

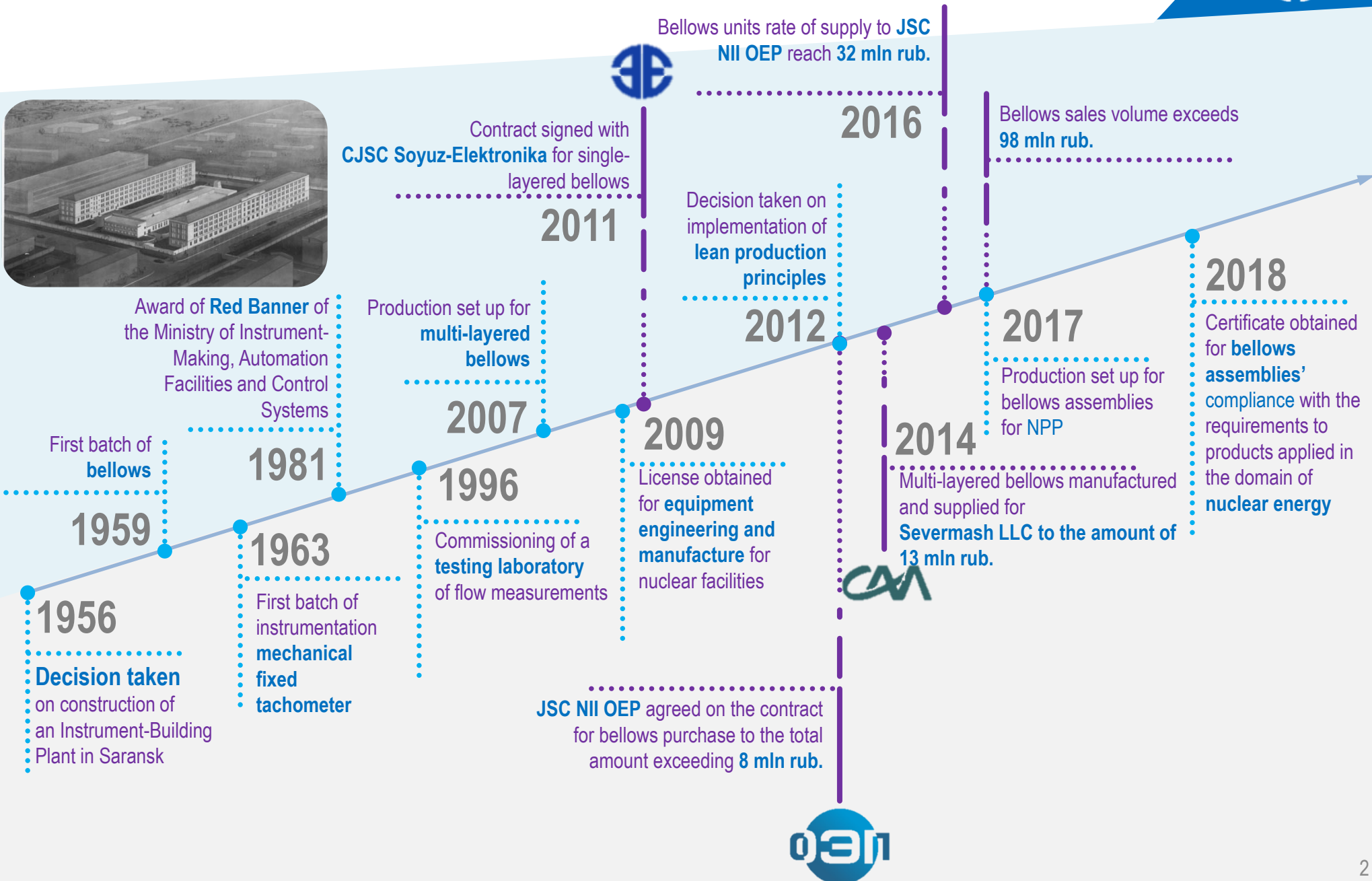


***PJSC Saransk instrument works***

**Bellows Production**



# About the plant





## About the plant

Staff number

**500**

people

Including  
**50**  
specialists in the design  
and process departments

Output value

**500**

mln rub.\*

Main lines of business:  
Bellows and  
instrumentation, services,  
tests

**1000**

Purchasing  
companies

Including oil and gas,  
cosmonautics, rocket  
engineering, military-  
industrial complex, aviation,  
railway and shipbuilding  
enterprises

Annual steady and strong growth of sales volume due to  
launching new products and extending the customer pool





## Development Directorate

**50**

new articles  
in 3 years

**Instrument  
Design Bureau**



**Special Design Engineering  
Bureau**

**Chief Process Engineer's  
Department**

**5**

main disciplines

**Department for mechanization,  
automation, and custom  
equipment**

**Test section**



Product development uses state-of-the-art licensed software and design documentation storage systems, which allow timely changes in article configuration to offer products customized for the individual customer. Besides, we have established relationship with numerous leading Design Bureaus in the country.

