05-0515

INDUSTRIAL GENERATORS

steam or overheated water
97/23/CE - P.E.D. certified

TECHNIQUE, COMPETENCE, EXPERIENCE FOR INDUSTRY

The steam and overheated water production cost is a decisive factor for the production processes' economy that require high heat consumption. It is therefore very important the use of industrial generators with high efficiency, reliability and long life characteristics.

Sile meet this requirement planning and manufactoring package pressurized generators with very high efficiencies thanks to the rational utilization of the combustion and to the larger dimensioning which grant the generator's long life and reliability.

They can work with gas, light oil and heavy oil.

INDUSTRIAL GENERATORS

The range

The Sile industrial generators' range foresees versions:

- **reverse flame with three pass smoke tubes, two of them in the furnace**; represents the best solution considering quality-price.
  - **VMB** low pressure steam generators (1 bar)
  - **VMA** medium pressure steam generators (12 bar)
  - **SMB** overheated water generators 5 bar - 120°C

- **three real pass smoke tubes, one in furnace and two of them in the smooth tubes** without turbolators, pass through flame and wet bottom. This manufactoring way as well as the studied designs by Sile, offer the maximum reliability, long life and performances, being always recommended to the firms that want to take the maximum advantage from their investments.
  - **PVM B.P.** low pressure steam generators (1 bar)
  - **PVM M.P.** medium pressure steam generators (8-12 bar)
  - **PAS-M** overheated water generators 5 bar - 120°C

Fundamental aspects and advantages

- **Low heat load.** Sile generators have large heat exchange surfaces. Considering this advantage, the generators are never extremely stressed. The unit surface heat load and the furnace heat load are very low assuring high efficiencies constand in time and high reliability. For each model it is indicated in label the heat exchange surface.
- **High steam quality.** Thanks to the large generator's dimensioning, the volume and the stretch of steam water are big assuring high steam takings without water drops' drag. The produced steam always is high quality thanks to the specific laminating device that, drying it before the first outlet, assures an high level with a saturation point near to the unit. The steam production actually "dry" enables the best working of the whole steam net and users with high working economy reducing the boiler's condensate return.
- **Inspectionability.** All the steam generators are easily inspectionable both on the front and on the back.
  In three smoke runs version, the smooth tubes without turbolators dimensioned to keep high the gas of combustion, favour the the self cleaning reducing to the minimum the maintenance interventions.
- **High efficiency.** All the generators assure a very high and constant combustion efficiency with any combustion type thanks to the large furnace's dimensions that enables a perfect combustion, to the back reverse fire chamber entirely wet and to the boiler's body insulation.

Quality construction

All the generators' manufactoring is done according to quality standards as per norm ISO 9001:2008 and following the mostly advanced technologies with full penetrating weldings, expanded tubes to the tubes' plates for the three real smoke runs models, X-ray tests, weldings and final tests.
All the generators are tested in factory by N.B. and certified CE according to the European Directory 97/23/CE-PED both for components and working assembly hot tested.

Sile Package

Symbol  indicates the package Sile products: "plug and play", that is ready for use, for a simple installation, because complete of the main accessories..

VMB

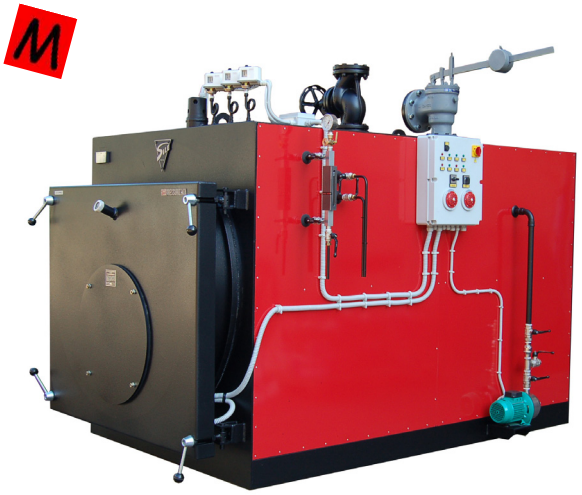
STEAM

Packaged steam generators pressurized at low pressure, horizontal semifixed type, reverse flame furnace with three pass smoke tubes, two of them in the furnace, smooth tubes with stainless steel turbolators.

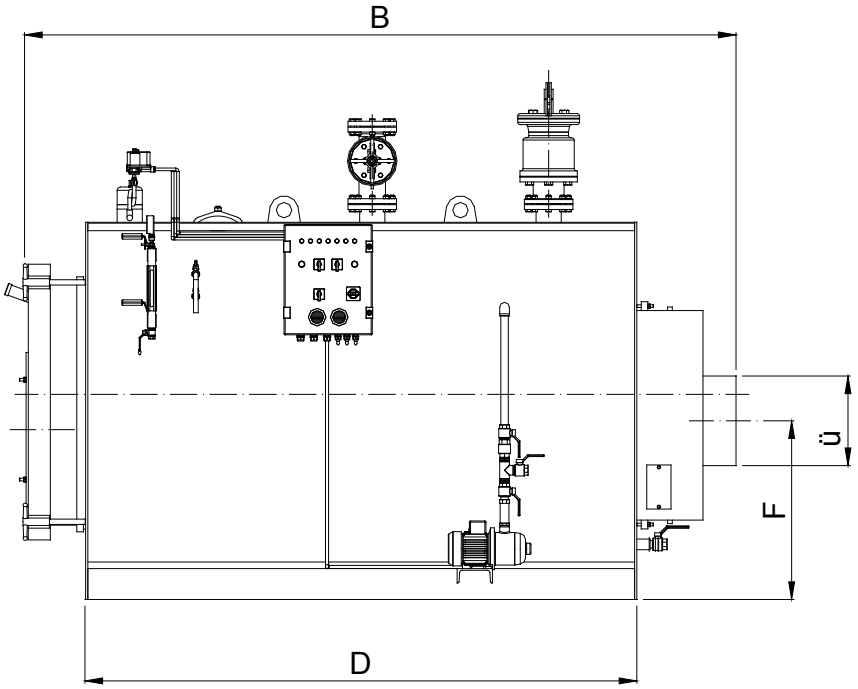
Tested in production by N.B. as "ASSEMBLY" approved according to the European Directive 97/23 CE-PED.

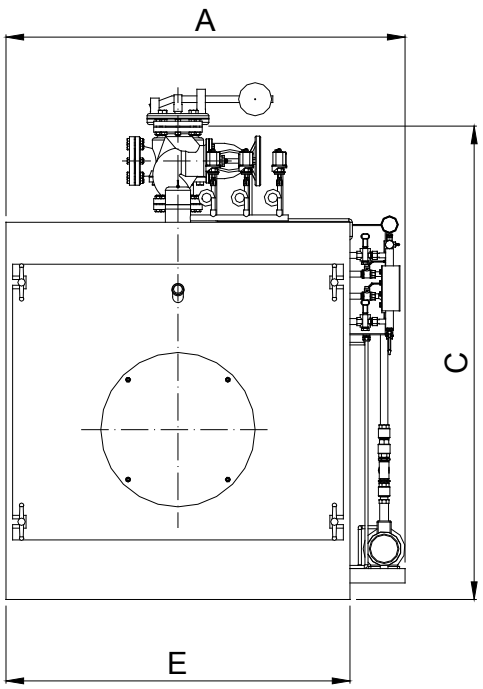
Working with gas, light oil, heavy oil. Complete of all the accessories (burner excluded) ready for working.

