Pre-insulated impulse tubes and tubing bundles RIZURPAK

Intended use and application area

Pre-insulted impulse tubes and tubing bundles RIZURPAK are manufactured acc. to Technical regulations TU-3464-010-12189681-2013 and are designed to protect impulse tubes and tubes of small diameter against freezing, condensate formation, harsh media impact, equipment failure, and the increase in media viscosity due to the impact of low temperatures.

Application – hazardous areas of indoor and outdoor facilities in accordance with the specified markings, industry safety standards and the manufacturer's recommendations.

The safety of pre-insulated impulse tubes and tubing bundles at explosion-hazardous facilities is confirmed by a Customs Union Certificate on the «Safety of equipment intended for use in explosive atmospheres» № TC RU C-RU.MH04.B.00125.



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Design and operating principle

Constructionally, RIZURPAK is an impulse tube or a tubing bundle insulated in factory conditions with steam or electric trace heating and a solid protective housing. The outside housing can be made out of different materials providing protection from the abrasion, as well as atmospheric, chemical, mechanical, and other impacts. The insulation can be made out of polyether, mineral fiber, and other materials depending on the operational conditions.

Heat insulation is provided by heat-resistant sealing. The design of the tubes is seamless calibrated or welded. The standard materials for the tubes are: stainless steel, copper, copper alloys, Teflon, or other materials depending on the operating conditions.

Depending on the design variant, RIZURPAK can be manufactured with electric tracing (heating cables) or steam tracing (hot water/steam), as well as without any trace heating at all.

The steam tracing variant is manufactured with a heating circuit that uses hot water/steam as a heat source. Temperature control is performed by a direct-acting temperature regulator installed on a line supplying the heat-carrying medium to the heating circuit.

RIZUR has three design varinats of pre-insulated tubing bundles RIZURPAK:

Design variant of pre-insulated tubing bundles RIZURPAK

RIZURPAK-S

RIZURPAK-L/-H

RIZURPAK-E

One pre-insulated tube designed mainly for steam supply and condensate recirculation. It's recommended to use RIZURPAK-S for personnel protection and/or decrease of heat loss under the condition that there's no necessity to maintain specific medium temperature in the processor impulse tube.

A tubing bundle with steam tracing used for protection against freezing and maintaining the required medium temperature in the process pipes and impulse lines. A tubing bundle with electric tracing used for protection against freezing and maintaining the required medium temperature in the process pipes and impulse lines.

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Advantages

The system of heating and heat insulation RIZURPAK does not require technical maintenance; it guarantees stable quality and, when compared to the traditional methods of heating and covering small diameter tubes, it's not just time but also money efficient.

Traditionally, it's necessary to perform the following steps during heating and insulation process on-site: prepare mounting instruments, measure, cut, splice, bend, mount, and connect the impulse tubes; mount the tracing (steam or electric) along the whole length of the tubes; carefully and evenly cover all the tubes with the insulation material, except for the cold bridges and freezing points; cover the whole construction with water-proofed material protecting the construction against the climatic impacts.

When working with RIZURPAK systems the number of actions is reduced to the first one only – which is to prepare the mounting instruments, cut, splice, bend, mount, and connect the impulse tubes. The system then is ready for operation in a stable and reliable manner. In such a way, the major economic advantages of RIZURPAK system compared to the traditional process of on-site installation are evident.

Besides, it's worth mentioning that the mounting is substantially simplified due to a unique parallel configuration of the processing pipes and steam/electric tracing inside the RIZURPAK system.

During on-site installation tubing bundles of such construction are easier to bend because all the tubes are bent together rather than counteract each other.



Pre-insulated (heated) impulse tubes RIZURPAK are used for protection of personnel against heat burns and workplace injuries, as well as for preventing:

- Freezing
- Condensate formation
- Equipment failure caused by low temperatures
- Media viscosity increase

Only high-quality materials are used in insulation and heating systems RIZURPAK. The housing is made from elastomeric materials without halogen which excludes the probability of chloride exudation that has a corrosive effect on the stainless steel elements of the tubes. The coatings used are resistant to mechanical damage and impacts of chemicals, as well as have a wide range of operating temperatures. The mounting of RIZURPAK system can be done at low temperatures: down to - 40 °C.

The standard examples of application are supply, transportation of steam and recirculation of condensate, detergent lines with enough water to prevent freezing, feed lines for chemical additives, etc.

OOO «NPO RIZUR» offers a complex solution for installation and protection of equipment on the base of pre-insulated tubes and tubing bundles RIZURPAK, fiberglass and metal enclosures RizurBox, soft enclosures RIZUR, heaters RIZUR-TERM.