# Bellows manufacturing capacity



25

mln rub.  
of investments  
for 5 years



Bellows hydraulic  
forming

Testing  
laboratory



Pipe fitting  
machine  
UCT 48-96-600-11



Laser beam  
and argon arc  
welding



Roller bending  
machine  
MRT 48-96-800-11



Tape cutting  
machine  
UC-1000-11



Quenching and vacuum furnaces have been acquired, as well as leak detector and welding power sources; pickling zone has been upgraded

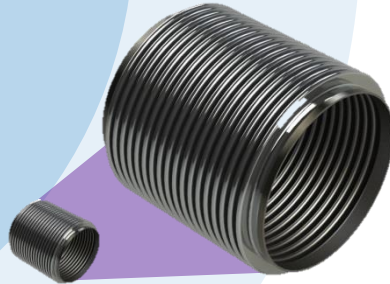


## Products

over  
**1000**  
standard sizes

### Bellows: single-layered and multi-layered

**min**  
Diameter, mm: 9  
Wall thickness, mm: 0.08



**max**  
80 Diameter as per GOST 21482-76, GOST 22388-90, mm:  
100 Diameter as per customer's specifications and drawings, mm:  
0.25 Wall thickness, mm:

### Multi-layered bellows

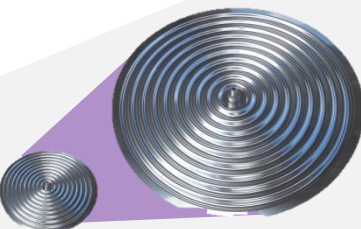
**min**  
Diameter, mm: 22  
Wall thickness, mm: 0.16



**max**  
125 Diameter as per GOST R 55019-2012, mm:  
250 Diameter as per customer's drawings, mm:  
0.3 Wall thickness, mm:  
10 Number of layers

### Diaphragms

**min**  
Diameter, mm: 20  
Thickness, mm: 0.045



**max**  
127 Diameter, mm:  
0.32 Wall thickness, mm:

### Materials for bellows manufacture

Alloy, grade **36HXTЮ**

Beryllium bronze, grade **БрБ2**

Stainless corrosion-  
and heat-resistant steel, grades  
**08X18H10T, 12X18H10T**

Brass, grade **Л-80**

The applied processes allow manufacture bellows and bellows assemblies as per customer's drawings of specific materials **Inconel 625, 10X17H13H2T, Титан ВТ-1 (Titan VT-1), etc.**

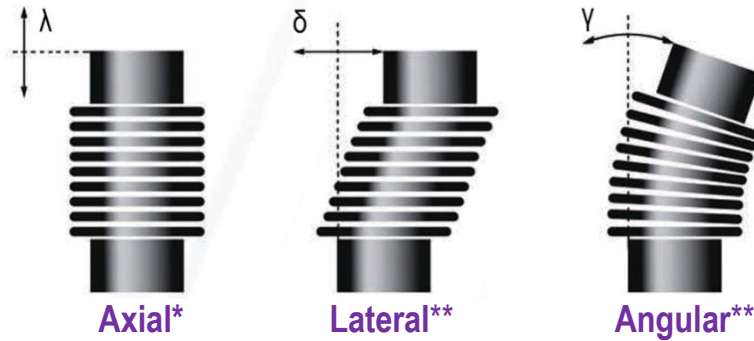




## Products

### Bellows assemblies and expansion joints

#### Expansion joint types



\* - Serial manufacture

\*\* - At the mastering stage

#### Connection types



#### Parameters

Diameters as per customer's drawings, mm

22<



<250

Operating pressure, mPa



<1.6

Operating medium temperature, °C



<250

#### Applied materials

Steel 20

Stainless corrosion- and heat-resistant steel, grade **12X18H10T**

Acceptance  
Military  
Representative Office,  
NPP





## Products

### Welded plated bellows



#### Advantages

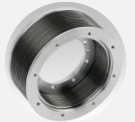
- Flexibility
- Dense packaging
- Low rigidity
- Adjustable section width
- Long length
- Production of non-round shapes

#### Applied materials

Steel 20

Stainless corrosion- and heat-resistant steel, grade 12X18H10T

#### Parameters

Diameters as per customer's drawings, mm : 28<  <160

Diaphragm thickness, mm : 0.1<  <0.3





# Products

## Thermal system



Intended for maintenance of a definite thermal balance of a device, equipment, or compartment. May be used for heating system automation to ensure comfortable temperature of certain circuits. Functions as an executive element in area control systems configuration. May be mounted on the distribution manifold valve to adjust the control valve upon a thermostat signal by determining the heat carrier flow in heating systems.