Working pressure 0,98 bar
Working temperature 120°C.



Dimensions and characteristics





Model	Surface	Flow rate	Power output	Total capacity	Capacity at min. level	Empty weight	Pressure in combustion chamber mbar ±20%		Steam production with feed water at 80°C	Dimensions with accessories mm							Connections	
	m^2	kW	kW	l	l	kg	light oil heavy oil	natural gas	kg/h	A	B	C	D	E	F	G	Steam taking DN	Drain Ø
VMB 100	8	115	103	760	560	1130	1.0	0.8	157	1420	2000	1600	1500	1170	675	250	65	1"1/2
VMB 170	8	195	174	760	560	1130	2.0	1.6	265	1420	2000	1600	1500	1170	675	250	65	1"1/2
VMB 260	9	292	262	840	610	1220	2.8	2.2	399	1420	2140	1600	1650	1170	675	250	65	1"1/2
VMB 370	9	415	366	840	610	1220	3.5	2.8	557	1420	2140	1600	1650	1170	675	250	65	1"1/2
VMB 500	16	560	502	1270	940	1720	3.0	2.4	764	1560	2640	1700	2050	1310	750	300	65	1"1/2
VMB 650	16	709	635	1270	940	1720	4.2	3.4	996	1560	2640	1700	2050	1310	750	300	65	1"1/2
VMB 750	16	838	750	1270	940	1720	5.2	4.2	1141	1560	2640	1700	2050	1310	750	300	65	1"1/2
VMB 1000	32	1116	1000	2360	1860	2950	5.5	4.4	1522	1810	3210	2140	2500	1560	810	400	100	1"1/2
VMB 1200	32	1376	1232	2360	1860	2950	6.5	5.2	1875	1810	3210	2140	2500	1560	810	400	100	1"1/2
VMB 1400	32	1586	1395	2360	1860	2950	7.0	5.6	2000	1810	3210	2140	2500	1560	810	400	100	1"1/2
VMB 1700	44	1885	1700	2820	2070	3530	6.5	5.3	2585	2200	3400	2450	2700	1800	1070	450	100	1"1/2
VMB 2000	55	2200	1998	3400	3170	4250	7.5	5.9	3040	2200	4050	2450	3250	1800	1070	450	100	1"1/2

VMA

STEAM

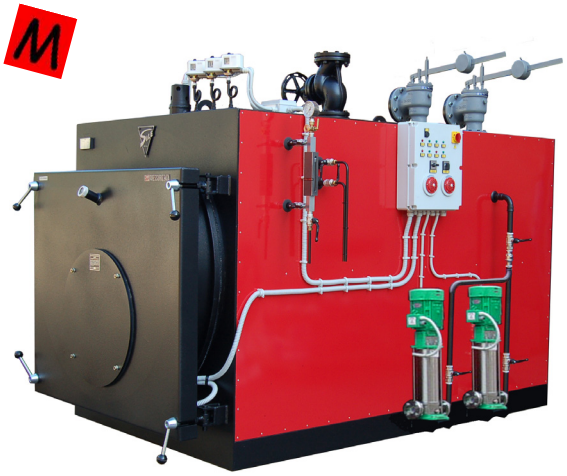
Packaged steam generators pressurized at medium pressure, horizontal semifixed type, reverse flame furnace with three pass smoke tubes, two of them in the furnace, smooth tubes with stainless steel turbolators.

Tested in production by N.B. as "ASSEMBLY" approved according to the European Directive 97/23 CE-PED.

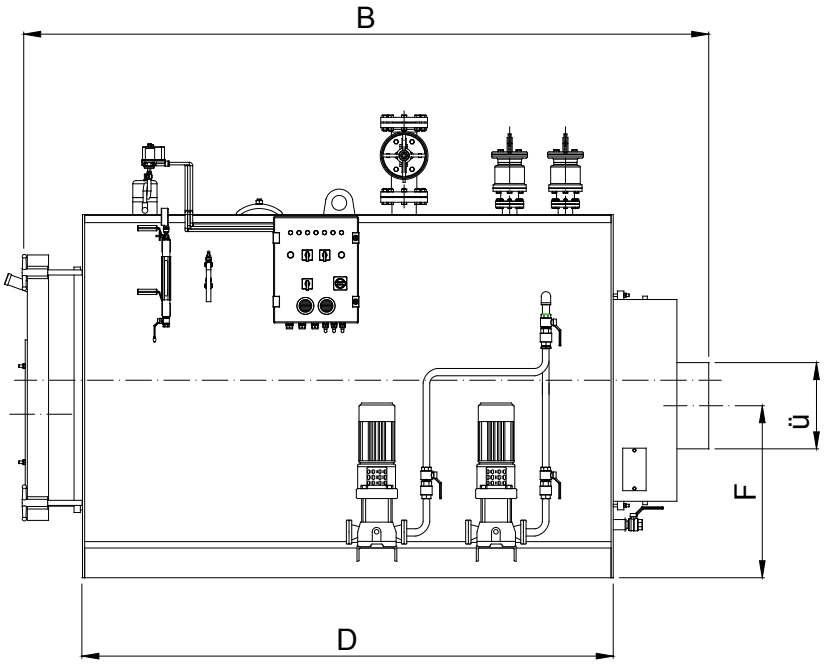
Working with gas, light oil, heavy oil. Complete of all the accessories (burner excluded) ready for working.

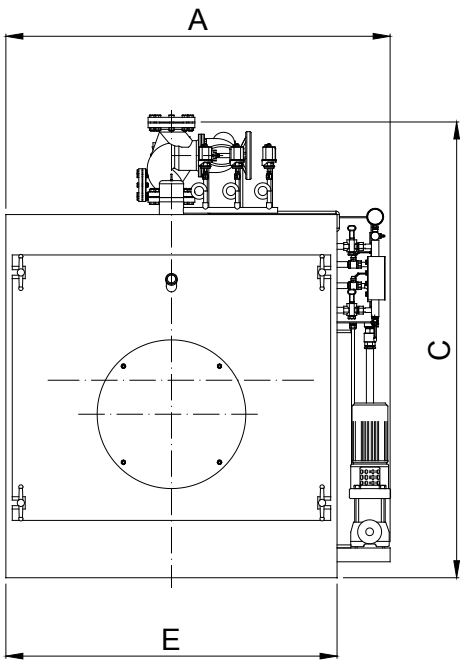
Working pressure 12 bar
Working temperature 191,5°C.

