135.1	3052.6	9.5	12.35	14.25	4290	45	7350	8870

DIMENSIONS



Model	W	L	H	C	D	E	T1 - T2	T3	T4	Vsic
	mm	mm	mm	mm	mm	mm	DN	DN	Øi mm	DN
140	900	1900	1230	550	200	650	65	25	202	20/32
210	1000	2125	1270	600	200	800	65	25	222	20/40
270	1000	2125	1270	600	200	800	65	25	222	20/40
370	1115	2424	1327	675	200	1010	80	25	252	20/40
465	1115	2424	1327	675	200	1010	80	25	252	20/40
580	1270	2792	1500	765	200	1140	80	25	352	20/40
700	1270	2792	1500	765	200	1140	80	25	352	20/40
1000	1400	3200	1660	865	250	1450	100	25	402	25/40
1160	1400	3200	1660	865	250	1450	100	25	402	25/40
1400	1510	3426	1770	920	300	1570	125	25	402	40/50
1750	1720	3500	2030	1075	300	1600	150	40	502	40/50
2050	1720	3500	2030	1075	300	1600	150	40	502	40/50
2300	1800	3875	2120	1115	300	1700	150	40	552	40/50
2900	1980	4195	2290	1205	300	1850	200	40	602	40/65

PRODUCT PLUS VALUES

■ FRONT DOOR

Fitted on hinges, with reversible opening. It is in welded steel sheet, with the inside completely insulated with refractory concrete. Complete with burner plate and flame sight glass

■ REAR SMOKE CHAMBER

Made of steel sheet and complete of horizontal chimney connection (vertical on request) and cleaning openings

■ BASEMENT

In steel profiles

■ THERMAL INSULATION

Made of a mineral wool mattress, externally protected by painted aluminum panels

■ DELIVERY

Is complete with board panel, safety and control devices

TYPE OF PIPES

BIMETALLIC PIPE (HP)

an aluminium multiradial profile, bound by rolling, is inserted within the steel pipes in order to increase the exchange surface and efficiency.



HEXALOBULAR PIPE (HPO)

a steel profile with a hexalobular section, bound by rolling, is inserted within the smoke pipes, in order to increase the exchange surface and efficiency.



OPTIONAL EQUIPMENT

ELECTRICAL CABINET BASIC-P_SH

- Single and two-stage burner control
- Possible 24/72 h exemption
- No. 1 low level safety PED level switch (optional)
- Terminal board on quick coupling connectors
- Expansion with optional kits
- IP55 Protection rating



ELECTRICAL CABINET IML_SH

- Control PLC
- 7" touch screen display (or superior) with graphic interface
- Single and two-stage, three-stage, modulating burner control
- Possible 24/72 h exemption
- No. 1 low level safety PED level switch (optional)
- Terminal board on quick coupling connectors
- Expansion with optional kits
- IP55 Protection rating



24 h EXEMPTION KIT

Set of accessories to obtain the partial exemption of the burner (24 h) according to European dir. n. 2014/68/EU transposed by DLgs. n. 26 of 15/02/2016, D.M. n. 94 of 07/08/2020 All. 3 - P.to 1.1 letter c, D.M. 1 December 2004 n°329, UNI/T S 11325-3:2018 and guidelines H/15 e I/20.

Consisting of:

- 24h exemption control panel including a timer and preset for a 24h exemption reset procedure
- Instrument/safety device wood log to be mounted on the boiler flow, with all equipment required and namely:
 - 1 pressure gauge with a pressure gauge valve
 - 1 large dial thermometer with a limit indication
 - 1 maximum and minimum safety pressure switch
 - 1 reflection level indicator with shut-off valves
 - 1 fail-safe minimum level safety probe
 - 2 fail-safe self-controlled temperature switch units (PT100), TRD604 CAT. IV.



72 h EXEMPTION KIT

Set of accessories to obtain the partial exemption of the burner (72 h) according to European dir. n. 2014/68/EU transposed by DLgs. n. 26 of 15/02/2016, D.M. n. 94 of 07/08/2020

All. 3 - P.to 1.1 letter c, D.M. 1 December 2004 n°329, UNI/T S 11325-3:2018 and guidelines H/15 e I/20.

Consisting of:

- Control panel for up to a 72h exemption, including a timer and preset for a 72h exemption reset procedure
- Instrument/safety device wood log to be mounted on the boiler flow, with all equipment required and namely:
 - 1 pressure gauge with a pressure gauge valve
 - 1 large dial thermometer with a limit indication
 - 1 maximum and minimum safety pressure switch
 - 1 reflection level indicator with shut-off valves
 - 1 fail-safe minimum level safety probe
 - 2 fail-safe self-controlled temperature switch units (PT100), TRD604 CAT. IV.