## Wave guide



The corrugated wave guide serves to transfer energy in microwave sections (e.g. from transmitter to antenna). Typically, such sections consist of various (in shape and sizes) radio wave guides, elbows, etc. Wave guide walls shall be flexible at elbows, thus metal rectangular bellows are used.

## Aneroid capsule



A hermetically sealed deflated diaphragm box, intended for measurement of absolute pressure of ambient air. When pressure changes outside the aneroid capsule, it deforms due to pressure difference between ambient pressure and the pressure inside the box cavity. Deformation of an aneroid or barometric capsule equals to the sum of deformations of constituent diaphragms. The welded aneroid capsules are deflated and sealed using special equipment



# Application



## Instrumentation

As an elastic sensing element in devices.

- aviation,
- motor industry
- railway machinery
- shipbuilding

## Pipeline valves

As rod seals in check valves.

- oil and gas transportation
  - ship valves
- nuclear plant valves



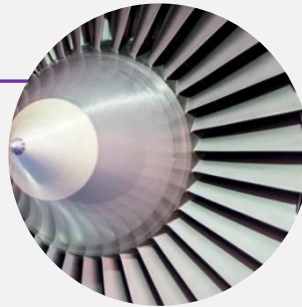
## Motor and armoured vehicles

As a misalignment compensation device during installation in vacuum, fuel, gas, and exhaust lines



## Motors, turbines, generators

As part of motors, generators, turbines, refrigeration and ventilation units, widely applied in various industries



## Housing services and utilities

As a compensator in heating and water supply systems



## Military rocketry and cosmonautics

As a phase separator and a sealing element in various systems, including guidance system



## Testing laboratory

High-pressure laboratory for pneumatic and hydraulic tests

Vibration tables

Climate chambers

Measuring instruments system for mechanical impact tests

## Laboratory for production monitoring and industrial hygiene

Paint and coating thickness measurement

Substance and material weight measurement

Chemical analysis for material, metal and alloy incoming inspection

## Metallography laboratory

Metal hardness measurement

Heat treatment quality control, defect analysis

Post-heat-treatment metal microstructure control







# Quality management system



PJSC SIW quality management systems comply with the requirements of

**GOST RV 0015-002-2012**  
**GOST ISO 9001-2011**

We are the only enterprise in the Volga region with the licenses for engineering and manufacture for nuclear facilities of nuclear power plants for 10 years





## Advantages of bellows assembly manufacture for nuclear plants with PJSC SIW

A large-assembly component part manufactured in accordance with the requirements of NPP supply documents

Freeing of customer's equipment capacities

Labour costs reduction

Reduction of inspection points in the Quality Plan

Reduction of the end product delivery time to customer



СИСТЕМА ОЦЕНКИ СООТВЕТСТВИЯ В ОБЛАСТИ  
ИСПОЛЬЗОВАНИЯ АТОМНОЙ ЭНЕРГИИ  
ОБЯЗАТЕЛЬНАЯ СЕРТИФИКАЦИЯ

№ 0000196

**СЕРТИФИКАТ СООТВЕТСТВИЯ**

№ ОИАЭ.RU.067(OC).00232

Срок действия с 16.10.2018 по 15.10.2021

**ОРГАН ПО СЕРТИФИКАЦИИ** Общество с ограниченной ответственностью «РусАтомЭкспертиза» (Орган по сертификации ООО «РусАтомЭкспертиза»), Юридический адрес/Фактический адрес: 115088, г. Москва, ул. Шарикоподшипниковская, д. 4, корпус 1А, помещение IX, КОМ5, 5А, 6. Тел./факс: +7(495)514-13-54, e-mail: info@rusatomexp.ru. Аттестат аккредитации рег. № ОИАЭ.RU.067 (OC) от 11.07.2018

**ЗАЯВИТЕЛЬ** Публичное акционерное общество «Саранский приборостроительный завод» (ПАО «СПЗ»), Юридический адрес/Фактический адрес: Россия, 430030, Республика Мордовия, г. Саранск, ул. Васенко, д.9, Тел.: (8342) 29-65-18, Факс: (8342) 33-37-58, e-mail: secretariat@saranskpribor.ru

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ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ Условия действия сертификата соответствия см. Приложение 3 (бланк № 0001686)

РУКОВОДИТЕЛЬ ОРГАНА ПО СЕРТИФИКАЦИИ В.С. Обломей М.П.

## Our partners



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