Examples of fully integrated solutions for equipment and impulse lines heating with RIZURPAK

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Pre-insulated impulse tubes and tubing bundles

Benefits

 RIZURPAK is an insulation and heating system that does not require maintenance, thus saving time and money while also ensuring stable and failure-free operation.

Pre-insulated impulse tubes and tubing bundles RIZURPAK are custom-engineered and ready-to-mount solutions. The mounting is simplified due to the parallel configuration of the components – the process pipes and steam/electric tracing inside the RIZURPAK system are always parallel. During the on-site installation, the bundles are bending much easier since they bend together rather than counteract each other.

■ All the connections are easy to make since the bundles are circular in shape and the housing does not become hard even in low temperatures. The installation of RIZURPAK can be performed in low temperatures down to - 40°C.

■ RIZURPAK is structured in such a way that helps preserve circular shape of the bundles and their flexibility characteristics when used with compression mounting elements and fittings.

Only high-quality materials are used in insulation and heating systems RIZURPAK. The housing is made from elastomeric materials without halogen which excludes the probability of chloride exudation that has a corrosive effect on the stainless-steel elements of the tubes. The housing is made from materials that are resistant to mechanical damage and impacts of chemicals, as well as have a wide range of operating temperatures.

RIZURPAK system is a complex solution for installation and protection of equipment against low temperatures.

Installation area	- general industrial areas - areas exposed to explosion hazards V-1a and V-1d, acc. to Electrical installation code (PUE), Ch. 7.3
Resistivity	 to oil products to chemical environments to ultraviolet radiation
Explosion protection marking:	
RIZURPAK-E Series	1 Exs II T6T4 X*
RIZURPAK-L/-H/-S Series	II Gb T6T4 X*
Ingress protection	IP67 acc. to GOST 14254-96
Min. ambient temperature for installation	-40°C
Ambient temperature range for installation:	
for the temperature rating T6	-70 +45 °C
for the temperature rating T5	-70+60 °C
for the temperature rating T4	-70+95 °C
for the temperature rating T3*	-70+160 °C
for the temperature rating T2*	-70+255 °C
for the temperature rating T1*	-70+405 °C
Max. temperature of the housing surface	+60 °C
Supply voltage for RIZURPAK-E	230 V
Housing colour	any (black on default)
Warranty period	- 12 months
	- 24/36 months (on request)
Average operation time	over 20 years

Technical specifications

* Tubing bundles can be manufactured with explosion protection marking 1 Exs II T3...T1 X or II Gb T3...T1 X on request

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Technical specification of RIZURPAK materials

Housing	 Thermoplastic polyester urethane elastomer stabilized by hydrolytic method: does not contain halogens; resistant to abrasive impacts; resistant to UV radiation; maintains flexibility at low temperatures 		
Insulation	Non-hygroscopic fiberglass		
Temperature			
• RIZURPAK-L, H, S	Max. temperature of the process line - 204°C*		
• RIZURPAK-E (All of the traces have a copper screen and an outside fluoropolymer housing)	Constant temperature: XTV 121°C* BTV 65°C* Short-term temperature: XTV 250°C* BTV 85°C* Max. temperature of the tracing: XTV класс T3, 230°C BTV класс T6, 85°C		

* Wider temperature ranges are available on request.

Technical specifications of the tubing

Outside \varnothing , mm	Wall, mm	Construction and material	ASTM
6	1	seamless calibrated 316/316L SS	A-269
8	1	seamless calibrated 316/316L SS	A-269
10	1	seamless calibrated 316/316L SS	A-269
12	1	seamless calibrated 316/316L SS	A-269
12	1,5	seamless calibrated 316/316L SS	A-269
14	1	seamless calibrated 316/316L SS	A-269
14	1,6	seamless calibrated 316/316L SS	A-269
14	2	seamless calibrated 316/316L SS	A-269
6	1	copper	B-68, B-75
8	1	copper	B-68, B-75
10	1	copper	B-68, B-75
12	1	copper	B-68, B-75
6	1	PFA Teflon	
8	1	PFA Teflon	
10	1	PFA Teflon	
12	1	PFA Teflon	

Other materials and sizes are available on request.

Insulated tubing bundle with an electric tracing RIZURPAK-E

Intended use and design description

RIZURPAK-E systems are designed for protection against freezing, maintenance of required temperature in a small range or for maintenance of the required media viscosity. This system is the best solution for temperature maintenance along the whole length of impulse lines and pipelines. In this design variant self-regulating heating cable is used as a heating source.