☞ *On request offers generators with 8 bar working pressure (working temperature 175,4 °C)*



Dimensions and characteristics





Model	Surface	Flow rate	Power output	Total capacity	Capacity at min. level	Empty weight	Pressure in combustion chamber mbar ±20%		Steam production with feed water at 80°C	Dimensions with accessories mm							Connections	
							heavy oil, diesel oil	natural gas		A	B	C	D	E	F	G	Steam taking DN	Drain DN
	m^2	kW	kW	l	l	kg			kg/h									
VMA 230	9,0	261	235	770	580	1570	1,1	1,0	350	1520	2045	1585	1520	1170	780	250	40	32
VMA 300	9,0	344	308	770	580	1570	2,5	2,2	452	1520	2045	1585	1520	1170	780	250	40	32
VMA 340	10,0	380	342	860	650	1650	2,6	2,3	503	1520	2225	1585	1700	1170	780	250	40	32
VMA 440	14,2	487	440	1100	830	1980	2,0	1,7	646	1660	2350	1755	1750	1310	780	300	50	32
VMA 500	14,2	557	502	1100	830	1980	3,0	2,7	737	1660	2350	1755	1750	1310	780	300	50	32
VMA 550	16,2	605	545	1270	950	2130	5,3	4,5	800	1660	2620	1755	2020	1310	780	300	50	32
VMA 630	16,2	711	639	1270	950	2130	5,9	5,0	939	1660	2620	1755	2020	1310	780	300	50	32
VMA 680	27,4	756	682	1980	1010	3200	5,0	4,2	1002	1910	2620	2060	2020	1560	850	350	50	32
VMA 750	27,4	837	754	1980	1010	3200	5,4	4,6	1108	1910	2620	2060	2020	1560	850	350	50	32
VMA 900	32,2	1023	921	2300	1170	3500	5,8	5,4	1353	1910	2950	2060	2350	1560	850	350	50	32
VMA 1050	34,0	1160	1047	2840	1470	4150	5,8	4,6	1538	2070	3050	2330	2350	1720	900	400	65	40
VMA 1200	34,0	1354	1221	2840	1470	4150	6,1	5,4	1793	2070	3050	2330	2350	1720	900	400	65	40
VMA 1400	39,0	1556	1400	3250	1680	4550	7,0	4,6	2056	2070	3400	2330	2700	1720	900	400	65	40
VMA 1700	53,0	1927	1737	3890	2850	5300	9,0	7,5	2551	2320	3400	2520	2700	1910	1100	500	80	40
VMA 2000	63,0	2252	2028	4670	3420	5950	10,0	8,5	2979	2320	4000	2520	3250	1910	1100	550	80	50
VMA 2400	70,0	2711	2443	5550	3980	8450	10,0	8,5	3588	2400	4000	2720	3250	2050	1200	550	80	50
VMA 2700	78,0	3018	2715	7170	5050	10900	10,5	9,0	3988	2530	4500	2900	3750	2180	1250	600	80	50
VMA 3400	99,0	3769	3395	8600	6100	13000	11,0	9,5	4987	2650	4850	3070	4050	2300	1300	600	80	50

PVM B.P.

STEAM - 3 REAL PASS

Packaged steam generators pressurized at low pressure, horizontal semifixed type, reverse flame furnace with three pass smoke tubes, two of them in the smooth tubes.

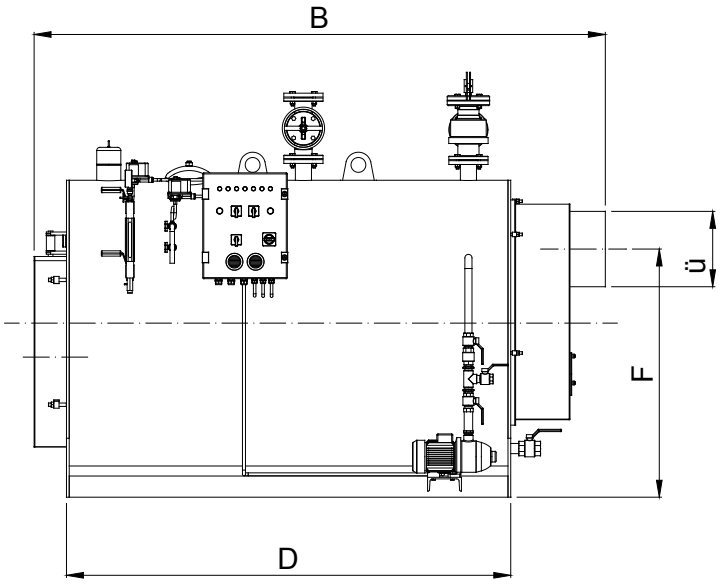
Tested by N.B. as “ASSEMBLY” approved according to the European Directive 97/23 CE-PED.

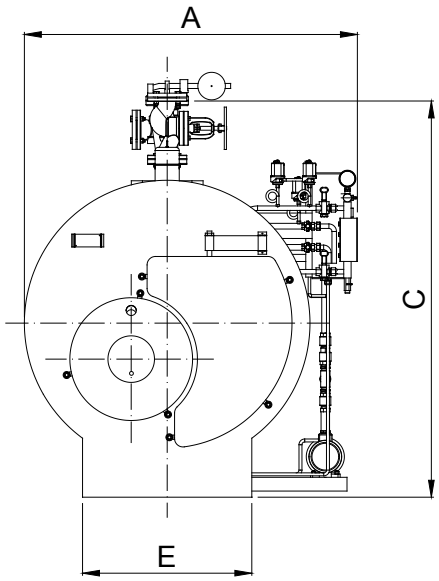
Working with gas, light oil, heavy oil. Complete of all the accessories (burner excluded) ready for working.

Working pressure 0,98 bar

Working temperature 120°C.

Dimensions and characteristics





Model	Surface	Flow rate	Power output	Total capacity	Capacity at min. level	Empty weight	Pressure in combustion chsmber mbar ±20%		Steam production with feed water at 80 °C	Dimensions with accessories mm							Connections	
							light oil, heavy oil	natural gas		A	B	C	D	E	F	G	Steam taking	Drain
	m^2	kW	kW	l	l	kg			kg/h								DN	Ø
PVM 10	9	115	103	860	700	1020	0.5	0.4	157	1400	2030	1650	1500	700	1035	250	65	1”1/2
PVM 15	9	195	174	860	700	1020	0.8	0.6	265	1400	2030	1650	1500	700	1035	250	65	1”1/2
PVM 22	9	277	244	860	700	1020	1.6	1.3	371	1400	2030	1650	1500	700	1035	250	65	1”1/2
PVM 28	10	331	296	995	870	1165	2.8	2.2	450	1400	2430	1650	1900	700	1035	250	65	1”1/2
PVM 35	10	415	366	995	870	1165	3.5	2.8	557	1400	2430	1650	1900	700	1035	250	65	1”1/2
PVM 50	22	581	521	1765	1445	1475	2.8	2.2	792	1500	2700	2100	2100	800	1170	350	65	1”1/2
PVM 60	22	697	622	1765	1445	1475	3.6	2.9	945	1500	2700	2100	2100	800	1170	350	65	1”1/2
PVM 72	22	837	738	1765	1445	1475	5.0	4.0	1127	1500	2700	2100	2100	800	1170	350	65	1”1/2
PVM 95	41	1104	988	3160	2650	2400	4.5	3.6	1502	1750	3430	2200	2800	900	1360	450	100	1”1/2
PVM 120	41	1378	1232	3160	2650	2400	6.0	4.8	1875	1750	3430	2200	2800	900	1360	450	100	1”1/2
PVM 136	41	1586	1395	3160	2650	2400	6.5	5.2	2000	1750	3430	2200	2800	900	1360	450	100	1”1/2
PVM 165	59	1919	1688	5100	4300	3700	7.0	5.6	2578	1850	4030	2200	3250	900	1300	550	125	DN 40
PVM 200	68	2384	2093	5850	4500	--	7.5	6.0	3000	2360	4560	2640	2150	1150	1690	550	125	DN 50
PVM 230	73	2643	2326	6000	4600	6300	8.0	6.4	3552	2360	4760	2720	2250	1150	1690	550	150	DN 50
PVM 290	94	3302	2907	6800	6800	--	9.0	7.2	4440	2530	5460	2900	2500	1250	1800	650	150	DN 50
PVM 340	110	3953	3488	10800	8350	--	10.0	8.0	5327	2680	6250	3080	3350	1250	1875	650	200	DN 50

PVM M.P.

