

KSI

Heat exchangers



TECHNICAL BROCHURE

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Who we are

We are a global organization specialized in designing and manufacturing technologically advanced solutions for natural gas treatment, transmission and distribution systems.

We are the ideal partner for operators in the Oil & Gas sector, with a business offer that goes across the whole natural gas chain.

We are in constant evolution to meet our customers' highest expectations in terms of quality and reliability.

Our aim is to be a step ahead of the competition, with customized technologies and an after-sale service program undertaken with the highest grade of professionalism.



Pietro Fiorentini advantages



Localised technical support

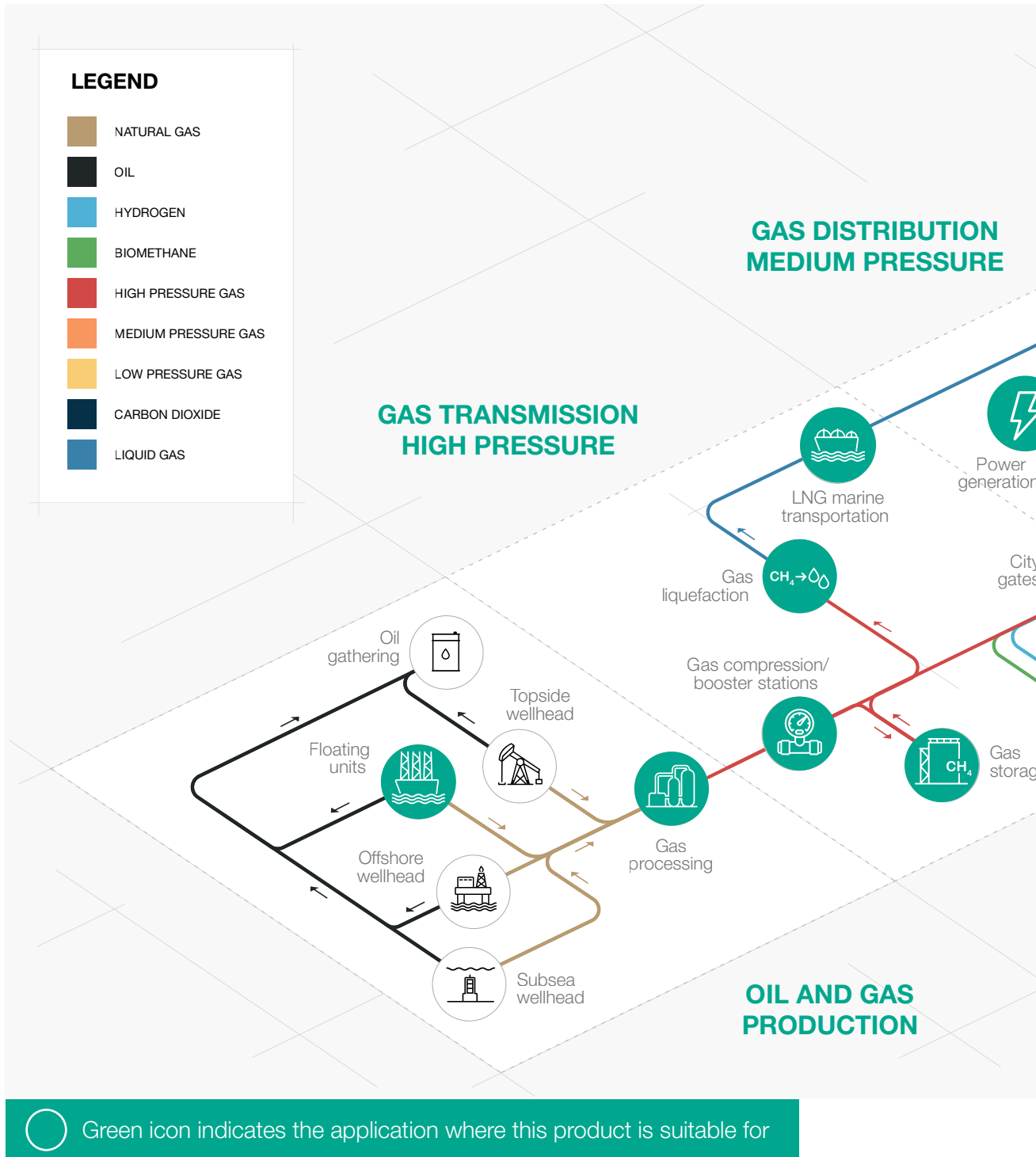


Experience since 1940



