TOTALGAZ INDUSTRIE

Filter heater
FW 620

Introduction

FW 620 filter heaters combine filtration and heating assemblies and are designed to filter and heat natural gas, air, propane and other non – corrosive gases.

The working principle consists of heat transfer from a hot fluid (thermal carrier fluid) to the gas to be heated.

Constructive characteristics

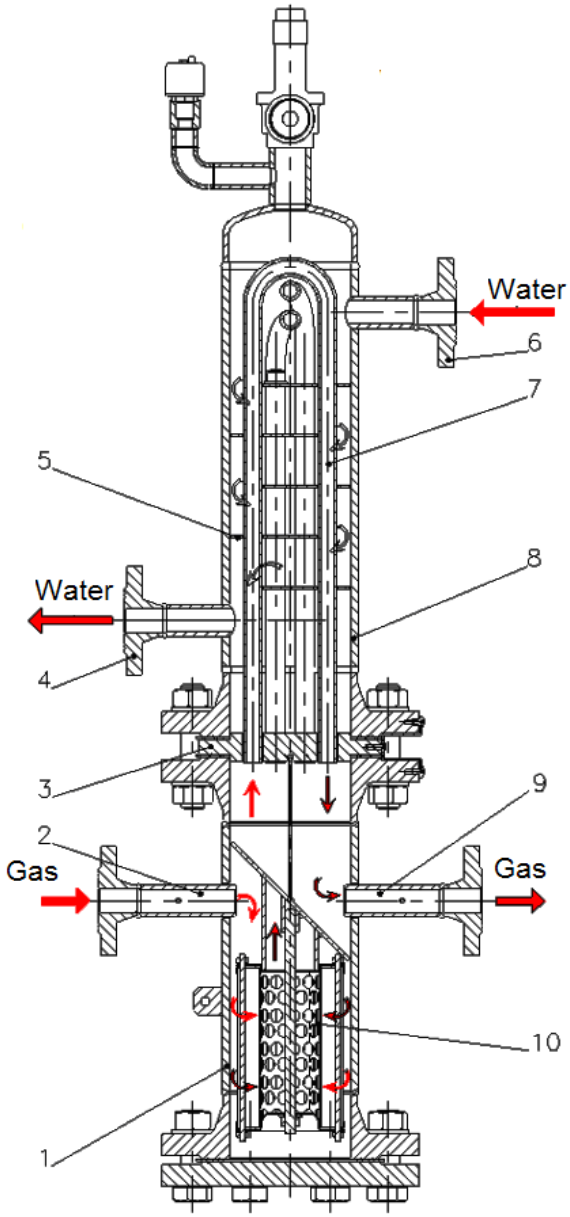


Figure 1 - FW 620 filter heater

FW 620 filter heaters (Figure 1) comprise the following elements:

1. filter body
2. gas inlet
3. tube plate
4. water outlet
5. baffle plate
6. water inlet
7. tube bundle
8. shell
9. gas outlet
10. filter element

Technical characteristics

Filter heater main parameters:

Connection nominal diameter:	DN 25, DN 32, DN 40, DN 50, DN 65, DN 80, DN 100, DN 125, DN 150, DN 200, DN 250, DN 300
Body nominal diameter:	DN 100 ÷ DN 500
Nominal pressure:	25/ 40/64/100 [bar]
Thermal carrier fluid:	hot water, overheated water, steam
Thermal carrier fluid nominal pressure:	3 ÷ 6 [bar]
Pressure drop:	
- in gas circuit	90 ÷ 900 [mbar]
- in water circuit	50 ÷ 100 [mbar]
Working temperature:	-20 ÷ +120 [ºC]
Ambient temperature:	-30 ÷ 80 [ºC]
Thermal carrier fluid temperature:	70 ÷ 80 [ºC]
Filtering cartridge:	stainless steel filtering cartridge or phenolic resin impregnated cellulose filtering cartridge, hardened with polyester
Filtration rating:	10 / 50 / 160 / 300 / 800 µm
Efficiency:	99.9% for particles > 3 µm
Cartridge replacement:	at a pressure drop of 0,8 bar
Thermal capacity:	2540 ÷ 640000 [kcal/h].
Design specifications:	according to PED 97/23 EC / AD; ASME

Optional accessories:

Upon request, the filter heater can be equipped with:

- differential pressure gauge
- thermometer on inlet / outlet connection
- safety shut off valve
- ventilator
- copper ground plate
- shell thermal insulation
- safety shut-off device on water circuit.