STEAM - 3 REAL PASS

Packaged steam generators pressurized at medium pressure, horizontal semifixed type, reverse flame furnace with three pass smoke tubes, two of them in the smooth tubes.

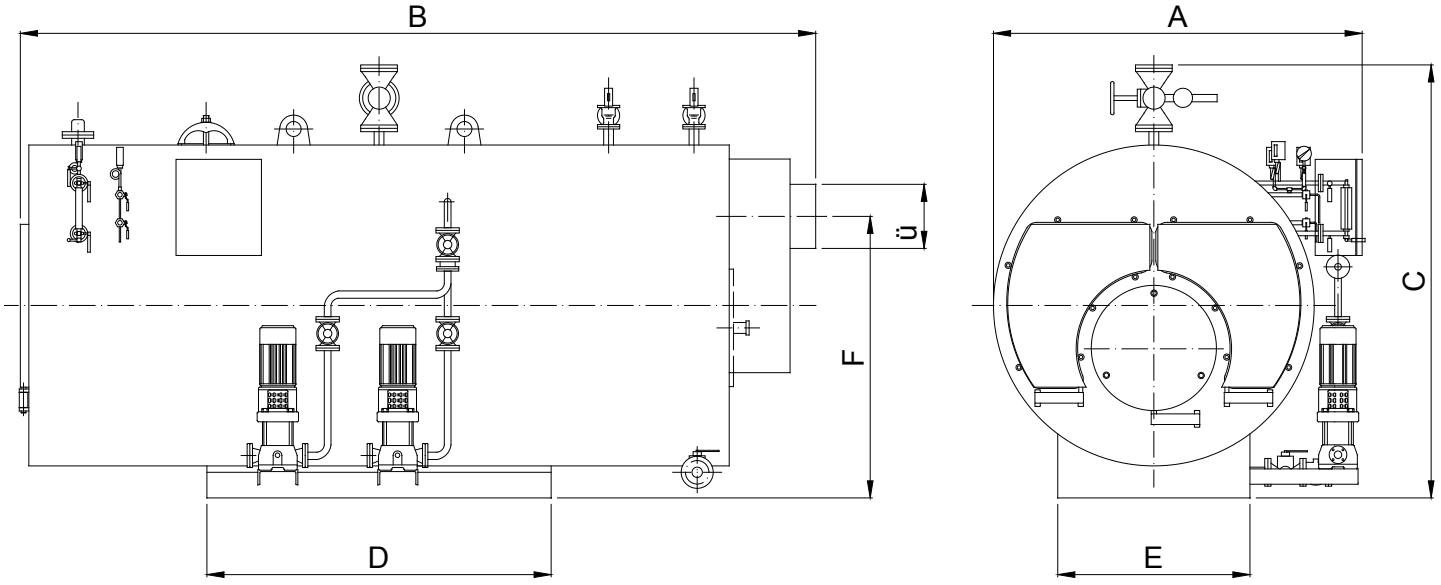
Tested by N.B. as "ASSEMBLY" approved according to the European Directive 97/23 CE-PED.

Working with gas, light oil, heavy oil. Complete of all the accessories (burner excluded) ready for working.

Working pressure 12 bar
Working temperature 191,5 °C

☞ *On request offers generators with 8 bar working pressure (working temperature 175,4 °C)*

Dimensions and characteristics



Model	Surface	Flow rate	Power output	Total capacity	Capacity at min. level	Empty weight	Pressure in combustion chamber mbar ±20%		Steam production with feed water at 80°C	Dimensions with accessories mm							Connections	
							light oil	natural gas		A	B	C	D	E	F	G	Steam taking	Drain
	m²	kW	kW	l	l	kg	heavy oil	gas	kg/h								DN	DN
PVM 20	11	265	233	1400	1100	1700	2.1	1.5	342	1530	2380	1700	1850	700	1150	250	32	32
PVM 25	11	317	279	1400	1100	1700	2.5	1.8	410	1530	2380	1700	1850	700	1150	250	32	32
PVM 32	12	371	325	1550	1250	1800	3.3	2.2	478	1530	2580	1700	2050	700	1150	250	32	32
PVM 36	13,5	462	407	1750	1400	1950	3.8	2.6	598	1530	2830	1700	2300	700	1150	250	32	32
PVM 46	17	555	488	2400	1900	3000	4.5	3.0	717	1800	2840	2020	1350	900	1320	300	40	32
PVM 54	19	634	558	2750	2170	3200	6.0	4.0	820	1800	3140	2020	1450	900	1320	300	40	32
PVM 74	25	860	756	3400	2700	3700	6.0	4.0	1110	1800	3740	2020	1600	900	1320	300	40	32
PVM 95	37	1104	988	3500	2750	5000	4.5	3.0	1452	2200	3000	2550	1650	1150	1740	450	50	40
PVM 120	41	1378	1232	3850	3050	5300	6.0	4.0	1810	2200	3200	2550	1750	1150	1740	450	50	40
PVM 136	45	1586	1395	4250	3350	5750	6.5	4.3	2050	2200	3450	2550	2000	1150	1740	450	50	40
PVM 170	59	1983	1744	6400	5050	7400	7.0	4.7	2562	2450	4400	2550	2460	1150	1650	550	80	50
PVM 200	70	2318	2040	7000	5500	8100	7.5	5.0	2996	2450	4700	2550	2760	1150	1650	550	80	50
PVM 230	78	2643	2326	7500	5900	8400	8.0	5.3	3420	2450	4950	2550	3010	1150	1650	550	80	50
PVM 290	98	3302	2907	11600	8700	9700	9.0	6.0	4270	2480	5560	2840	2720	1250	1845	650	80	50
PVM 340	115	3953	3488	13500	10100	14750	10.0	6.6	5130	2615	6080	2850	3350	1250	1950	650	100	50
PVM 400	130	4540	4000	15200	11400	17000	10,5	7,0	5900	2900	6080	3100	3700	1450	1950	700	150	50
PVM 550	175	6200	5490	16800	12600	19000	11,0	7.2	8064	2900	6500	3100	3700	1450	1950	700	100	50
PVM 680	210	7676	6808	16800	14050	21600	12,0	8.0	10000	3200	6500	3200	4000	1600	2150	700	100	50
PVM 810	260	9231	8170	21340	17750	29850	12,0	8,0	12000	3500	6880	4000	5000	2000	2750	800	200	50

