
oiltechpipe
fortiuspipe
HIGH PRESSURE THERMOPLASTIC PIPES

Our Company

Pipeline Systems OILTECH LLC is a part of SIEBC group of companies working in the energy industry for more than 20 years which produce, engineer and develop systems with the most advanced plastic technologies for the conduction and storage free of corrosion of all kind of fluids at high pressures and temperatures.

The group is working worldwide providing services, installations, products and performing turn key projects.

Factory in 2017

New factory 2021

New development 2023

Content

Our product

We manufacture flexible composite pipes up to 8 inches in coils and up to 20" in bars for working pressures up to 3000 psi under our registered brand OILTECHPIPE. Our product is the result of work of the company engineering staff and has a number of characteristics that provide an indisputable advantage over the analogues available on the market. Pipes have increased reliability and strength due to special reinforcing profiles, which ensure their more dense laying with uniform loading, and polymer antifriction layer under the outer sheath. The design of reinforcing profiles and technology of their laying is the company's own development.

OILTECHPIPE can be installed onshore and offshore. OILTECHPIPE are designed and produced according to API 15S, API 17J and ISO 13628-2

* Other sizes available

Application and advantages

Onshore

- Flowlines
- Water injection
- Gas lift lines
- Gas distribution lines
- Effluent water

Offshore

- Static flowlines
- Flexible risers
- Water / chemical injection
- Well intervention

Installation methods

- Trench pipe-laying
- Above-ground pipe-laying
- Underwater pipe-laying
- Relining
- Directing around corners and obstacles
- Guided with nylon straps

Other applications

- Mining
- Water utilities
- Gas utilities
- Pumping sewage stations
- Transport of diluents, diesel, gasoline, etc.
- Hydrogen pipelines
- Fracking

OILTECHPIPE and FORTIUSPIPE have a number of advantages compared with the traditionally used steel pipes:

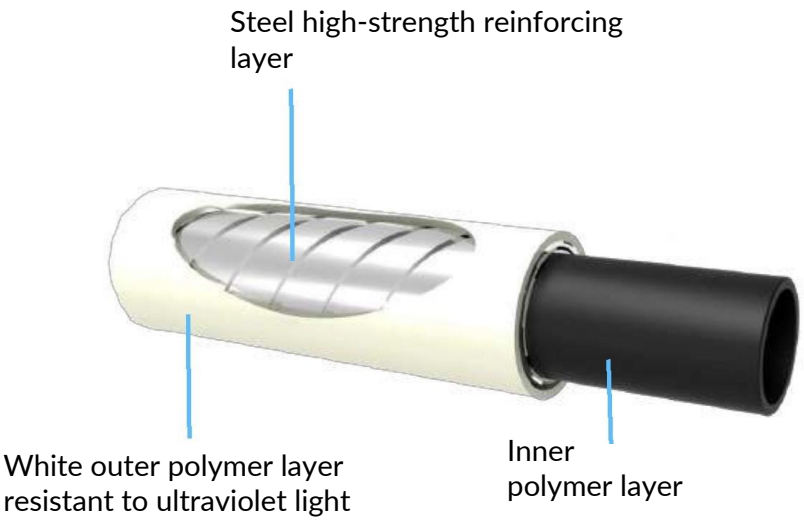
- no corrosion
- reduced pipeline cost
- reduced pipeline installation time
- production of long-length parts
- low thermal conductivity factor
- high resistance to aggressive environments
- possibility of electric heating
- low hydraulic losses
- low friction, no scale or erosion
- low operating costs
- no cathodic protection

Our product

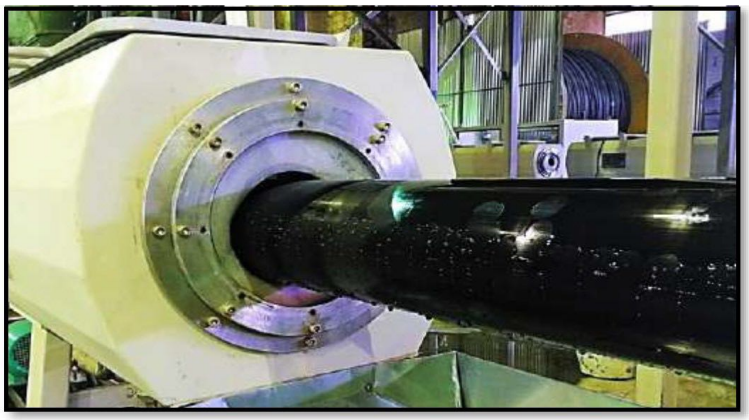
The pipe consists of inner and outer polymer layers and intermediate reinforcing layer based on profiled metal tapes.

Nominal diameters (in): 2-8
Operating pressure (psi): 600-3000
Operating temperature (°F): -40...+203*
Transported fluids: oil, gas, and water.

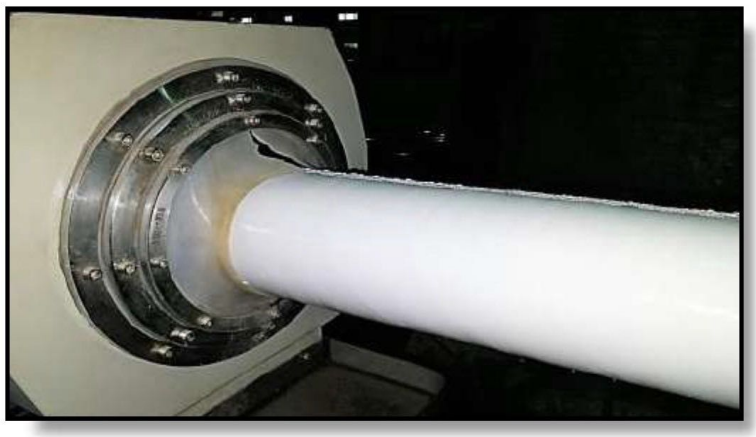
OILTECHPIPE is produced both for onshore and offshore applications and differs by material of its outer sheath.

