

Fabric expansion joints

 Powered by **Powerz** group

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Powerz® company is the innovative market leader in the field of engineering and production of fabric expansion joints and quickly removable thermal insulation.



Powerz® is the established manufacturer and supplier of fabric expansion joints and quickly removable thermal insulation. The using of innovative technologies ensures failure-free and long-term operation of air and gas ducts at low and high temperatures or in case of aggressive operating medium.



Unique projects

Innovation is one of the company's key routes.

We are very interested in nonstandard projects which require a special technical and engineering approach. The increase in volume of orders shows that Powerz engineers successfully accomplish such projects.



Warranty

Detailed installation instructions and manuals along with considerable project experience allow us to guarantee the high quality of manufactured products.



In-house production

With over 150 employees and wide production facilities our company ensures the full production cycle of fabric expansion joints, thermal insulating jackets and other sealing materials.



Quality management

We pay close attention to quality. All management processes have been carefully reviewed and reworked in details. Our production complies with international quality standards and has all the necessary licenses and permits. Our quality management system is certified to international standard ISO 9001.



No limits

Diameter range: from DN 100 up to “unlimited”
Powerz® Fabric expansion joints can be delivered as ready-made modules with metal fittings for further welding at a site or as separate construction modules designed for on-site assembling and installation (from DN 4000 and more).



Engineering

Engineering and calculation stage is a complicated process where special technical knowledge is required. After sending the technical data we prepare a detailed quotation with indication of dimensions, technical parameters and delivery terms. Upon request the drawings can be provided to the customer.



Materials

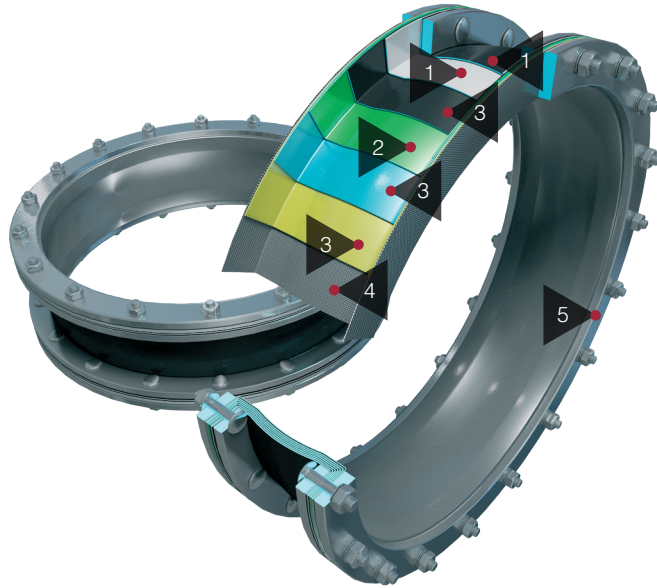
All materials and fabrics used in production are fireproof.



Technologies

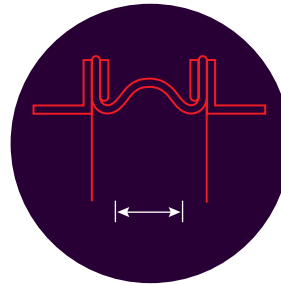
To make the fabric expansion joints wear- and abrasion-resistant to dust and ash we developed a special construction which provides a long operation life and supports all service data.

POWERZ® FABRIC EXPANSION JOINTS: APPLICATION AREAS AND STRUCTURE

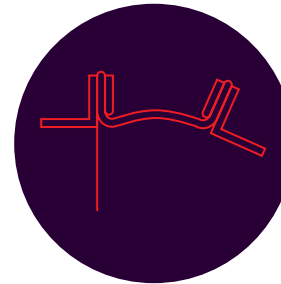


Structure of fabric expansion joint

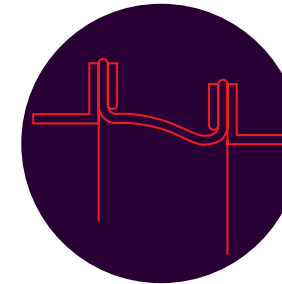
1	External gas-tight layer
2	Insulation layer
3	Insulation layer, resistant to high temperatures
4	Stainless steel grid
5	Clamping flange



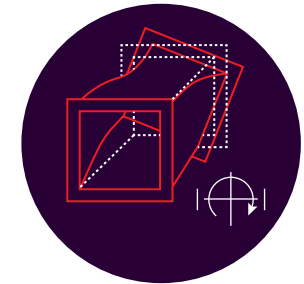
axial
movements



angular
movements



shifting



twisting

Fabric expansion joints absorb movements, oscillations and vibrations in the axial and lateral direction in pipelines. Due to high elasticity and engineering characteristics, it is possible to reduce temperature and pressure fluctuations using fabric expansion joints. Thanks to flexible materials we offer fabric expansion joints in different geometric shapes and all sizes. Fabric expansion joints are used for gas, dust and air ducts with low pressure and large operating displacements. Due to their low fabric rigidity fabric expansion joints are able to detect and absorb the slightest pipeline movements.