SMB

OVERHEATED WATER

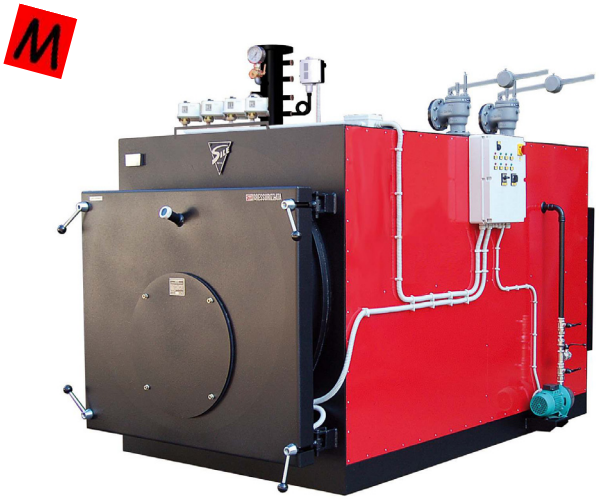
Packaged overheated water generators pressurized at low pressure, horizontal semifixed type, reverse flame furnace with three pass smoke tubes, two of them in the furnace, smooth tubes with stainless steel turbolators.

Tested by N.B. as “ASSEMBLY” approved according to the European Directive 97/23 CE-PED.

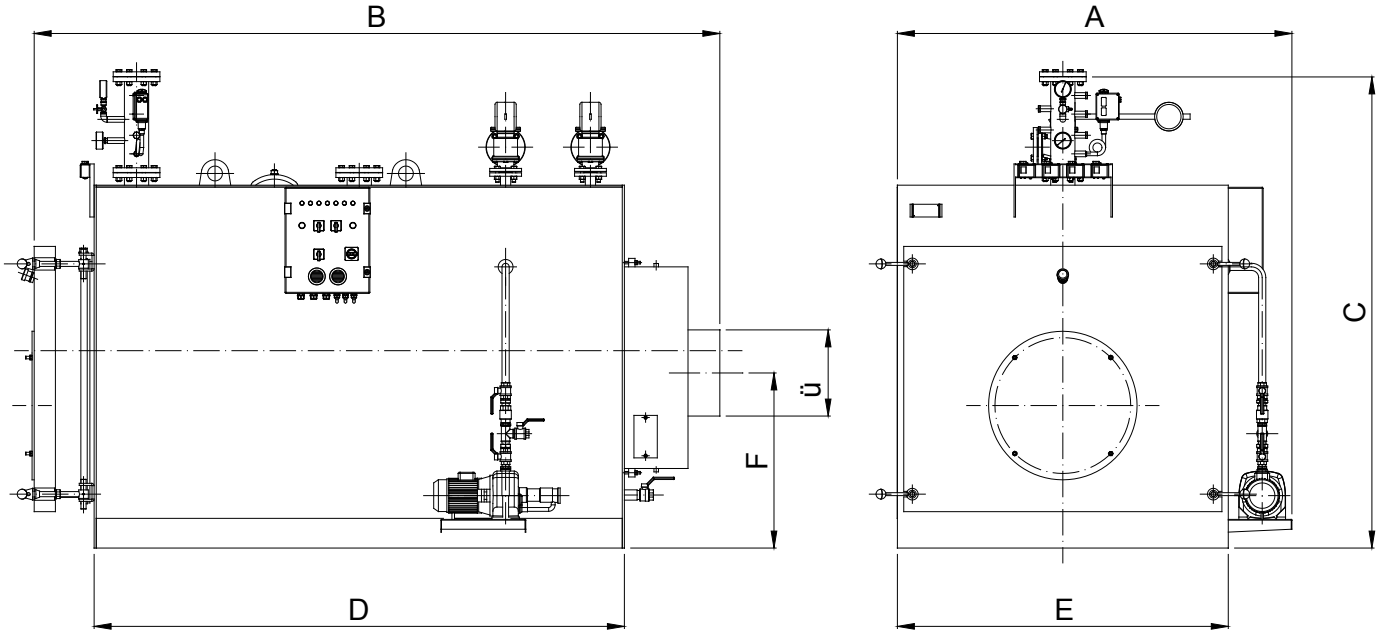
Working with gas, light oil, heavy oil. Complete of all the accessories (burner excluded) for automatic working.

Working pressure 5 bar
Working temperature 120°C.

☞ TO BE COMBINED WITH EXPANSION TANKS AT 5 bar - 120 °C



Dimensions and characteristics



Model	Surface	Flow rate	Power output	Total capacity	Empty weigth	Pressure in combustion chamber mbar ±20%		Load loss hydraulic circuit with Δt=20°C	Dimensions with accessories mm							Connectios	
	m^2	kW	kW	l	kg	light oil, heavy oil	natural gas	mbar	A	B	C	D	E	F	G	takings overheat.wat DN	Drain Ø
SMB 100	8	115	103	760	1200	1.0	0.8	1.0	1420	2000	1600	1500	1170	715	250	80	1”1/2
SMB 170	8	195	174	760	1200	2.0	1.6	2.0	1420	2000	1600	1500	1170	715	250	80	1”1/2
SMB 260	9	292	262	840	1300	2.8	2.2	3.0	1420	2150	1600	1650	1170	715	250	80	1”1/2
SMB 370	9	415	366	840	1300	3.5	2.8	4.0	1420	2150	1600	1650	1170	715	250	80	1”1/2
SMB 500	16	560	502	1270	1840	3.0	2.4	4.5	1560	2640	1700	2050	1310	750	300	80	1”1/2
SMB 650	16	709	635	1270	1840	4.2	3.4	6.0	1560	2640	1700	2050	1310	750	300	80	1”1/2
SMB 750	16	838	750	1270	1840	5.2	4.2	7.5	1560	2640	1700	2050	1310	750	300	80	1”1/2
SMB 1000	32	1116	1000	2360	3150	5.5	4.4	12.0	1810	3210	2140	2500	1560	810	400	100	1”1/2
SMB 1200	32	1376	1232	2360	3150	6.5	5.2	13.0	1810	3210	2140	2500	1560	810	400	100	1”1/2
SMB 1400	32	1586	1395	2360	3150	7.0	5.6	14.0	1810	3210	2140	2500	1560	810	400	100	1”1/2
SMB 1700	52	1927	1737	2550	3850	8.0	7.0	17.0	1910	3510	2450	2700	1660	1160	550	150	DN40
SMB 2000	62	2252	2028	3050	4300	9.0	8.0	19.0	1910	4060	2450	3250	1660	1160	550	150	DN40
SMB 2300	75	2585	2326	3670	5300	10.7	9.5	20.5	2100	4060	2710	3250	1800	1800	550	200	DN40

PAS-M

OVERHEATED WATER - 3 REAL PASS

Packaged overheated water generators pressurized at low pressure, horizontal semifixed type, with three pass smoke tubes, two of them in the smooth tubes.

Tested by N.B. as "ASSEMBLY" approved according to the European Directive 97/23 CE-PED.