We operate in over 100 countries

Area of Application



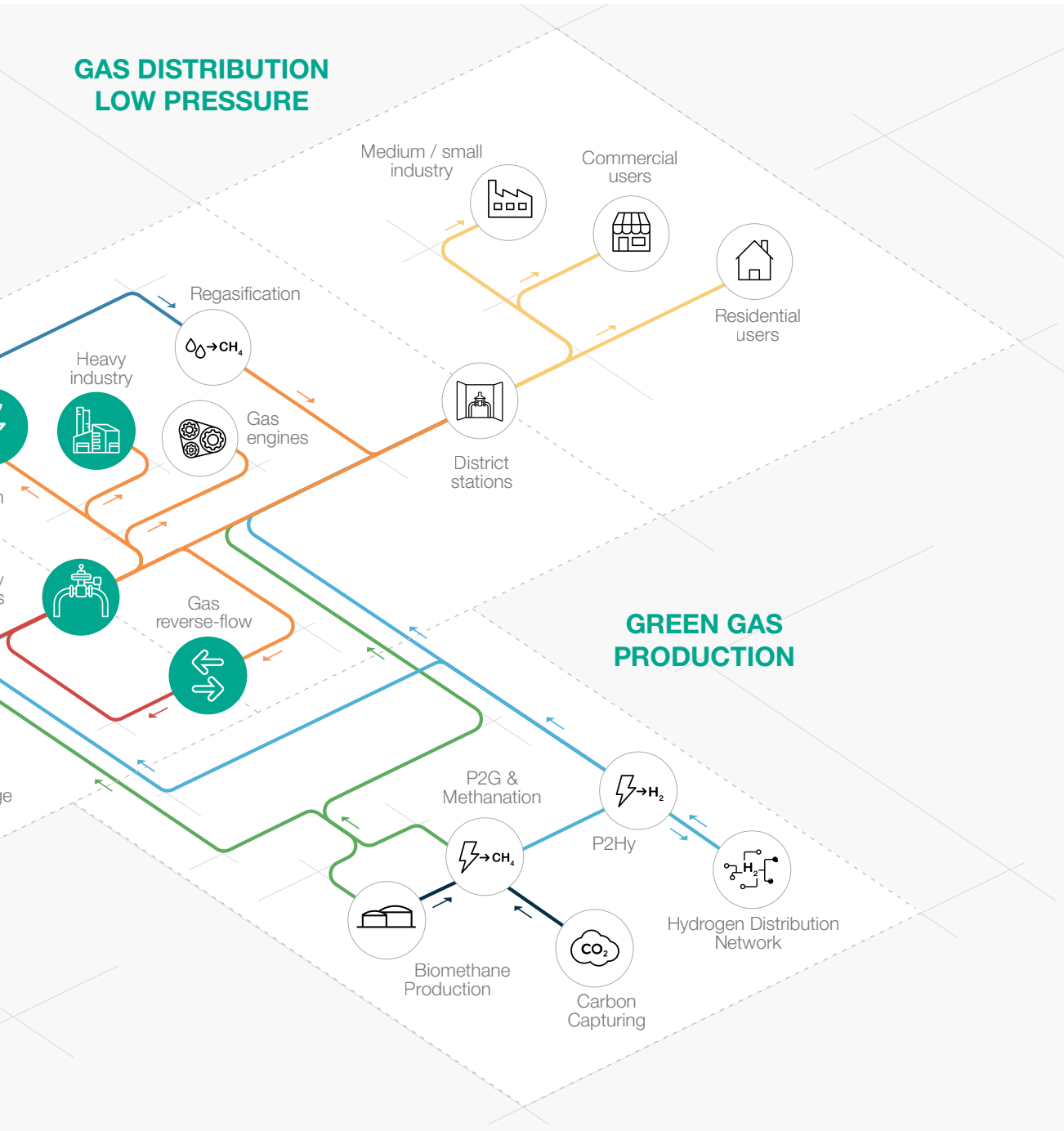


Figure 1 Area of Application Map

Introduction

KSI standard design has been developed by Pietro Fiorentini to **preheat upstream gas regulation sections**, in order to compensate **cooling due to Joule Thomson effect**. The standard design is based on a vertical BEU configuration with gas flowing through the tubes and heating medium on the shell side.

Pietro Fiorentini gas heat exchangers (KSI) are suitable for natural gas, air, propane and other non-aggressive gases, and can be provided with hot, superheated water or steam as heating fluid, based on customer's needs.

On demand, they can be equipped with pressure gauge and pressure switch, safety valve on tube or shell side and with air self-exhausting device.