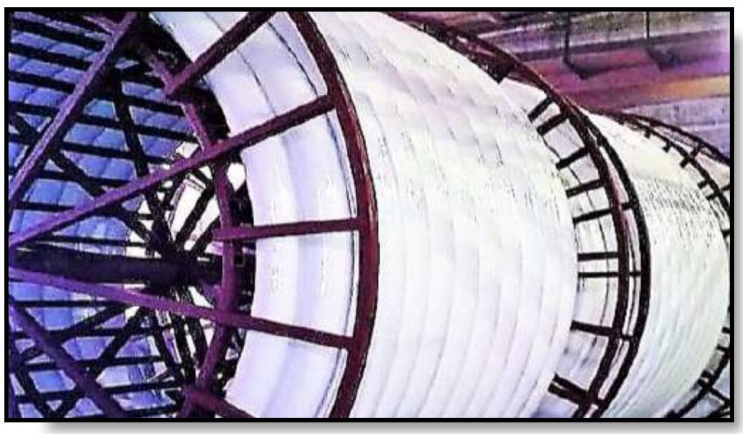


Design life is 20 years on surface installations and 50 years if it is buried.
OILTECHPIPE is produced in accordance with GOST-ISO 13628-2, API 17J and API 15S



To preserve all the properties of the pipeline during its storage or in use under direct sun exposure, the outer sheath of OILTECHPIPE is produced in white color with UV protection.





Our product

Technical parameters

All main characteristics of the OILTECHPIPE: dimensions, thermal properties, pressure, weight and length can be found in the table below.

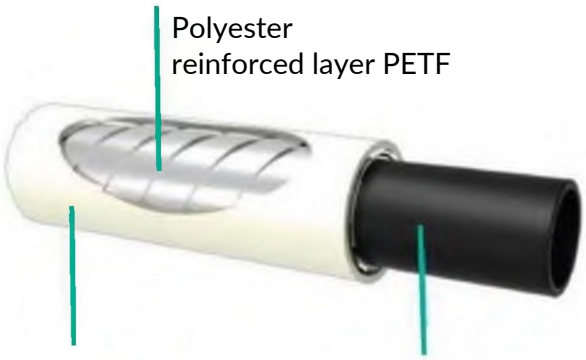
OILTECHPIPE	600 psi					1500 psi					3000 psi				
	2'	3'	4'	6'	8'	2'	3'	4'	6'	8'	2'	3'	4'	6'	8'
Dimensions															
Pipe Inside Diameter, (in)	2.09	3.07	3.82	5.59	7.87	2.09	3.07	3.82	5.59	7.87	2.09	3.07	3.82	5.59	7.87
Pipe Outside Diameter, (in)	2.95	4.09	4.88	7.01	9.69	3.03	4.13	5.00	7.32	9.92	3.03	4.21	5.08	7.48	9.92
Min. bending radius, (ft)	2.46	2.95	3.77	5.25	7.55	2,46	2,95	3,77	5,25	7.55	2,46	2,95	3,77	5,25	7.55
Thermal Properties															
Lowest allowable operating temperature, (˚F)	-40														
Maximum allowed operating temperature, (˚F)	+185*														
Pressure															
Operating pressure according to API 15S, (psi)	600					1500					3000				
Minimum bursting pressure, (psi)	1726	1581	1552	1581	1581	3698	3625	3611	3452	3452	6525	6395	6235	6192	6018
Weight and length															
Weight, (lb/ft)	2.82	4.30	6.05	10.8	20.0	3.63	5.44	8.27	13.17	30.23	4.43	7.79	11.42	22.17	30.23
Max. length, (ft)	4921	3608	2624	984	787	3937	3937	2625	984	787	3937	3609	2625	984	787
Weight of max. length with reel, (lb)	13877	15514	15875	10627	15678	17598	24724	25016	16266	30262	20748	31421	33285	25122	30262
Properties															
Design life, (years)	20														
Expected life buried, (years)	50														

* Higher temperature resistant pipes are available

Our product

The pipe consists of inner and outer polyester layers and intermediate reinforcing layer based on profiled metal tapes.