Powerz® expansion joints are produced of one or more layers of material presenting two functions: temperature insulation and sealing-in. Materials are individually selected for every certain application. We use about 30 different materials.

INDUSTRIAL APPLICATION AREAS



Chemical industry
gas flues for process gas, air and smoke fumes,
transportation pipelines for bulk materials, flexible
inserts for exhaust fans, gas scrubbing systems

Natural gas transportation
expansion joints for gas turbine
diffusers, expansion joints for gas
removal canals to the pipe or wasteheat
boiler

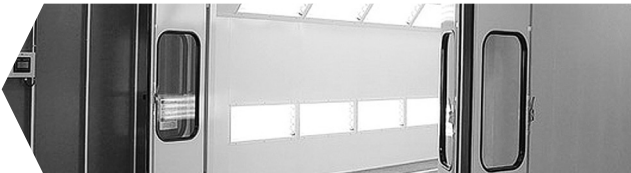


Metallurgy
ducts and pipelines for flue gases and
air, gas scrubbing systems



Wood-working industry

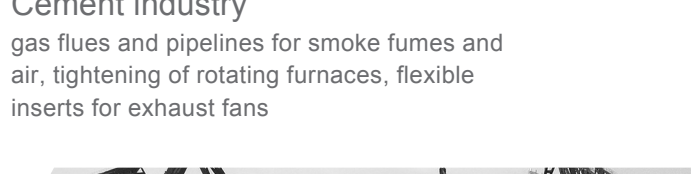
Industrial lines
air and gas ducts



Cement industry
gas flues and pipelines for smoke fumes and
air, tightening of rotating furnaces, flexible
inserts for exhaust fans



Petroleum chemistry



Shipbuilding industry

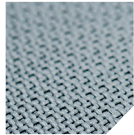
Pulp and paper industry
air and gas ducts



Thermal power industry
expansion joints for convection pass,
expansion joints for air and gas ducts of
smoke fumes, flexible inserts for exhaust
fans, gas cleaning



POWERZ® PRODUCTION MATERIALS



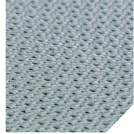
ELATEX-sil 2™

- silicon-coated glass fabric of dense weaving
- water and low temperature resistant
- thermal resistance up to 200°C



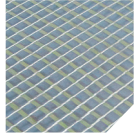
ELATEX-iso 500™

- glass fabric of dense weaving
- thermal resistance up to 500°C



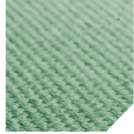
ELATEX-iso Arm™

- glass fabric of dense weaving
- reinforced with stainless steel grid
- thermal resistance up to 750°C



ELATEX-cord™

- stainless steel grid



ELATEX-fluorine 700™

- fluoroplastic-coated glass fabric of dense weaving
- water and low temperature resistant
- thermal resistance up to 265°C