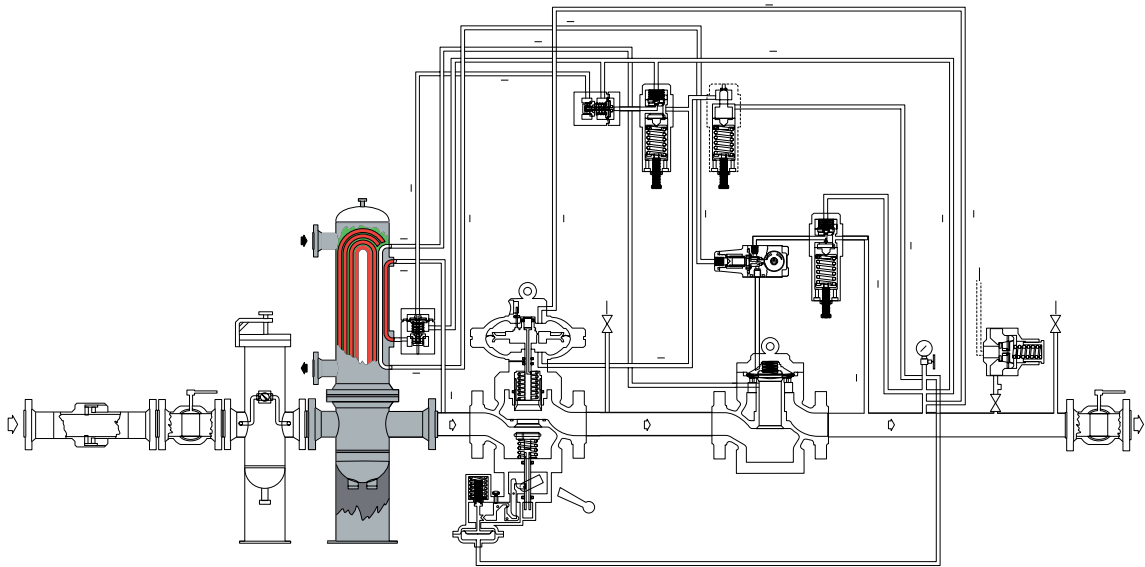


Figure 2 KSI heat exchanger typical installation

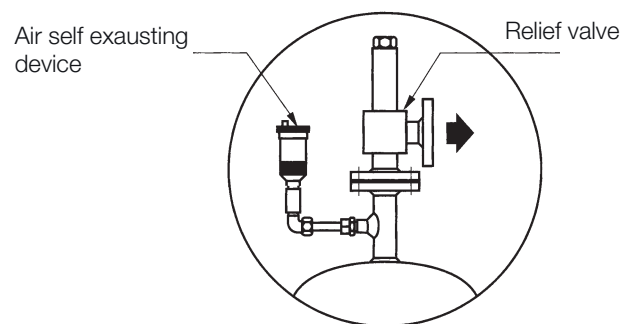


Figure 3 KSI relief valve

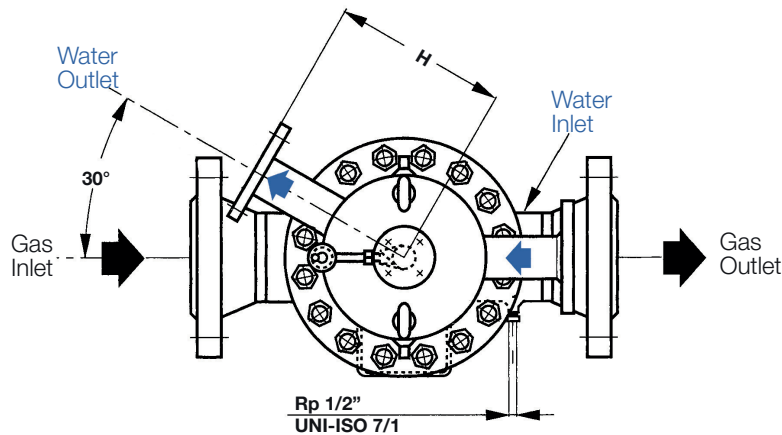


Figure 4 KSI top view

KSI competitive advantages

-  Inspectable
-  Easy to repair (when necessary)
-  Tailored design possible

Available accessories

- Drain ball valve
- Pressure gauge
- Pressure switch
- Safety valve on tube side
- Safety valve on shell side
- Air self-exhausting device
- Outlet gas temperature indicator

Features

Features	Values	
	Tube side	Shell side
Design pressure	<ul style="list-style-type: none"> 8.5 MPa 85 barg 1232 psig 4.63 MPa 46.3 barg 671 psig 	0.6 Mpa 6 barg 87 psig
Design temperature	from -10 °C to +100 °C from +14 °F to +212 °F	from -10 °C to +100 °C from +14 °F to +212 °F
Corrosion allowance	0 mm 0 inches	1 mm 0.04 inches

REMARK: Different functional features and/or extended temperature ranges available on request. Stated temperature ranges are the maximum for which the equipment's full performance, including accuracy, are fulfilled. Standard product may have a narrower range.

Table 1 Features

Connections

Part	Connection type
Gas nozzle	ASME B16.5 WNRF Class 600 (for 8.5 MPa 85 barg 1232 psig version) WNRF Class 300 (for 4.63 MPa 46.3 barg 671 psig version)
Water nozzle	PN 16 (EN1092-1)
Bonnet condensate drain	Screwed Rp (EN10226)
Relief valve (shell side top)	Flanged PN 16 (EN1092-1)
Gas pre-heating (pressure regulator pilot loop)	Double Rp 1/4 (EN10226)
Grounding	Copper

Table 2 Connections

Construction standards and Approvals

The KSI heat exchanger is certified according to European Directive 2014/68/EU (PED). On request, the KSI can be supplied with additional certifications, such as ASME U-Stamp and ASME U2-Stamp, designed according to ASME Section VIII, Division 1.