Operation

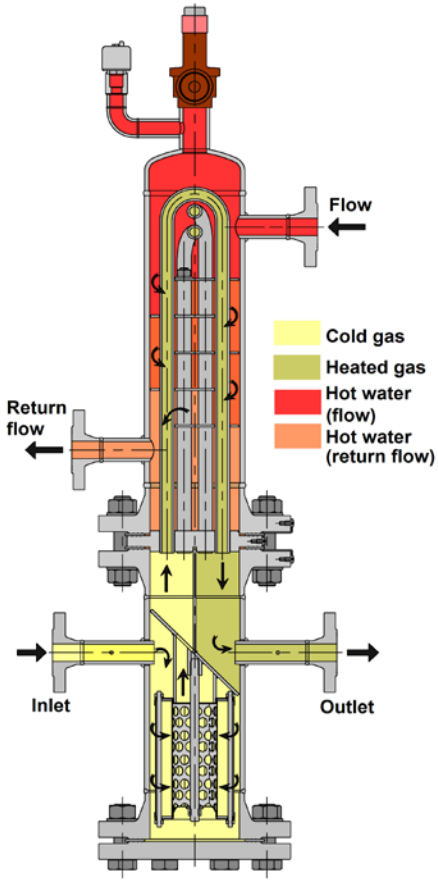


Figure 2 - FW 620 filter heater operation

The working fluid, that is the gas to be filtered and heated, enters the inlet connection (2), is deflected by the separator plate, and flows towards the filter element (10) (Figure 10). The gas passes through the filtering cartridge mesh (which collects the solid particles depending on the filtration efficiency), enters the heater inlet chamber, and continues to flow through the tube bundle (7). Here the heat transfer takes place, from the thermal carrier fluid (the hot water) and to the gas to be heated. The hot water flows through the tube bundle, enters through connection (6) and is discharged through connection (4). The thermal carrier fluid flow is controlled by a cross-cut walls system (5) that causes a considerable increase of the fluid speed and a better heat transfer.

The heated gas flows out the tube bundle, enters the collecting chamber, and then exists through the gas outlet (9).

The thermal carrier fluid passes counter stream, which means the flow direction of the thermal carrier fluid is backward the working fluid flow direction. Therefore, the heat transfer surface is smaller and the capacity is higher.