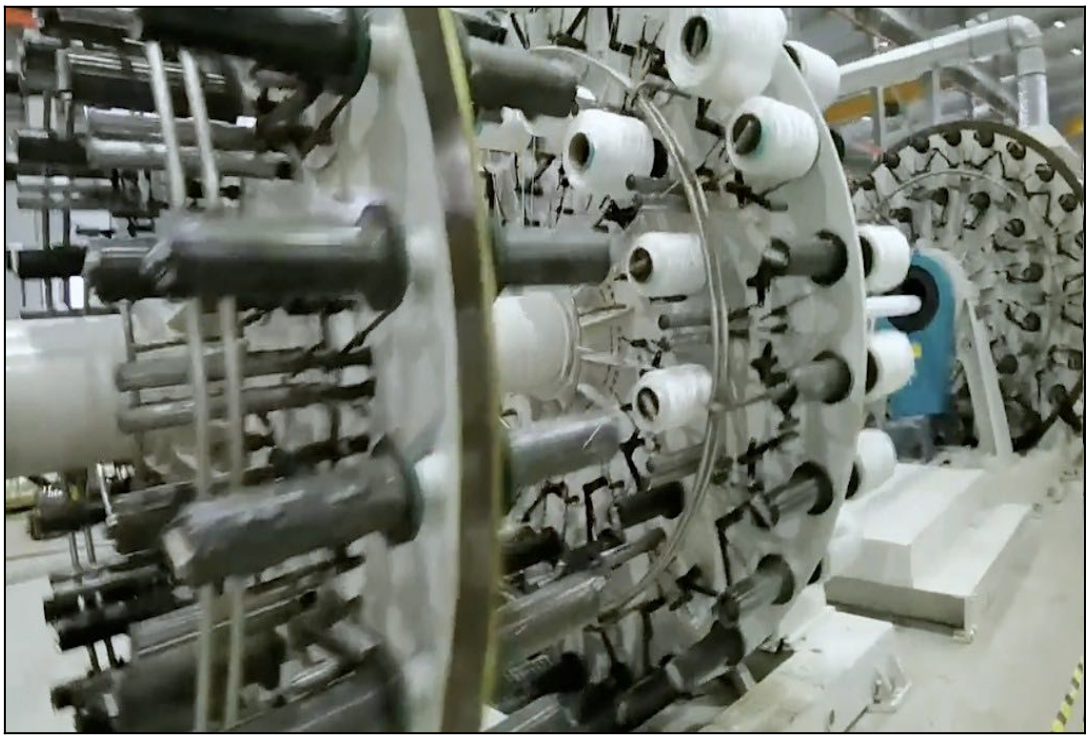
Nominal diameters (in): 2-8
Operating pressure (psi): 300-750-1500
Operating temperature (°F): -40...+180
Transported fluids: oil, gas, water, abbrasive materials, aggressive environments etc.



FORTIUSPIPE is produced for onshore applications and differs by material of its outer sheath.

Design life 20 years on surface installations and 50 years if it is buried.
FORTIUSPIPE is produced in accordance with GOST-ISO 13628-2 and API 15S

To preserve all the properties of the pipeline during its storage or in use under direct sun exposure, the outer sheath of FORTIUSPIPE is produced in white color with UV protection.



Our product

Technical parameters

All main characteristics of the FORTIUSPIPE: dimensions, thermal properties, pressure, weight and length can be found in the table below.

FORTIUSPIPE	300 psi					750 psi					1500 psi				
	2'	3'	4'	6'	8'	2'	3'	4'	6'	8'	2'	3'	4'	6'	8'
Dimensions															
Pipe Inside Diameter, (in)	2.09	3.07	3.82	5.59	7.88	2.09	3.07	3.82	5.59	7.88	2.09	3.07	3.82	5.59	7.88
Pipe Outside Diameter, (in)	2.92	4.06	4.89	6.97	9.65	2.92	4.06	4.89	6.97	9.65	2.99	4.18	4.96	7.05	9.65
Min. bending radius, (ft)	2.48	2.97	3.80	5.28	7.59	2,48	2,97	3,80	5,28	7.59	2,48	2,97	3,80	5,28	7.59
Thermal Properties															
Lowest allowable operating temperature, (˚F)	-40														
Maximum allowed operating temperature, (˚F)	+180														
Pressure															
Operating pressure according to API 15S, (psi)	300					750					1500				
Minimum bursting pressure, (psi)	1044	1044	1030	1015	1015	2639	2639	2581	2581	2465	4959	4829	4655	4655	4350
Weight and length															
Weight, (lb/ft)	1,17	1.95	2,72	5,41	9,49	1,37	2,39	3,19	6,33	10,58	1.73	2,80	3.92	7,33	10,58
Max. length, (ft)	4950	3960	2640	990	787	4950	3960	2640	990	787	4950	3960	2640	990	787
Weight of max. length with reel, (lb)	6857	8796	8251	6438	9638	7867	10537	9525	7354	10495	9662	12199	11425	8340	10495
Properties															
Design life, (years)	20														
Expected life buried, (years)	50														

Our product

fortiuspipe

Technical parameters

All main characteristics of the Glass Fibre Tape Reinforced Pipe: diameter and operating pressure can be found in the table below.

