Unical

SÜHR’

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 oil		gas / LPG		
WORKING PRESSURE	5 bar (SÜHR’5) / 10 bar (SÜHR’10)						
TEMPERATURE	up to 158.1°C (max. safety temperature SÜHR’5) up to 183.2°C (max. safety temperature SÜHR’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 BASIC control panel complete with:
  - n. 1 thermometer
  - n. 2 service thermostats
  - n. 1 safety thermostat with manual reset
  - n. 1 pressure gauge
  - n. 1 safety pressure switch with manual reset
- 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 safety thermostat
  - pressure equipme nt minimum level safety probe
  - electrical panel (if supplied)
  - feed pump/s (if supplied)
  - recirculation pump (if supplied)
  - economizer circulation pump (if supplied)
  - economizer (if provided)
  - economizer safety valve (if supplied)
  - warranty
  - manufacturer’s declaration concerning the operation of the pressure equipment
  - steam generator installation, use and maintenance manual and any accessories provided
  - drawing of the steam generator completely equipped
  - wiring diagram of the electrical panel (if supplied)

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

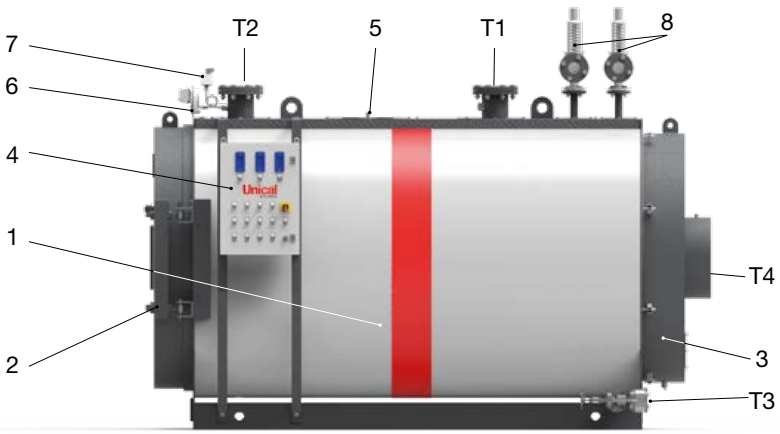
(2) Quantities, types or models may vary according to the configuration offered.

(3) The above documentation will be provided in electronic format, except for the installation, use and maintenance manual which will be supplied in paper format together with the equipment.

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 / thermometer
8. Safety valves

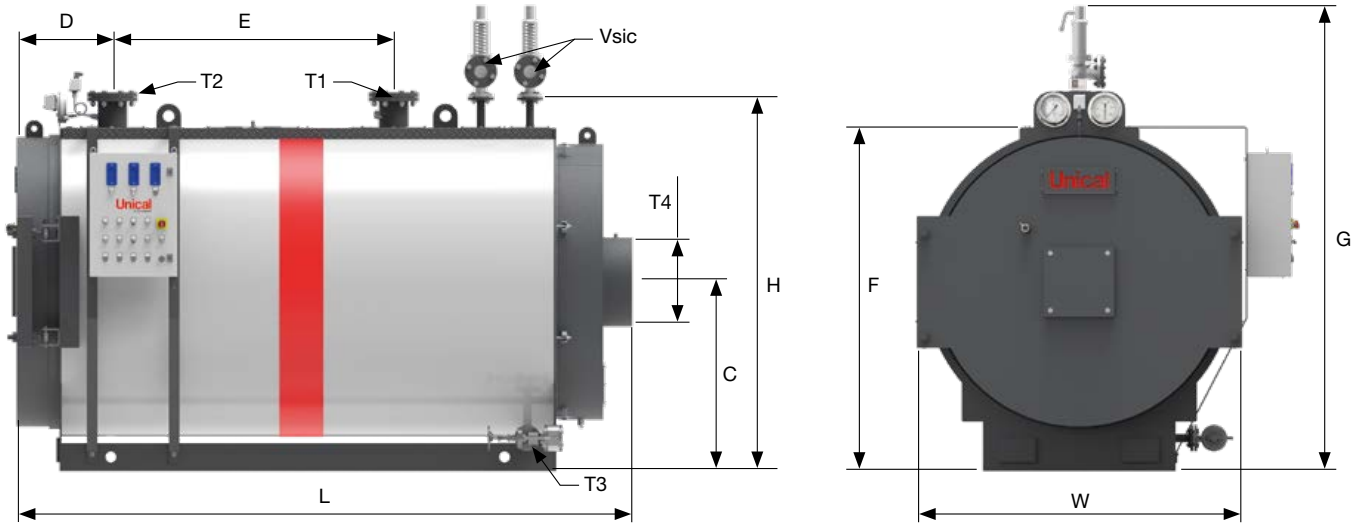
T1. Flow
T2. Return
T3. Boiler drain
T4. Chimney connection