Overall dimensions

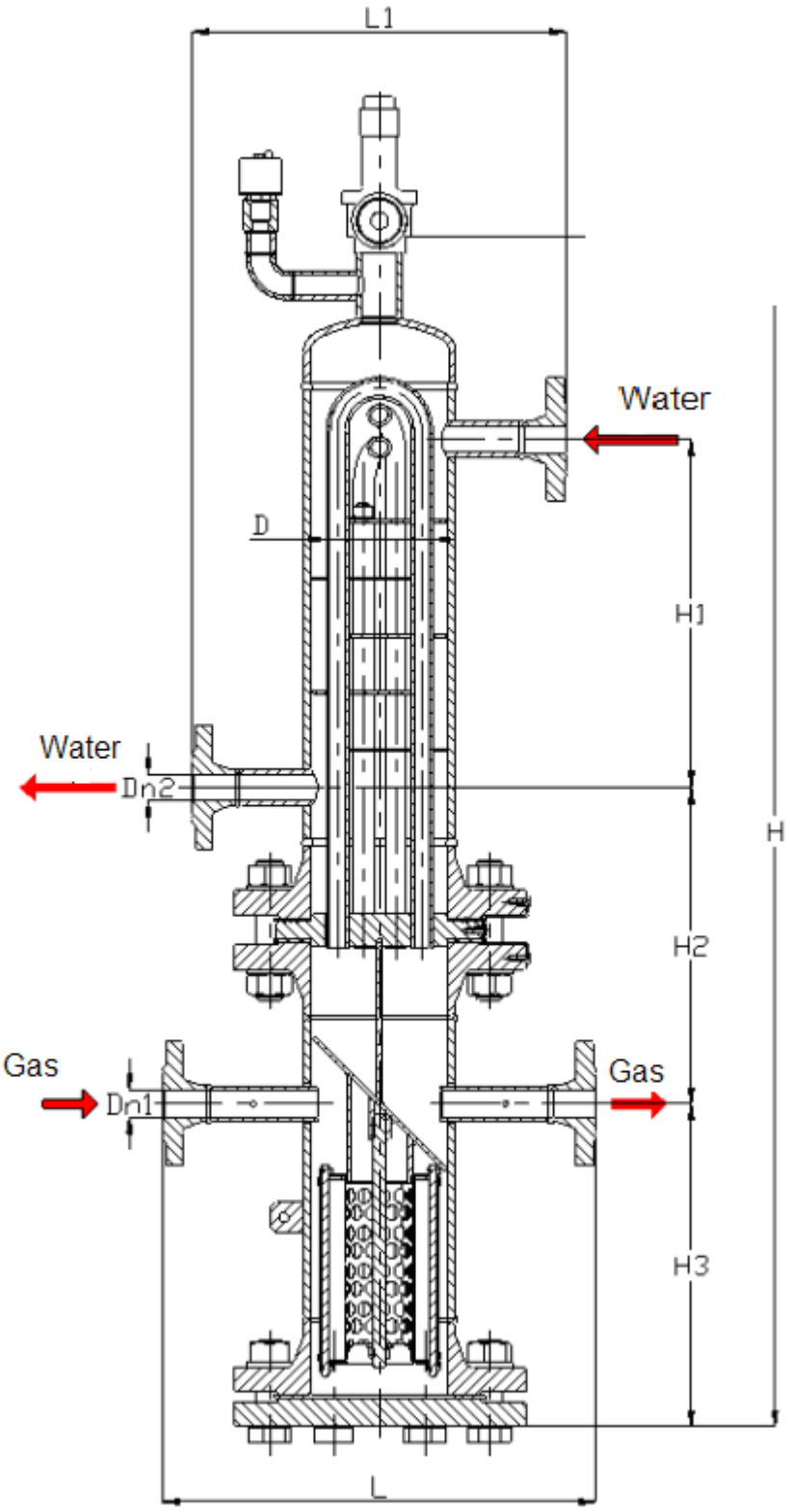


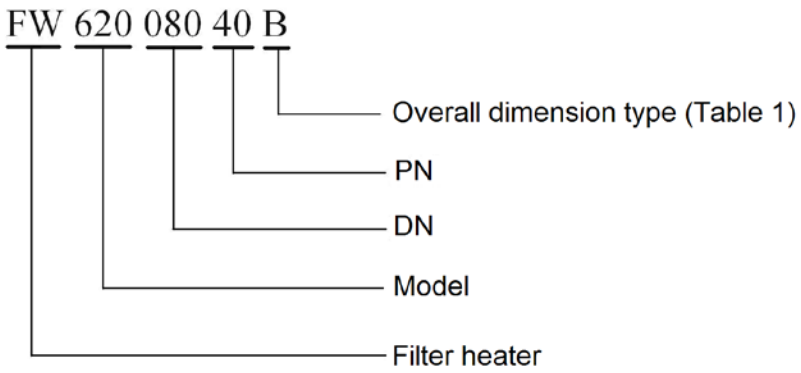
Figure 3 – Overall dimensions of FW 620 filter heater

Table 1 – Overall dimensions

Type	DN1	DN2	L	L1	D	H	H1	H2	H3	Heat duty
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kcal/h]
A	25	25	400	360	Φ141,3	1113	320	293	300	2600
B						1363	570			4600
C						1613	820			6500
A	32	25	450	400	Φ168,3	1240	300	320	400	3700
B						1490	550			6000
C						1740	800			13500
D						1990	1050			18000
E						2240	1300			22600
A	40	25	450	400	Φ168,3	1240	300	320	400	3700
B						1490	550			6000
C						1740	800			13500
D						1990	1050			18000
E						2240	1300			22600
A	50	50	500	440	Φ219,1	1470	320	380	500	14000
B						1720	570			23000
C						1970	820			31000
D						2220	1070			40000
A	80	50	600	530	Φ323,8	1680	330	450	600	23000
B						1900	580			38500
C						2180	830			74200
D						2430	1080			96000
A	100	80	700	570	Φ323,8	1850	350	500	650	23000
B						2100	600			38500
C						2350	850			74200
D						2600	1100			96000
A	150	80	850	700	Φ406,4	2070	460	600	750	69500
B						2320	710			100000
C						2570	960			140000
D						2820	1210			175000
E						3070	1460			232000
A	200	100	850	760	Φ406,4	2070	460	600	750	69500
B						2320	710			100000
C						2570	960			140000
D						2820	1210			175000
E						3070	1460			232000
A	250	150	950	900	Φ508	2320	590	700	850	135000
B						2570	840			200000
C						2820	1090			265000
D						3070	1340			365000
E						3320	1590			430000
A	300	150	950	900	Φ508	2320	590	700	850	135000
B						2570	840			200000
C						2820	1090			265000
D						3070	1340			365000
E						3320	1590			430000

Ordering code

The filter heaters can be ordered by specifying the constructive type, inlet - outlet nominal dimensions, maximum working pressure and overall dimension type.



For example, the ordering code FW 620-080-40-B designates FW 620 filter heater, inlet – outlet nominal diameter 80 mm, maximum working pressure 40 bar and overall dimension type B (according to Table 1).

Additional requirements, if any, must be specified when placing the order.

The manufacturer reserves the right to make modifications without any prior notification.

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TOTALGAZ INDUSTRIE
Nr. R.C.: J-22-3277/1994
CUI: RO6658553
IBAN: RO28BRDE240SV13842272400
B.R.D. G.S.G. Iaşi
Şos. Păcurari, nr. 128,
Iaşi, cod 700545, România
Tel. : 0040-232-216.391(2)
Fax : 0040-232-215.983
E-mail: office@totalgaz.ro
Web: www.totalgaz.ro

Certified Management System