Inside Diameter (in)	Operating pressure (psi)	Outer Diameter mm	Wall Thickness mm	Weight (kg/m)	Min.Bend Radius (Operational) /mm	Package Size					
						Length/Reel/m	Reel Weight (Full - kg)	O.D of Reel Inner/mm	Reel Size/mm	Reel or not	Reel Weight (Empty - kg)
1,5"	4.650	75.8	17.4	3.89	650	1000	5091	1300	2500*2000	Y	1200
	3625	71	15	3.10	650	1150	4760	1300	2500*2000	Y	1200
	3.000	68.6	13.8	2.72	650	1150	4326	1300	2500*2000	Y	1200
	2.400	64.8	11.9	2.21	650	1300	4071	1300	2500*2000	Y	1200
	1.800	62.4	10.7	1.87	650	1300	3626	1300	2500*2000	Y	1200
	1.000	60	9.5	1.54	650	1550	3582	1300	2500*2000	Y	1200
	400	58.8	8.9	1.38	650	1550	3335	1300	2500*2000	Y	1200
2"	4.650	86.8	17.9	4.70	750	750	4721	1300	2500*2000	Y	1200
	3625	82	15.5	3.78	750	850	4410	1300	2500*2000	Y	1200
	3.000	79.6	14.3	3.34	750	1050	4704	1300	2500*2000	Y	1200
	2.400	76.2	12.6	2.79	750	1150	4410	1300	2500*2000	Y	1200
	1.800	73.8	11.4	2.38	750	1200	4061	1300	2500*2000	Y	1200
	1.000	71.4	10.2	1.99	750	1200	3590	1300	2500*2000	Y	1200
	400	70.2	9.6	1.80	750	1300	3540	1300	2500*2000	Y	1200
3"	3625	107	15.5	5.19	950	880	5964	2000	3200*2800	Y	1400
	3.000	104.6	14.3	4.61	950	920	5639	2000	3200*2800	Y	1400
	2.400	102.2	13.1	4.04	950	950	5239	2000	3200*2800	Y	1400
	1.800	99.8	11.9	3.49	950	980	4819	2000	3200*2800	Y	1400
	1.000	97.4	10.7	2.95	950	1020	4409	2000	3200*2800	Y	1400
	400	96.2	10.1	2.69	950	1060	4246	2000	3200*2800	Y	1400
4"	3.000	134.8	16.9	7.06	1450	850	7697	2400	3750*2800	Y	1700
	2.400	132.4	15.7	6.32	1450	860	7137	2400	3750*2800	Y	1700
	1.800	131.2	15.1	5.96	1450	890	7005	2400	3750*2800	Y	1700
	1.500	130	14.5	5.60	1450	920	6854	2400	3750*2800	Y	1700
	1.200	128.8	13.9	5.25	1450	950	6685	2400	3750*2800	Y	1700
	1.000	127.6	13.3	4.90	1450	960	6400	2400	3750*2800	Y	1700
	600	126.4	12.7	4.55	1450	980	6156	2400	3750*2800	Y	1700
	400	125.2	12.1	4.20	1450	990	5861	2400	3750*2800	Y	1700
6"	1.800	189.4	19.2	11.00	1650	400	6302	2600	3900*2800	Y	1900
	1.500	188.2	18.6	10.48	1650	400	6094	2600	3900*2800	Y	1900
	1.200	187	18	9.97	1650	400	5887	2600	3900*2800	Y	1900
	1.000	185.8	17.4	9.45	1650	400	5681	2600	3900*2800	Y	1900
	600	184.6	16.8	8.94	1650	400	5477	2600	3900*2800	Y	1900
	400	182.2	15.6	7.93	1650	400	5073	2600	3900*2800	Y	1900
8"	1.000	238.2	18.6	13.56	3000	22	298	/	/	N	
	600	235.8	17.4	12.25	3000	22	270	/	/	N	
	400	233.4	16.2	10.95	3000	22	241	/	/	N	
10"	1.000	289.2	19.1	17.08	5000	22	376	/	/	N	
	600	286.8	17.9	15.48	5000	22	341	/	/	N	
	400	284.4	16.7	13.90	5000	22	306	/	/	N	
12"	1.000	340.4	19.7	21.18	6000	22	466	/	/	N	
	600	336.8	17.9	18.36	6000	22	404	/	/	N	
	400	334.4	16.7	16.49	6000	22	363	/	/	N	
14"	1.000	392.4	20.2	25.13	7000	22	553	/	/	N	
	600	390	19	22.96	7000	22	505	/	/	N	
	400	387.4	17.7	20.29	7000	22	446	/	/	N	
16"	1.000	444.6	21.3	30.40	8000	22	669	/	/	N	
	600	442.2	20.1	27.93	8000	22	614	/	/	N	
	400	438.6	18.3	24.25	8000	22	534	/	/	N	
18"	1.000	495.6	21.8	34.73	9000	22	764	/	/	N	
	600	493.2	20.6	31.98	9000	22	703	/	/	N	
	400	489.6	18.8	27.87	9000	22	613	/	/	N	
20"	1.000	547.8	22.9	40.74	10000	22	896	/	/	N	
	600	545.4	21.7	37.69	10000	22	829	/	/	N	
	400	541.8	19.9	33.15	9000	22	729	/	/	N	
Operating Temperatures											
HDPE-RT 185 °F											

other reel dimensions and coil lengths are available

Fittings and Installation equipment

Flange fitting
Bolted connection Sealing elements

Midline fitting
Connection of pipe segments

Welded fitting
It is welded to standard pipeline elements
and standard pipeline fittings

Custom manufacturing
Configuration is at the request of customers. It is possible to manufacture flanges according to GOST, ANSI, DIN, ASTM, ISO.

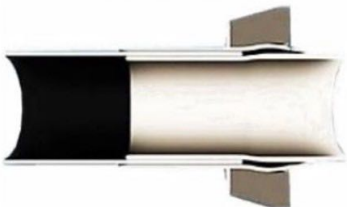
Fitting Installation
End fittings are installed in several consecutive stages - swaging along the inner surface, swaging along the outer surface.

The purpose of swaging is the permanent formation of the end fitting walls according to the pipe size. This operation provides uniform tight crimp of the pipe walls by the fitting, both on the inner and outer surfaces.

Schematic diagram of broaching the fitting along its inner and outer surface:

Swaging along the inner surface

Swaging along the outer surface



Installation

Advantages

- Quick installation of connections (30-45 minutes)
- Minimum amount of equipment
- Crew of 2-3 people

Pipeline Installation Equipment

- Fitting installation equipment
- Hydraulic press

Pipeline winding/unwinding equipment

- A-frames (pay-off)
- Take-up and pay-off equipment
- Moving on coiling rollers

Logistics

OILTECHPIPE is delivered in reels. It can be delivered to the place of installation by motor, railway and sea transport.

OILTECHPIPE in order to facilitate and make economically efficient the transport can produce reels and lengths according to required needs.