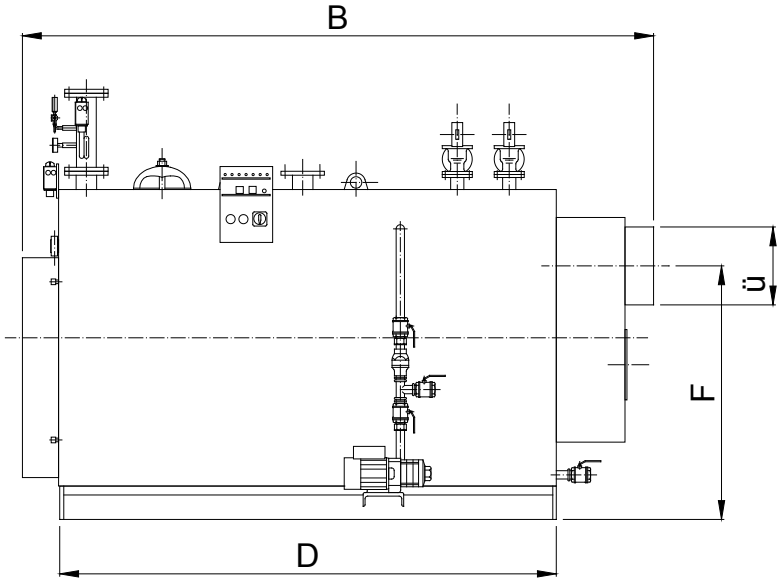
Working with gas, light oil, heavy oil. Complete of all the accessories (burner excluded) ready for working.

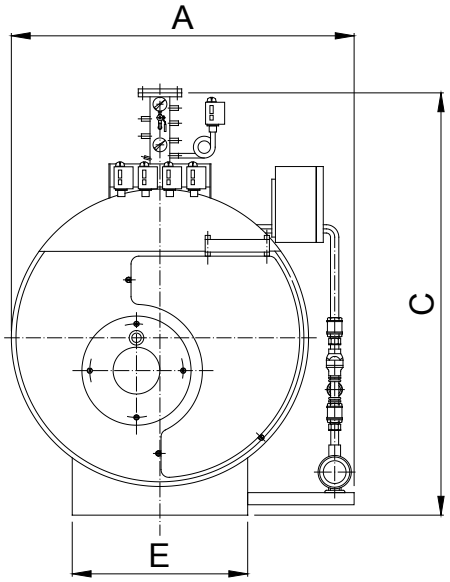
Working pressure 5 bar
Working temperature 120°C.

☞ TO BE COMBINED WITH EXPANSION TANKS AT 5 bar - 120 °C

☞ *On request offers for overheated generators with 8 bar working pressure (working temperature 175,4 °C)*

Dimensions and characteristics





Model	Surface	Flow rate	Power output	Total capacity	Empty weight	Pressure of combustion chamber mbar ±20%		Load loss hydraulic circuit with Δt=20°C	Dimensions with accessories mm							Connections	
	m^2	kW	kW	l	kg	light oil, heavy oil	natural gas	mbar	A	B	C	D	E	F	G	takings overheat.wat. DN	Drain Ø
PAS-M 10	9	115	103	860	1020	0.5	0.4	1.0	1350	2030	1850	1500	700	1035	250	80	1"1/4
PAS-M 15	9	195	174	860	1020	0.8	0.6	2.0	1350	2030	1850	1500	700	1035	250	80	1"1/4
PAS-M 22	9	277	244	860	1020	1.6	1.3	3.0	1350	2030	1850	1500	700	1035	250	80	1"1/4
PAS-M 28	10	331	296	995	1165	2.8	2.2	4.0	1350	2430	1850	1900	700	1035	250	80	1"1/4
PAS-M 35	10	415	366	995	1165	3.5	2.8	4.5	1350	2430	1850	1900	700	1035	250	80	1"1/4
PAS-M 50	22	581	521	1765	1515	2.8	2.2	6.0	1550	2700	2100	2100	800	1170	350	80	1"1/4
PAS-M 60	22	697	622	1765	1515	3.6	2.9	7.5	1550	2700	2100	2100	800	1170	350	80	1"1/4
PAS-M 72	22	837	738	1765	1515	5.0	4.0	9.0	1550	2700	2100	2100	800	1170	350	80	1"1/4
PAS-M 95	41	1104	988	3160	2400	4.5	3.6	10.0	1800	3430	2300	2800	900	1350	450	100	1"1/2
PAS-M 120	41	1378	1232	3160	2400	6.0	4.8	12.0	1800	3430	2300	2800	900	1350	450	100	1"1/2
PAS-M 136	41	1586	1395	3160	2400	6.5	5.2	13.0	1800	3430	2300	2800	900	1350	450	100	1"1/2
PAS-M 165	59	1919	1688	5100	3950	7.0	5.6	15.5	1800	3960	2300	3250	900	1300	550	150	DN40
PAS-M 200	68	2384	2093	5400	--	7.5	6.0	17.5	1800	4450	2300	2300	1000	1515	550	150	DN50
PAS-M 230	73	2643	2326	5600	--	8.0	6.4	18.5	1970	4600	2460	2400	1250	1740	550	200	DN50
PAS-M 290	94	3302	2907	7800	8700	9.0	7.2	19.5	2100	5300	2550	2500	1250	1860	650	200	DN50
PAS-M 340	110	3953	3488	9400	--	10.0	8.0	22.5	2100	5600	2550	2700	1250	1860	650	200	DN50

Complementary products

PACKAGE EXPANSION TANKS

Package vertical expansion tanks **5 bar - 120 °C** for overheated water with constant pressure and variable volume manufactured according to the European norm 97/23/CE-PED and tested by N.B. as "ASSEMBLY" approved according to the European Directive 97/23/CE-PED.

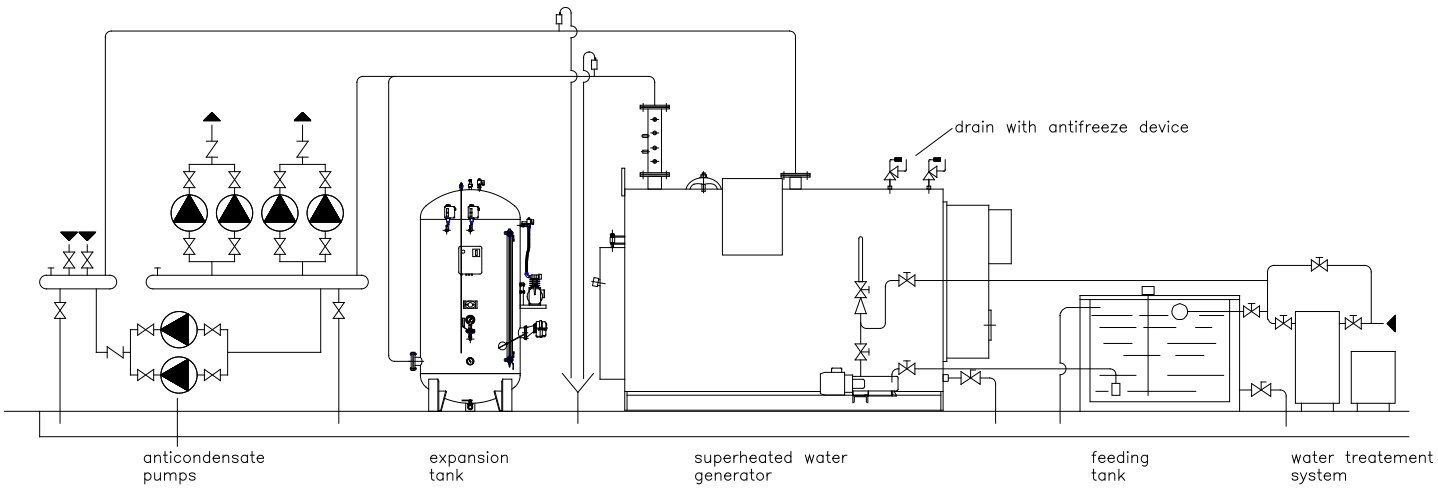
The expansion tanks are combined with the overheated water generators SMB and PAS-M types and the dimensioning of the net expansion capacity is calculated by the installation's designer.