PED-CE



ASME
U-Stamp*



ASME
U2-Stamp*



ASME VIII div.1*

*on request



Weights and Dimensions

KSI

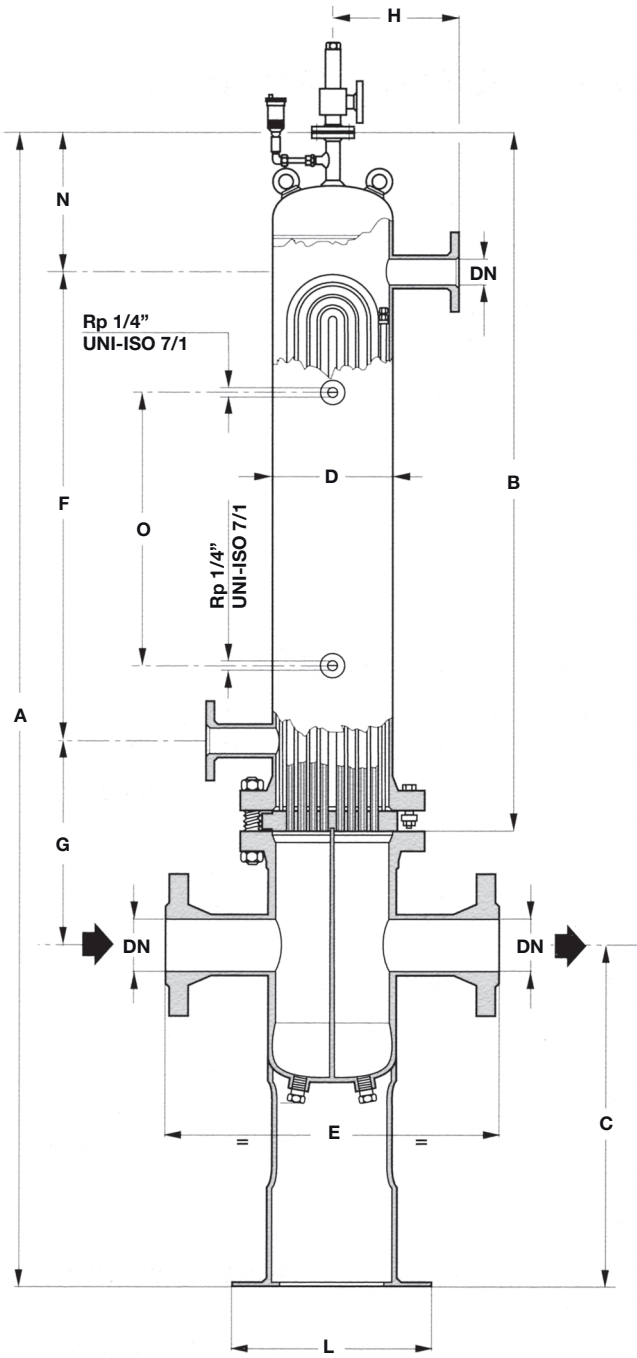
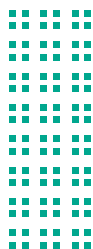


Figure 5 KSI dimensions



Weights and Dimensions (for other connections please contact your closest Pietro Fiorentini representative)

KSI type	A		B		C		D		E		F	
	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches
0,5	2242	88.3"	-	-	800	31.5"	141.3	5.6"	450	17.7"	975	38.4"
1	2404	94.6"	1374	54.1"	800	31.5"	168.3	6.6"	500	19.7"	950	37.4"
2	2530	99.6"	1530	60.2"	800	31.5"	219.1	8.6"	600	23.6"	975	38.4"
3	2720	107.1"	1640	64.6"	800	31.5"	273	10.7"	750	29.5"	1100	43.3"
4	2780	109.4"	1690	66.5"	800	31.5"	323.8	12.7"	800	31.5"	1100	43.3"
5	3040	119.7"	1785	70.3"	900	35.4"	406.4	16.0"	1000	39.4"	1100	43.3"
6	3325	130.9"	1946	76.6"	1000	39.4"	508	20.0"	1100	43.3"	1100	43.3"
7	3550	139.8"	2100	82.7"	1000	39.4"	609.6	24.0"	1200	47.2"	1100	43.3"

Table 3 KSI dimensions

Weights and Dimensions (for other connections please contact your closest Pietro Fiorentini representative)