Installation methods

Trench pipe-laying

In comparison with steel pipelines OILTECHPIPE requires 20-40 % less width of a trench and decreases the installation time by several times.

OILTECHPIPE does not have any special requirements to a bed plate, however in order to prevent outer sheath damages the areas contacting the pipe should not have big, sharp stones or bulges. Passages under the road as a rule go to a manifold pipe.

Above-ground pipe-laying

Using method of direct laying it is possible to se up multiple lines in a quick and effective way Usually during laying there is no need in an supports and ramps which are used with stee pipes.

However, OILTECHPIPE can be installed in existin pipeline routes using these constructions.

Installation methods

Relining

OILTECHPIPE can be installed instead of old pipes of bigger diameter by pulling the flexible composite pipeline through the opening the existing one. There is a successful experience of pulling one segment of the pipe with the length up to 1.2 km including several bends.
The main restriction is the length of a guide pipe, which should be preliminary pulled through the pipeline to be relined.

Offshore

OILTECHPIPE subsea version with extra reinforcement weight can be installed offshore on the sea, lakes, rivers, etc. The pipe design and structure offers an easy installation and good bottom stability.

Pipe restore system

The FORTIUSPIPE Restore system is based on the use of a special three-layer self-supporting repair pipe, is marked by ease of installation in any climatic condition, absence of practical limitations of use and is designed to repair continuous long sections.

The FORTIUSPIPE Restore system is used to repair oil pipelines, gas pipelines and other pipelines of various applications.

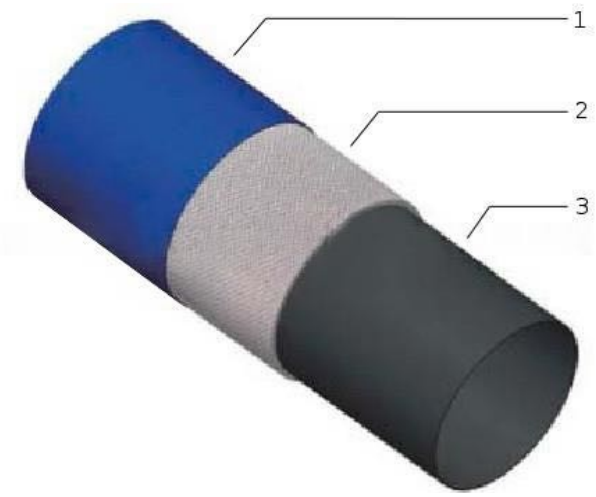
Nominal diameters (in): 6-8-10-12
Operating temperature: -40°F to 185°F
Operating pressure: Up to 600psi

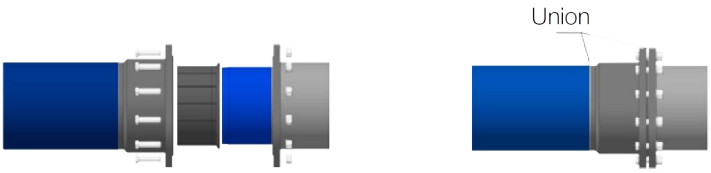
Structure

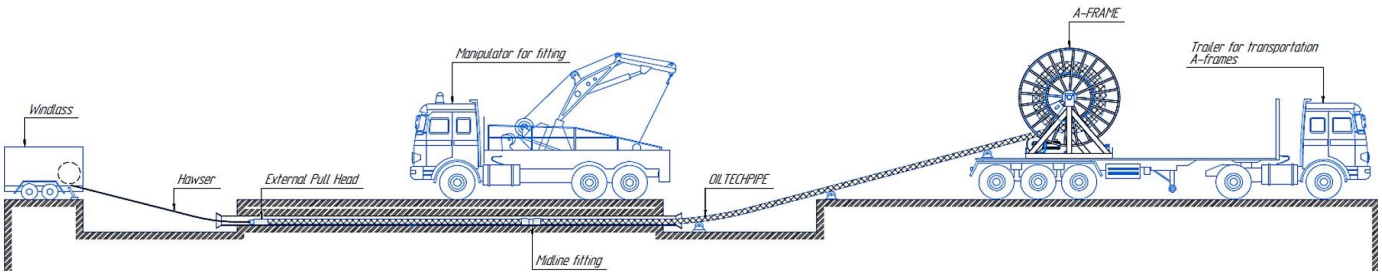
1. Heat-resistant polymer for petroleum products