TECHNICAL DATA

Model	Nominal output	Nominal input mod. OR	Nominal input mod. HPO	Nominal input mod. HP	ΔP smoke side OR	ΔP smoke side HPO	ΔP smoke side HP	Water content	Water side pressure drop (ΔT 15°C)	Empty weight SÜHR'5	Empty weight SÜHR'10
	kW	kW	kW	kW	mbar	mbar	mbar	l	mbar	kg	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	F	G	T1 - T2	T3	T4	Vsic
	mm	mm	mm	mm	mm	mm	mm	mm	DN	DN	Øi mm	DN
140	1000	1810	1270	600	388	600	1100	1671	65	25	222	20/40
210	1000	2061	1270	600	388	800	1100	1671	65	25	222	20/40
270	1000	2061	1270	600	388	800	1100	1671	65	25	222	20/40
370	1090	2273	1380	675	388	1010	1200	1781	80	25	252	20/40
465	1090	2273	1380	675	388	1010	1200	1781	80	25	252	20/40
580	1250	2675	1555	765	410	1140	1389	1960	80	25	352	20/40
700	1250	2675	1555	765	410	1140	1389	1960	80	25	352	20/40
1000	1400	3138	1700	840	500	1453	1520	2107	100	25	402	25/40
1160	1400	3138	1700	840	500	1453	1520	2107	100	25	402	25/40
1400	1546	3336	1770	920	557	1570	1664	2202	125	40	402	40/50
1750	1850	3502	2125	1075	545	1600	1950	2644	150	40	502	40/50
2050	1850	3502	2125	1075	545	1600	1950	2644	150	40	502	40/50
2300	1730	3715	2038	1020	595	1700	1850	2560	150	40	552	40/65
2900	1980	4172	2243	1180	595	1850	2155	2862	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.

BREVETTO Unical PATENT

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.

BREVETTO Unical PATENT

OPTIONAL EQUIPMENT

QUADRO ELETTRICO BASIC-P_SH

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

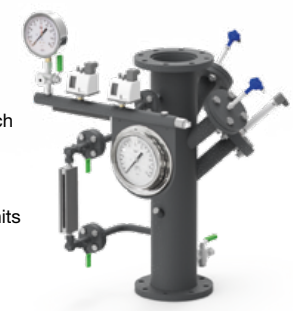
ELECTRICAL CABINET IML_SH

- Control PLC
- 10” touch screen display 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)
- Expansion with optional kits
- IP55 Protection rating

24 h EXEMPTION KIT

Set accessori per l’ottenimento dell’esenzione parziale del fuochista (24 h) secondo Dir. Europea n. 2014/68/EU recepita con DLgs. n. 26 del 15/02/2016, D.M. n. 94 del 07/08/2020
All. 3 - P.to 1.1 lettera c, D.M. 1 Dicembre 2004 n°329,
UNI/T S 11325-3:2018 e delle linee guida 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.

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