

BRUGG

Pipes

FLEXWELL® CRYO PIPE

Energy efficient and cost effective solutions for cryogenic fluids: flexible, double-wall, monitored, vacuum-insulated pipe systems for the transport of all cryogenic liquefied gases

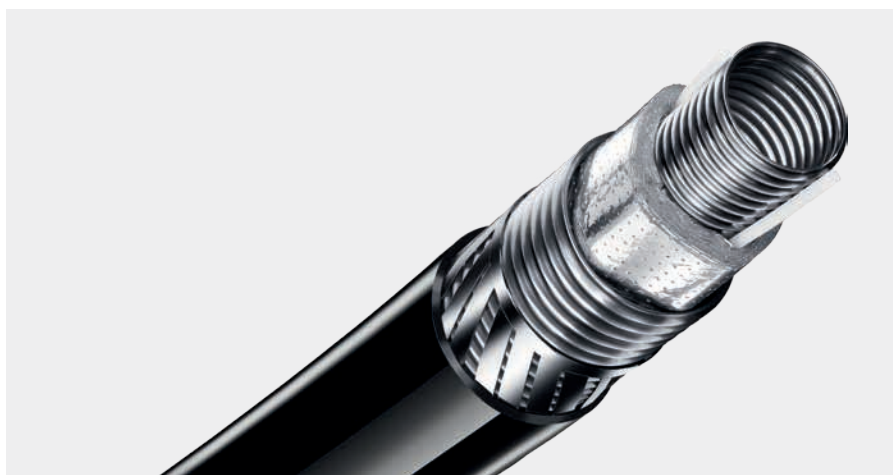
SYSTEM DESCRIPTION

FLEXWELL® CRYO PIPE has been developed for above-ground and underground transport of cryogenic liquefied gases. The special super-insulation made of highly reflective foil together with spacers in the vacuum layer enable an efficient and safe cryogenic fluid transport with low heat inleak along the whole length of the pipeline.

The specially adapted stainless steel armoring of the outer pipe guarantees high pressure stability and minimal elongation of FLEXWELL® CRYO PIPE. The stainless steel armoring also provides a stiffening component to ensure that the piping can be laid and pulled-in without risk. The pipe system is designed for a maximum pressure of 25 bar (PN 25) for the DN 15 to DN 32 pipes and for a maximum pressure of 30 bar for the DN 40 pipe in the temperature range between $-200\text{ }^{\circ}\text{C}$ (73 K) and $+50\text{ }^{\circ}\text{C}$.

CONSTRUCTION

FLEXWELL® CRYO PIPE is a flexible, double-walled, vacuum-insulated pipe system for the transport of all cryogenic liquefied gases. The pipe consists of two concentric helically-corrugated stainless steel pipes with a cryogenic insulation in between. The insulation of highly reflective polymer foil and spacers in a vacuum layer minimizes the total heat input into the pipe system. Stainless steel armoring is additionally applied to the outer pipe in order to



provide a higher pressure stability of the pipe system and to increase the tensile strength of the pipe for the installation. The final layer is a PE protective coating.

AREAS OF APPLICATION

Transport of cryogenic liquefied gases such as

- liquid nitrogen LN_2
- liquid argon LAr
- liquid oxygen LOX
- liquid hydrogen LH_2
- liquid helium LHe
- liquefied natural gas LNG

NOMINAL DIAMETERS/ PRESSURE LEVELS

FLEXWELL® CRYO PIPE is currently available as a standard product in the nominal diameters DN 15 to DN 40 in the temperature range from $-200\text{ }^{\circ}\text{C}$ to $+50\text{ }^{\circ}\text{C}$ with the pressure level PN 25

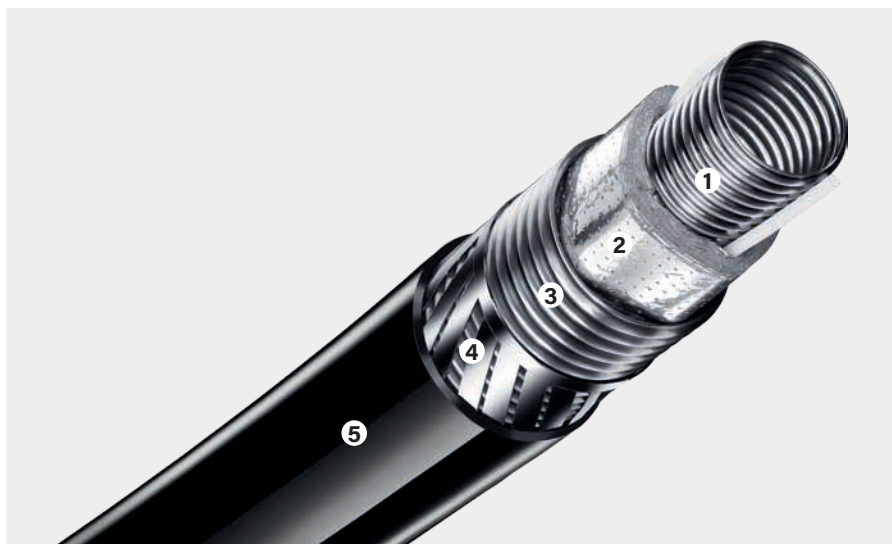
for the sizes DN 15 to DN 32 and with a maximum pressure of 30 bar for the size DN 40. The maximum pressures at temperatures below $-200\text{ }^{\circ}\text{C}$ are available on request. Other nominal diameters and pressure levels on request. The maximum nominal diameter is DN 200.

INSTALLATION

FLEXWELL® CRYO PIPE can be laid above ground, directly in buildings. Suitable pipe brackets, etc. are offered for this purpose.

It is also possible to install it in one piece directly in a pipe trench or on sand bed. The unique corrugated pipe geometry of the inner and outer pipe ensures excellent flexibility and simultaneously compensates for thermal expansion/shrinkage.

- 1 corrugated pipe, stainless steel
- 2 vacuum superinsulation layer including spacer
- 3 corrugated pipe, stainless steel
- 4 flat steel armoring, stainless steel
- 5 protective jacket, PE-LD



Technical data FLEXWELL® CRYO PIPE

Material:	inner pipe	AISI 316 L
	outer pipe	AISI 316 L
	armoring	AISI 304
	corrosion protection	protective jacket, PE-LD
Operating pressure:	DN 15 – DN 32	max. 25 bar
	DN 40	max. 30 bar
Operating temperature:	–200 °C (73 K) up to +50 °C (323 K)	

Dimensions

Type	Nominal diameter	Inner diameter mm	Outer diameter mm	Volume l/m	Weight kg/m	Bending radius m	Heat inleak W/m
FCP 16/50	DN 15	16	50	0.20	1.85	0.3	0.4
FCP 22/50	DN 20	22	50	0.38	1.90	0.3	0.6
FCP 30/61	DN 25	30	61	0.71	2.40	0.4	0.8
FCP 39/74	DN 32	39	74	1.19	3.45	0.6	1.0
FCP 48/94	DN 40	48	94	1.81	4.75	0.8	1.2

Subject to change without notice.

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