2. Aramid/polyester reinforcement fabric layer

3. Heat-resistant polymer for petroleum products

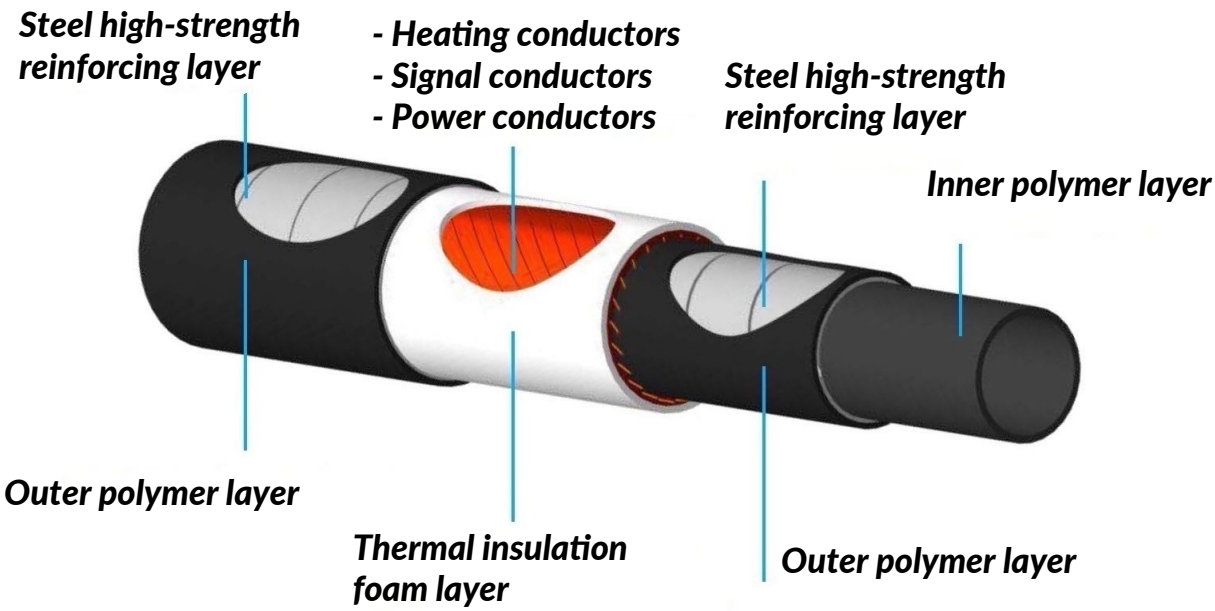






Pipe with electrical heating

Flexible pipes can be equipped with a thermal insulation foam layer with conductive conductors for electric heating.



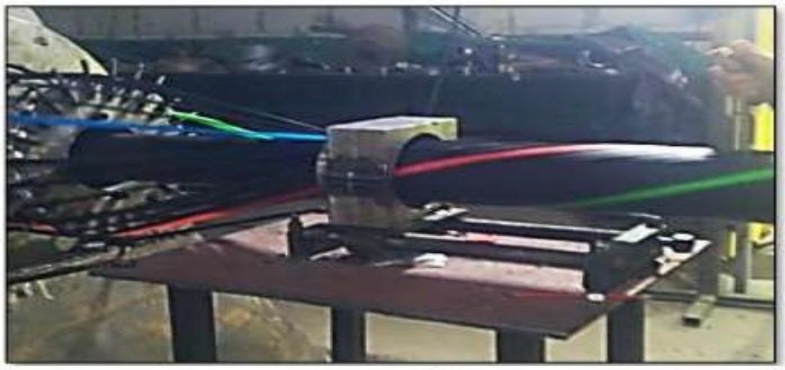
The technology of insulation of flexible pipes with thermal insulation foam layer with conductive cores for electric heating involves the following operations:

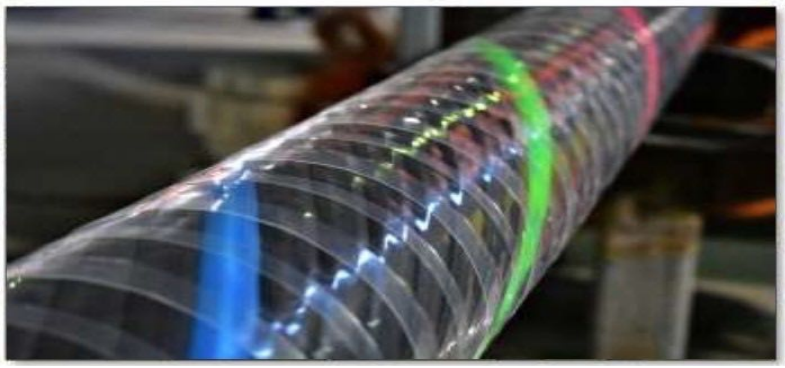
· application over the outer shell of the flexible pipe elements (segments) with conductors of the same layer, wound in the same direction with a certain step. Segments with conductive cores may include heating conductors, power conductors, signal conductors (twisted pairs, fiber);
· application of two anti-wear layers of polymer tape over segments with conductors;
· application of thermal insulation foam layer over polymer tape by continuous extrusion;
· application to the thermal insulation foam layer of the reinforcing element of two layers of high-strength metal tape wound in the same direction with a certain step and gap;
· production of the outer shell by continuous extrusion from compositions based on low-pressure polyethylene.

Number of conductive, information, power, control cores, pieces.	Types of conductive cores	Cross-section of conductive cores, mm2	Thickness of thermal insulation foam layer, mm	The density of the foamed layer, g/cm3	The thickness of the outer sheath, mm
1-36	copper (aluminium)	0,2-16,0	5-30	0,5-0,9	3-7
	twisted pair (categories 5e, 6)				
	fibre-optic				

Varieties of conductive cores and thermal insulation layers are shown in the table.

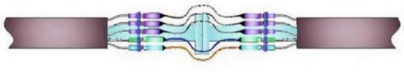
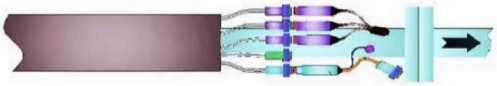
Pipe with electrical heating





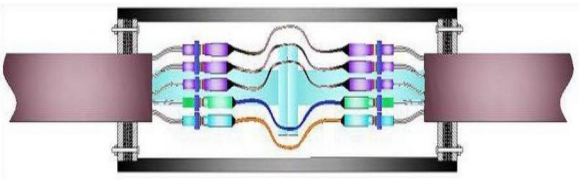

Depending on the length of the pipeline, there are three designs of each pipe size.

№ Designs	Length of pipeline, m
1	up to 1800
2	from 1800 to 3700
3	from 3700 to 8000

Description	General view
Connection to the heating control unit	
Connection of pipeline segments	
The end of the pipe with electric heating	

Cable assemblies are used to connect the conductors.