KSI type	G		H		L		N		O	
	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches
0,5	200	7.9"	150	5.9"	300	11.8"	250	9.8"	650	25.6"
1	390	15.4"	200	7.9"	400	15.7"	265	10.4"	650	25.6"
2	416	16.4"	220	8.7"	400	15.7"	340	13.4"	650	25.6"
3	460	18.1"	300	11.8"	425	16.7"	325	12.8"	650	25.6"
4	500 / 550*	19.7 / 21.7"	325	12.8"	475	18.7"	380	15.0"	650	25.6"
5	615	24.2	400	15.7"	520	20.5"	400	15.7"	650	25.6"
6	760	29.9	525	20.7"	640	25.2"	465	18.3"	650	25.6"
7	810	31.9	600	23.6"	640	25.2"	540	21.3"	650	25.6"

*for DN200

Table 4 KSI dimensions

Weights and Dimensions (for other connections please contact your closest Pietro Fiorentini representative)

KSI type	Nozzle tube side		Drain	Nozzle shell side		Heating surface		Weight		Shell side volume		Tube side volume	
	DN	NPS		DN	NPS	m ²	inches ²	Kg	Lbs	L	US Gal	L	US Gal
0,5	DN 25	1"	Rp 1/2" (DN 15)	DN 40	1 1/2"	0.52	800	86	190	4.5	1.2	13.5	3.6
	DN 40	1 1/2"											
	DN 50	2"											
1	DN 40	1 1/2"	Rp 1/2" (DN 15)	DN 50	2"	1.00	1542	260	573	10	2.6	21	5.5
	DN 50	2"											
	DN 65	2 1/2"											
	DN 80	3"											
2	DN 50	2"	Rp 1/2" (DN 15)	DN 50	2"	2.28	3539	260	573	24	6.3	34	9.0
	DN 65	2 1/2"											
	DN 80	3"											
	DN 100	4"											
3	DN 65	2 1/2"	Rp 1/2" (DN 15)	DN 50	2"	4.35	6747	350	772	48	12.7	57	15.1
	DN 80	3"											
	DN 100	4"											
	DN 125	5"											
	DN 150	6"											
4	DN 80	3"	Rp 1/2" (DN 15)	DN 50	2"	6.75	10456	570	1257	68	18.0	84	22.2
	DN 100	4"											
	DN 125	5"											
	DN 150	6"											
5	DN 200	8"	Rp 1/2" (DN 15)	DN 80	3"	11.44	17734	850	1874	127	33.5	128	33.8
	DN 100	4"											
	DN 125	5"											
	DN 150	6"											
	DN 200	8"											
6	DN 150	6"	Rp 1" (DN 25)	DN 125	5"	21.36	33102	1800	3968	210	55.5	250	66.0
	DN 200	8"											
	DN 250	10"											
7	DN 200	8"	Rp 1" (DN 25)	DN 150	6"	31.9	49445	2500	5512	450	118.9	370	97.7
	DN 250	10"											
	DN 300	12"											

Table 5 KSI technical specifications

Customer Centricity

Pietro Fiorentini is one of the main Italian International Company with high focus on Product and Service quality. The main strategy is to create a stable long-term oriented relationship, putting the customer's needs first. Lean Management and Thinking and Customer Centricity are used to improve and maintain the highest level of customer experience.



Support

One of Pietro Fiorentini's top priorities is to provide support to the Client in all phases of project development, during installation, commissioning and operation of the MPFM. Pietro Fiorentini has developed a highly standardized intervention management system, which helps to facilitate the entire process and effectively archive all the interventions carried out, drawing on valuable information to improve the product and service. Many services are available remotely, avoiding long waiting times or expensive interventions.



Training

Pietro Fiorentini offers training services available for both experienced operators and new users. The training is composed of the theoretical and the practical parts, and is designed, selected and prepared according to the level of use and the customer's need.



Customer Relation Management (CRM)

The centrality of customer is one of the main missions and vision of Pietro Fiorentini. For this reason, Pietro Fiorentini has enhanced the customer relation management system. This enable to track every opportunity and request from Customer in one single point and make free the information flow.



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