Complete of all the accessories for the automatic working

Dimensions and characteristics

Model capacity	Pressure	Expansion connection	Net expansion capacity	Dimensions mm	
liters	bar	Ø	litri	Ø	H
300	5	1" 1/2	165	550	1490
500	5	1" 1/2	305	650	1780
800	5	2"	500	800	1930
1000	5	2"	640	800	2280
1500	5	2" 1/2	890	1000	2250
2000	5	2" 1/2	1200	1100	2510
3000	5	DN 100	1670	1300	2710
4000	5	DN 100	2810	1300	3410
5000	5	DN 100	3570	1400	3670

Indicative diagram of hydraulic connection for overheated water



Complementary products

STEAM COLLECTORS

Horizontal steel externally anti-rust enamelled steam collectors.

N.B. approved according to European norm 97/23/CE.-P.E.D.

Production on request.

STEAM STORAGE TANKS

Horizontal steam storage steel tanks, externally anti-rust enamelled. Mineral wool insulation and external aluminium jacket. Complete of accessories

Manufactored according to the European norm 97/23/CE-PED and tested by N.B. as "ASSEMBLY" approved according to the European Directive 97/23 CE-PED.

ATMOSPHERIC STEAM DEAERATORS

Atmospheric steam deaerators, mild steel, painted externally and insulated with mineral wool, aluminium finishing, complete of all accesories required.

According to art. 3.3 - Dir 97/23/EC - P.E.D.

Capacity and prices on request

RC

TANKS TO COLLECT CONDENSATION

Vertical tanks to collect condensation galvanized, for steam plants, complete of all accessories required.

Atmospheric working pressure.

According to art. 3.3 - Dir 97/23/EC - P.E.D.

On request we make horizontal tanks and different capacities

Tank model	Capacity liters	Weight kg	Dimensions mm Ø	H
RC 1000	1000	120	800	2230
RC 2000	2000	200	1100	2400
RC 3000	3000	270	1300	2600
RC 5000	5000	330	1600	2900

Complementary products

ST DUPLEX SOFTENER

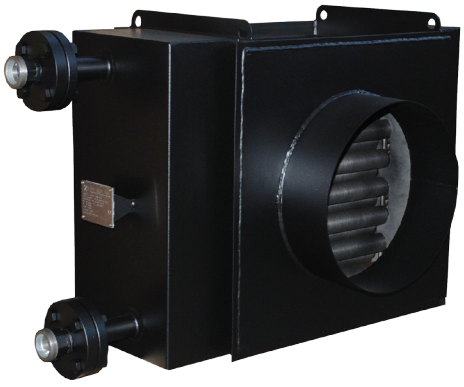
Duplex softeners for the water treatment suitable for the series of steam generators SILE models **PVM**, **VMB** and **VMA**

Model **ST SOFTENER**	Matching the following steam boilers
LOW PRESSURE GENERATORS	
ST DUPLEX 50+50	from PVM 10 to PVM 28
ST DUPLEX 75+75	from PVM 35 to PVM 50
ST DUPLEX 100+100	from PVM 60 to PVM 72
ST DUPLEX 150+150	from PVM 95 to PVM 230
ST DUPLEX 200+200	PVM 290
ST DUPLEX 300+300	PVM 340
MEDIUM PRESSURE GENERATORS	
ST DUPLEX 50+50	from PVM 25 to PVM 36
ST DUPLEX 75+75	from PVM 46 to PVM 54
ST DUPLEX 100+100	from PVM 74 to PVM 95
ST DUPLEX 150+150	from PVM 120 to PVM 200
ST DUPLEX 200+200	from PVM 230 to PVM 290
ST DUPLEX 300+300	PVM 340, PVM 400, PVM 550, PVM 680

ECO
Fuel saving device for steam generators

Fuel saving devices for medium pressure steam generators (8-12 bar)

Model **ECO**	Matching the following steam boilers
ECO 1	PVM 25 / VMA 230 PVM 32 / VMA 300 PVM 36 / VMA 340
ECO 2	PVM 46 / VMA 440 PVM 54 / VMA 500 PVM 74 / VMA 630-750
ECO 3	PVM 95 / VMA 900 PVM 120 / VMA 1050-1200 PVM 136 / VMA 1400
ECO 4	PVM 200 / VMA 1700-2000 PVM 230 / VMA 2400
ECO 5	PVM 290 / VMA 2700 PVM 340 / VMA 3400



OTHERS ACCESSORIES FOR STEAM GENERATORS
Automatic system mud discharge DN 32 (for VMA 200, PVM 230)
Automatic system mud discharge DN 40 (for VMA 340, PVM 340)
TDS (Total Dissolved Solids) - Salinity control group
Sample water cooler
Maximum level alarm kit
Safety maximum level alarm self controlled
Safety minimum level alarm self controlled

Safety devices

The steam generators and overheated water package units (ASSEMBLY) are complete of all the accessories required by norms and supplied completely assembled and wired.

The main board enables the steam generators' automatic working thanks to devices for the pressure and level check.

Lever safety valves

All the Sile generators are equipped with lever safety valve with counterweight (on request is possible to have spring type safety valve)

Pressure switch

All the Sile genarators are equipped with safety pressure switches with manual reset and pressure controls

Pumps of feed water

All the Sile generators are equipped with feed water electric pumps suitable also for the condensate re-use.