To improve the reliability,tightness of the connection of 2 segments of the pipe with electric heating, an external protective (intermediate) coupling is used.



Umbilical for oil wells

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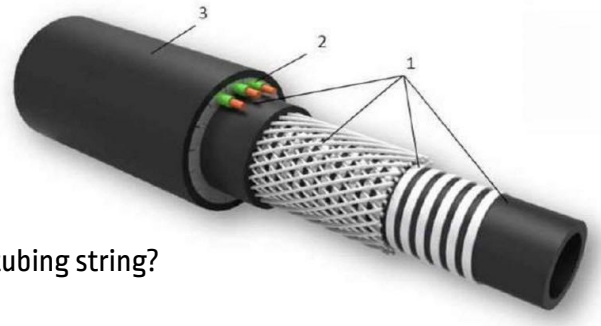
Umbilical construction

1 - steel polymer pipe
2 - conductive conductors
3 - outer shell



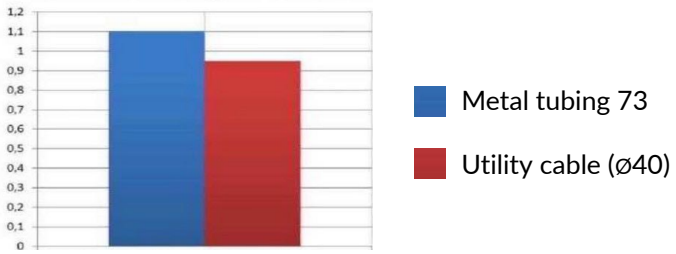
What are the advantages of umbilical cable over regular tubing string?

· Checking the tightness of the column is carried out at the factory.
· The time of work is sharply reduced, due to the exclusion of operations on twisting of NKT.
· The safety of the work is increased, since when the umbilical is launched, the personnel are not nearby, but only supervising the lowering process.
· Since the umbilical is made in one piece, there is no chance of leaks at the junction of two pipes.
· The probability of damage to the power cores is reduced, since they are located under a reinforcing sheath, which has excellent damping and protective properties.
· The environmental safety of the work increases since the wellhead is hermetically sealed during tripping, which eliminates the likelihood of a blowout or spill.
· On the inner surface of the pipe, the process of deposition of ARPD occurs much less intensively.

Technical parameters

Mark	Diameter, in/out	Breaking strength	Min. bending radius	Weight in air	Max pressure, in/out	Number of conductors	Section of conductors
	mm	kN	mm	kg/km	MPa	ea.	mm^2
OUM 30/75	30/75	120	1300	4200	25/25	3-15	3,0-16,0
OUM 40/85	40/85	150	1300	5600	25/25	3-15	3,0-16,0
OUM 50/98	50/98	180	1300	6400	25/25	3-15	3,0-16,0
OUM 63/112	Under engineering development						

Let's compare the hydraulic resistance to flow in a metal tubing and an umbilical



Consumption 150m^3/day

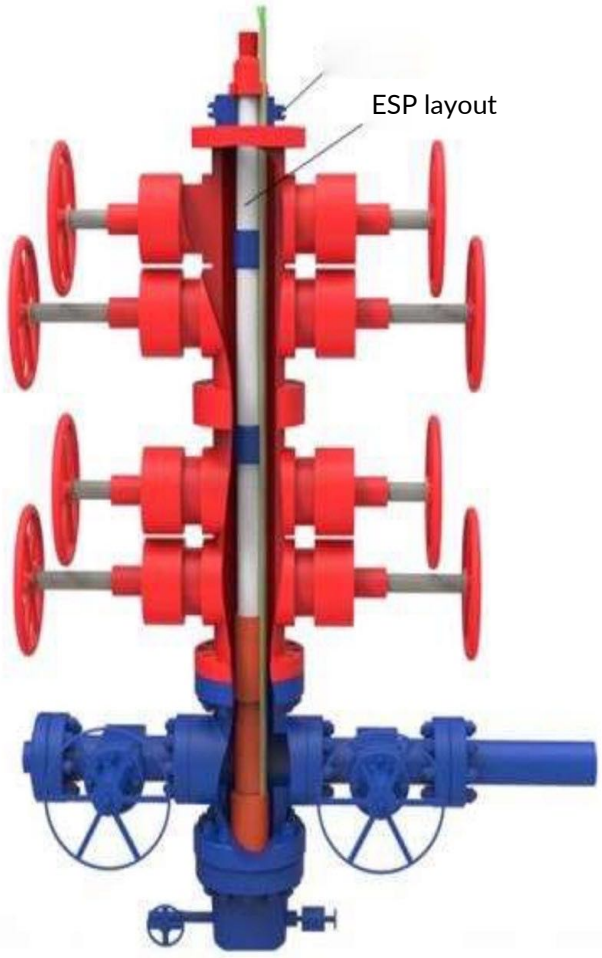
As a result, hydraulic fluid resistance in umbilical with inner diameter 40mm is in practice equal to the resistance of tubing string NKT73.