RIZURPAK-E ensures temperature maintenance in the process tubing within the range of 10°C to 121°C because the self-regulating heating cable reduces heat generation when the process tubing heats up.



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In order to ensure the temperature maintenance, it's also necessary to use a thermoregulator. Full technical specifications are listed on pages 3-6 of this catalogue. The order code for the insulated tubing bundle with an electric heating tracing RIZURPAK-E is on page 16 of this catalogue.

Design variants of RIZURPAK-E (depending on the tracing used)

Low-temperature

In this design variant lowtemperature self-regulating heating cable BTV is used as a heating element. BTV cable can withstand medium temperature of up to 65°C (constantly) and up to 85°C (temporally). Insulated tubing bundles RIZURPAK-E of the low-temperature design variant are mainly used for protection against freezing or for maintaining temperatures of up to 37°C.

High-temperature

In this design variant, high-temperature selfregulating heating cable XTV is used as a heating element. XTV cable can withstand medium temperature of up to 121°C (constantly) and up to 250°C (temporally). Insulated high-temperature tubing bundle RIZURPAK-E is mainly used for medium temperature maintenance up to 121°C.

For maintenance of higher temperature, it's possible to use two electric heating tracers in one bundle. This design variant is used for protection against freezing in technical processes and operating conditions that anticipate temporal temperature rise during, for example, steam operation.

Customized

The customized version of RIZURPAK is used for hightemperature processes as well as for maintenance of temperatures above 121°C. In this design variant it's possible to use two electric heating tracers in one bundle, while self-limiting or resistive cables can be used as a heat tracing. This design variant of RIZURPAK-E is designed for process temperatures of up to 800° and so its parameters are calculated individually in accordance with the process conditions.

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Dimensional specifications RIZURPAK-E

Design variant	Q-ty of pipes	Pipe Ø,	Nominal	Nominal dimensions, mm		
Design variant		mm	kg/m	А	В	
RIZURPAK-E1	One	6	0,45	28	25	
RIZURPAK-E1	IZURPAK-E1 One		0,6	33	25	
RIZURPAK-E1	RIZURPAK-E1 One		0,74	36	28	
RIZURPAK-E2	RIZURPAK-E2 Two		0,6	33	28	
RIZURPAK-E2 Two		8	0,89	38	30	
RIZURPAK-E2	Two	12	1,19	43	36	



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Process pipe temperature,

Standard parameters









Each graph shows standard parameters with summer/winter ambient conditions divided. Each graph is divided at the 16 °C point to designate seasonal difference. In the winter period, when the temperature is below 16 °C, the wind is expected to be about 40 km/h, and in summer the temperature is above 16 °C and the wind is about 16 km/h. For protection against freezing consider 10 °C the minimal permissible temperature of the process pipe. This will provide sufficient reliability.



Order code for pre-insulated impulse tubes and tubing bundles **RIZURPAK**

Ordering information:

<u>RIZURPAK-E-1-MB12-MN4</u> 1 2 3 4

1. Tubing bund	lle design variant
RIZURPAK-L	heat-insulated tube (tubing bundle) with light steam tracing (there's an insulation layer between the heating tube and the process tube to prevent over-heating)
RIZURPAK-H	heat-insulated tube (tubing bundle) with heavy steam tracing (heating tube is in direct contact with the process tubing)
RIZURPAK-E	heat-insulated tube (tubing bundle) with electric tracing
RIZURPAK-S	heat-insulated weather-proof tube without heating
2. Number of t	ubes in a tubing bundle
1	one process tybe
2	two process tubes
х	customized (specified in written form outside the order code)
3. The designation	tor for the construction type, material and size of the process tubing
MF6	seamless calibrated 316/316L SS, 6 mm outside diameter x 1 mm wall
MF8	seamless calibrated 316/316L SS, 8 mm outside diameter x 1 mm wall
MF10	seamless calibrated 316/316L SS, 10 mm outside diameter x 1 mm wall
MF12	seamless calibrated 316/316L SS, 12 mm outside diameter x 1 mm wall
MB12	seamless calibrated 316/316L SS, 12 mm outside diameter x 1.5 mm wall
MZ14	seamless calibrated 316/316L SS, 14 mm outside diameter (customized variant upon an agreement with the manufacturer). It's necessary to specify the wall thickness: 1,0; 1,5; 1,6 or 2,0 mm
MD6	copper, 6 mm outside diameter x 1 mm wall
MD8	copper, 8 mm outside diameter x 1 mm wall
MD10	copper, 10 mm outside diameter x 1 mm wall
MD12	copper, 12 mm outside diameter x 1 mm wall
MG6	PFA Teflon®, 6 mm outside diameter x 1 mm wall
MG8	PFA Teflon®, 8 mm outside diameter x 1 mm wall
MG10	PFA Teflon [®] , 10 mm outside diameter x 1 mm wall
MG12	PFA Teflon [®] , 12 mm outside diameter x 1 mm wall
хх	customized variant (material, outside diameter, and wall thickness are specified in written form ouside the order code)
4. The designa	tor for the construction type, material and size of the process tracing*
MF6	seamless calibrated 316/316L SS, 6 mm outside diameter x 1 mm wall
MF8	seamless calibrated 316/316L SS, 8 mm outside diameter x 1 mm wall
MF10	seamless calibrated 316/316L SS, 10 mm outside diameter x 1 mm wall
MF12	seamless calibrated 316/316L SS, 12 mm outside diameter x 1 mm wall
MB12	seamless calibrated 316/316L SS, 12 mm outside diameter x 1.5 mm wall
MD6	copper, 6 mm outside diameter x 1 mm wall
MD8	copper, 8 mm outside diameter x 1 mm wall
MD10	copper, 10 mm outside diameter x 1 mm wall
MD12	copper, 12 mm outside diameter x 1 mm wall
MN4	high-temperature self-regulating tracing with characteristics: 12 W/m at 10°C, 240V (only for RIZURPAK-E)
MN8	high-temperature self-regulating tracing with characteristics: 25 W/m at 10°C, 240V (only for RIZURPAK-E)
MN12	high-temperature self-regulating tracing with characteristics: 38 W/m at 10°C, 240V (only for RIZURPAK-E)
N15	high-temperature self-regulating tracing with characteristics: 47 W/m at 10°C, 240V (only for RIZURPAK-E)
N20	high-temperature self-regulating tracing with characteristics: 63 W/m at 10°C, 240V (only for RIZURPAK-E)
P5	low-temperature self-regulating tracing with characteristics: 16 W/m at 10°C, 240V (only for RIZURPAK-E)
P8	low-temperature self-regulating tracing with characteristics: 25 W/m at 10°C, 240V (only for RIZURPAK-E)
P10	low-temperature self-regulating tracing with characteristics: 32 W/m at 10°C, 240V (only for RIZURPAK-E)
XX	Customized version is specified in written form outside the order code
* This point is r	not chosen for the design variant S.

Pre-insulated impulse tubes and tubing bundles



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INQUIRY FORM Nº

Pre-insulated impulse lines RIZURPAK

Customer, contact person							
Number of tubes acc. to the inquiry form							
		øc		Wall thic	kness	Material	Max. pressure
	Tube №1						
Specifications of impulse tubes in the							
	Tube Nº3						
	Tube Nº4						
Process tubing heating	U Without heating (heat insulation only)		heating	 Heat tracing Outside diameter Wall thickness Material Max.pressure Presence of «return pipe» inside the bundle 		r urn pipe» inside	
Data on operational temperature, technological process, and heat carrier* *if the heat tracing was chosen	Specify the the max. and operating temperatures and the name of the medium in the process tubing:				the medium in		
	Operating t	_ °C	Max	t °C		Medium:	
	Specify max. temperature and cycle duration if there's a necessity for cleaning/steam cleaning of the processing tubes: Operating: t °C Time: hours Specify the operating and max. temperature, the name of the medium: Operating t °C Max t °C				y for		
					ium:		
	Ambient air temperature (external influence): Min t°C Max t°C						
The required maintained temperature in the processing tubes	t °C						
	Compression Specify: the thr	fittir ead f	ng for proces	ss connecti connection,	ion, pcs male/1	s female	
	Compression fitting for equipment connection, pcs Specify: the thread for process connection. male/female						
	🗆 Heat shrink	tape	sleeve for t	he bundle	ends s	ealing, pcs	
	Sealing kit (for the junction box input) and termination of the heating cat pcs				heating cable,		
Additional options	Adjustment thermostat for maintaining the precise temperature inside the bundle (complete with the repair kit for the housing for thermostat sensor installation under the bundle's housing), pcs					e inside the at sensor	
	🛛 🗆 Repair kit fo	or the	e housing in	case the o	utside	insulation is da	maged, pcs
	□ Input device for the tubing bundle RIZURPAK (specify the thickness of the enclosure's wall:mm), pcs						
	□ Customized machine tool for the tybing bundle bending, pcs.						
	□ Customized machine tool for the tubing bundle bending and installation of the central line, pcs						

RIZURPAK



If the phrasing in the inquiry form seems unclear or there're any other questions, please phone for an explanation +7 (4912) 20-20-80