KIT 24 - 72
FOR MEDIUM PRESSURE STEAM GENERATORS

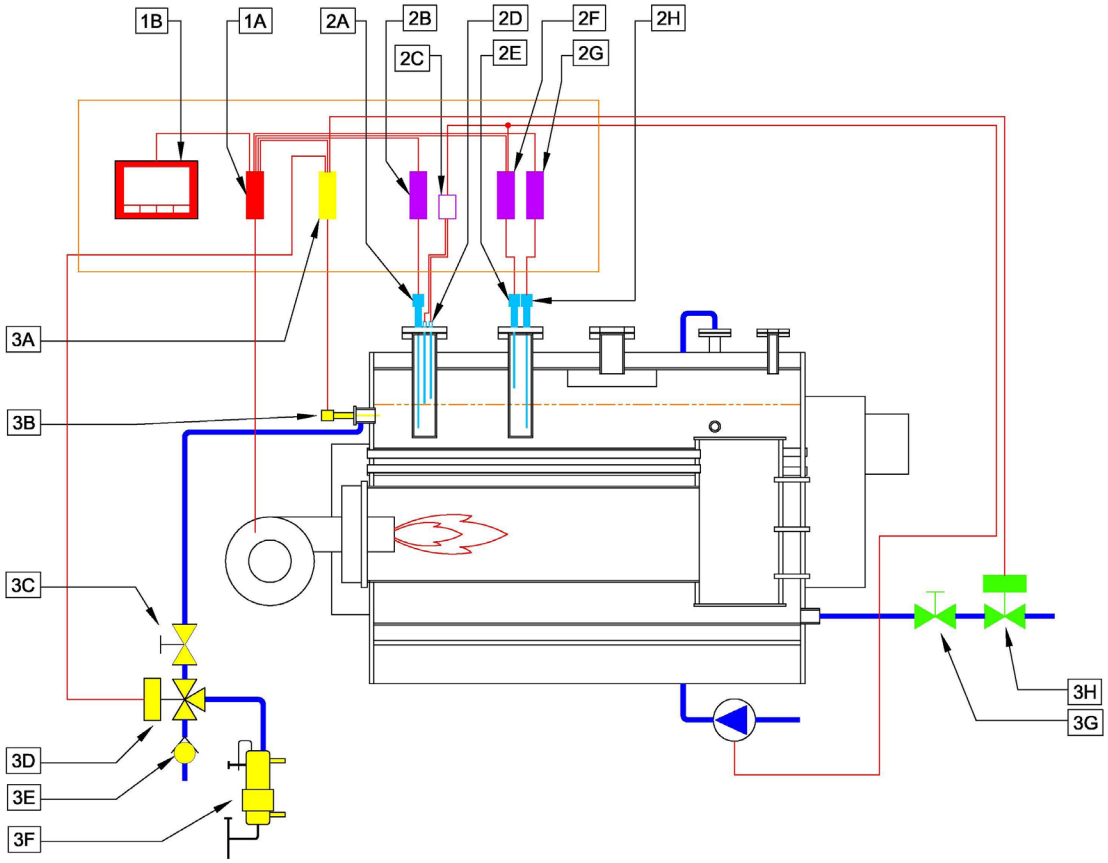
The **KIT 24 and 72 hours** enable the medium pressure steam generators' working (8-12 bar) without the supervision of the certified operator for 24 or 72 hours obtaining in this way partially exempting the continuous supervision.

The KIT 24-72 hours cosists of safety and tests devices, mounted on the generator and tested in production, in addition to the standard equipment of the steam generator.

The system is CE approved as ASSEMBLY according to European norm 97/23/CE-PED by N.B.

Main components of a KIT 72

Application diagram of KIT 72 hours



1) CENTRAL UNIT
- 1A PLC control regulatory signals , deadlines, controls and boiler control
- 1B -screen Display (panel painting)

2) PROBES AND LEVEL REGULATORS
- 2A first probe minimum safety level independent self-controlled
- 2B first independent safety regulator minimum level
- 2C level controller start / stop pumps
- 2D probes operating pumps
- 2E safety probe maximum level self-controlled
- 2F safety regulator maximum level self-controlled
- 2G second safety regulator minimum level independent
- 2H second probe minimum safety level independent self-controlled

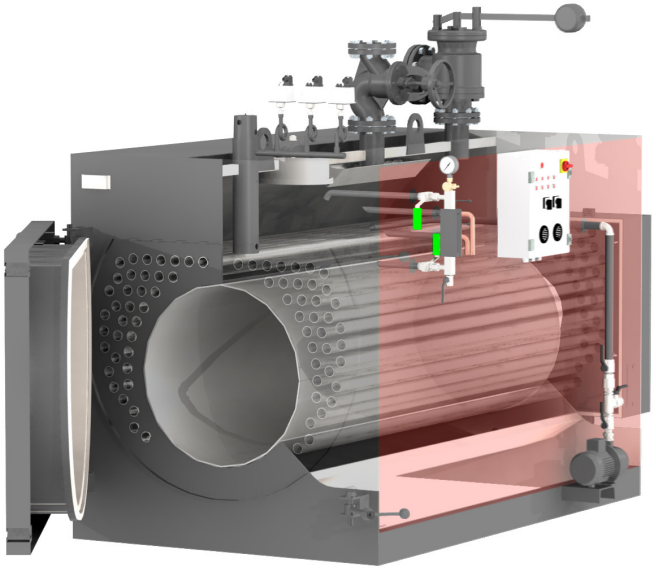
3) SALINITY CONTROL ' (TDS) AND AUTOMATIC DISCHARGE SLUDGE
- 3A regulator control salinity (panel painting)
- 3B conductivity probe
- 3C valve
- 3D motorized drain valve (controlled by 3A)
- 3E check valve
- 3F cooler water sample
- 3G shutoff valve
- 3H motorized timed exhaust valve (controlled by 3A)

Construction ways

The Sile industrial generators' range consists of models with three pass smoke tubes (one in the furnace and two in the smooth tubes without turbolators) with power output of 3488 kW and of models with reverse flame, two of them in the furnace with power output until 1400 kW.

They are two different construction ways.

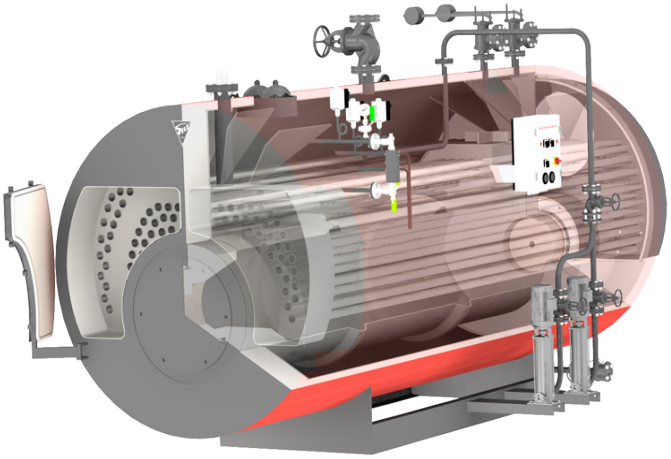
In the reverse flame models the smokes reverse their way in the furnace routing it twice.



REVERSE FLAME GENERATORS

In the three pass smoke tubes generators, smokes, after having been in the furnace, reverse their way in a reverse chamber inside the generator, refrigerated by water, routing two rows of tubes, one above the other.

Inconvenients due to refractory are in this way avoided (often maintenance) and heat losses are reduced both by irradiation and by convention thanks to reverse wet chamber.



THREE PASS SMOKE TUBES GENERATORS

Specification and norms

Feedwater's characteristics

For automatic working generators N.B. certification currently foresees the here below listed feedwater and generator's characteristics:
– total feedwater hardness not over 0,5°French.
– total water salinity in the generator not over 3500 p.p.m.
– alkaline water in the generator not over 1000 p.p.m. like $CaCO_3$.
It is therefore necessary to make water analysis and, according to the results, foresee the water adequate treatment.

Many generator's problems are caused by residual and corrosion due to the use of water with chemical characteristics not adequate. Before adding chemical additives to the water's generator get information about the reside forming and how to eliminate them.

www.sile.it

Please visit web site to download updated products technical documentation.

For technical assistance request please write to e-mail address:

export@sile.it

It is important to carry out always a periodical maintenance

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