Pipe corrosion resistance

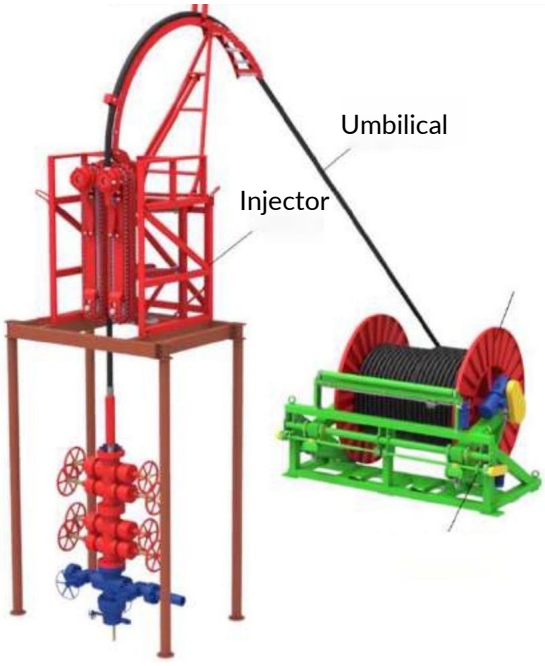
Steel-polymer pipes have higher corrosion resistance. Polyethylene is a main material, which is used in the production of our pipe, has operational life of 50 years that Is significantly more In comparison with standard structural steel which is used for tubing production. Besides, polyethylene is more resistant to the influence of aggressive environments such as hydrogen sulfide and carbon dioxide which can be present in a well.

Umbilical for oil wells

To produce ESP installation



Install injector, lifting equipment. Install the reel with umbilical into launching equipment and to put the umbilical into injector. Connect umbilical with components of ESP and splice conductors of umbilical. Descent the unit.



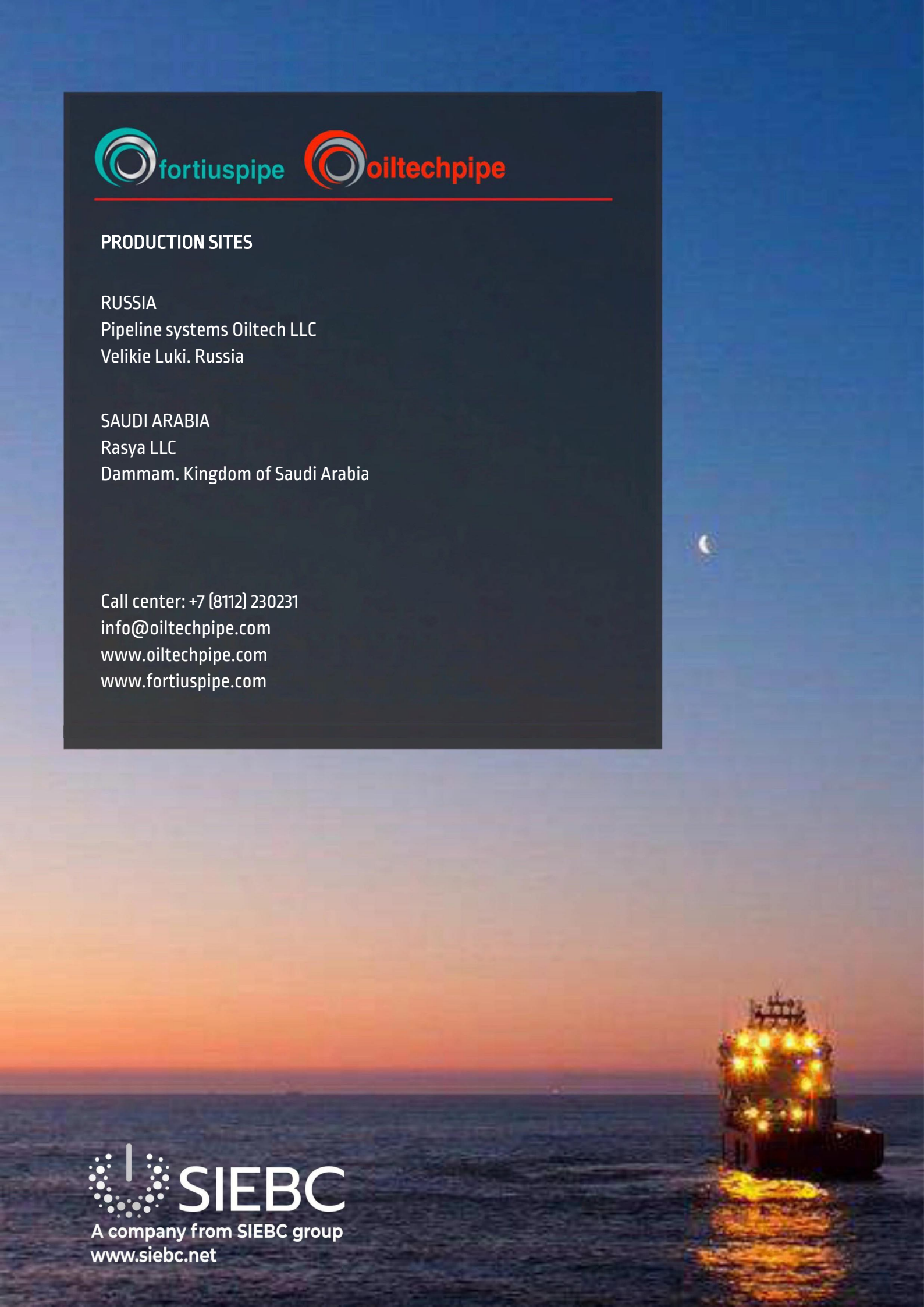
fortiuspipe oiltechpipe

PRODUCTION SITES

RUSSIA
Pipeline systems Oiltech LLC
Velikie Luki. Russia

SAUDI ARABIA
Rasya LLC
Dammam. Kingdom of Saudi Arabia

Call center: +7 (8112) 230231
info@oiltechpipe.com
www.oiltechpipe.com
www.fortiuspipe.com



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