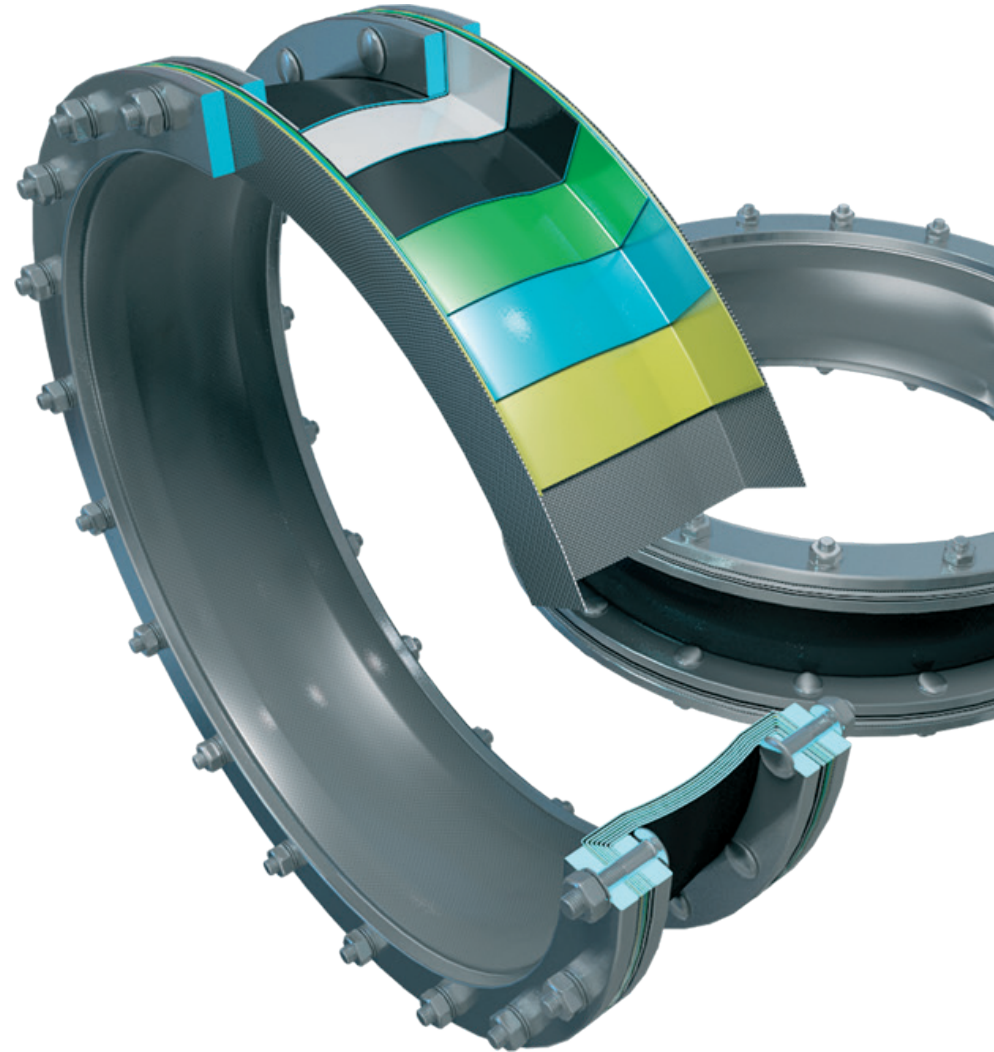
ELATEX-isokeram™

- thermal insulation based on ceramic wool
- thermal resistance up to 1200°C

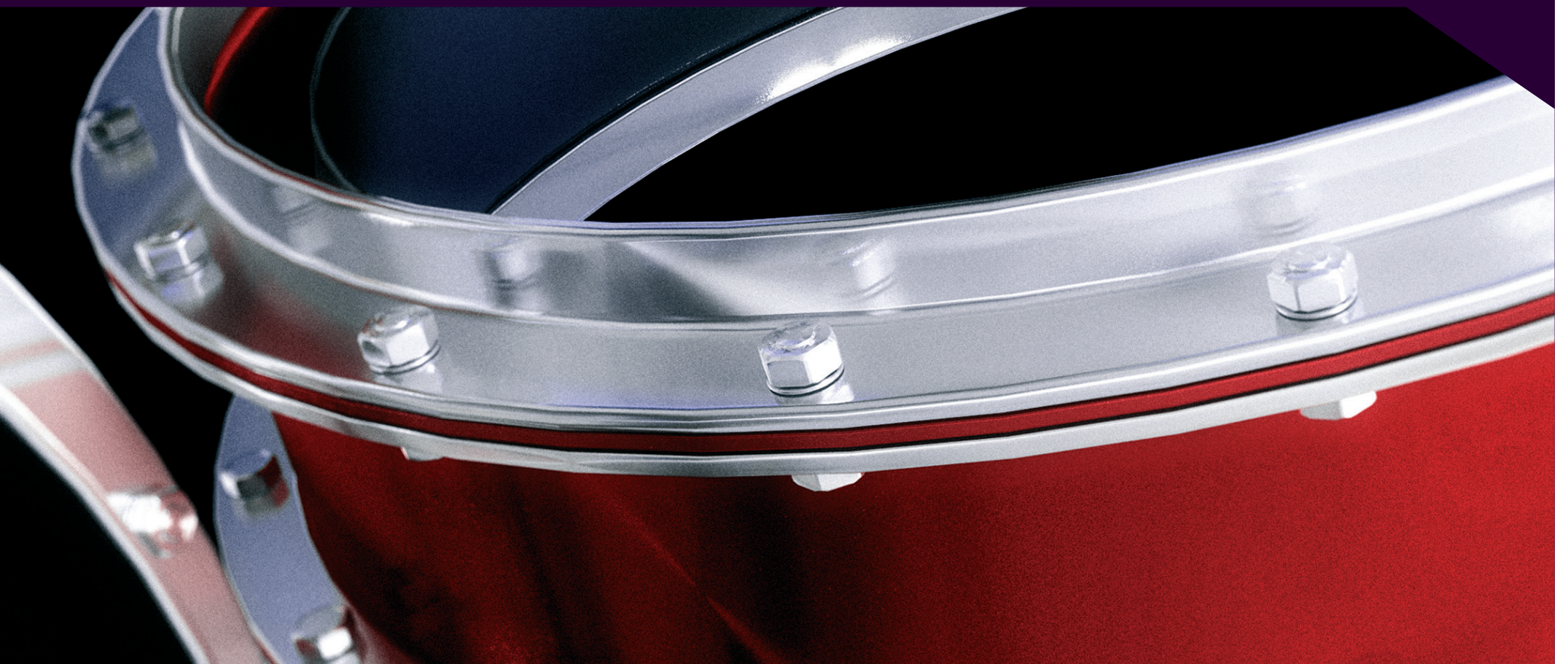


ELATEX-iso TH™

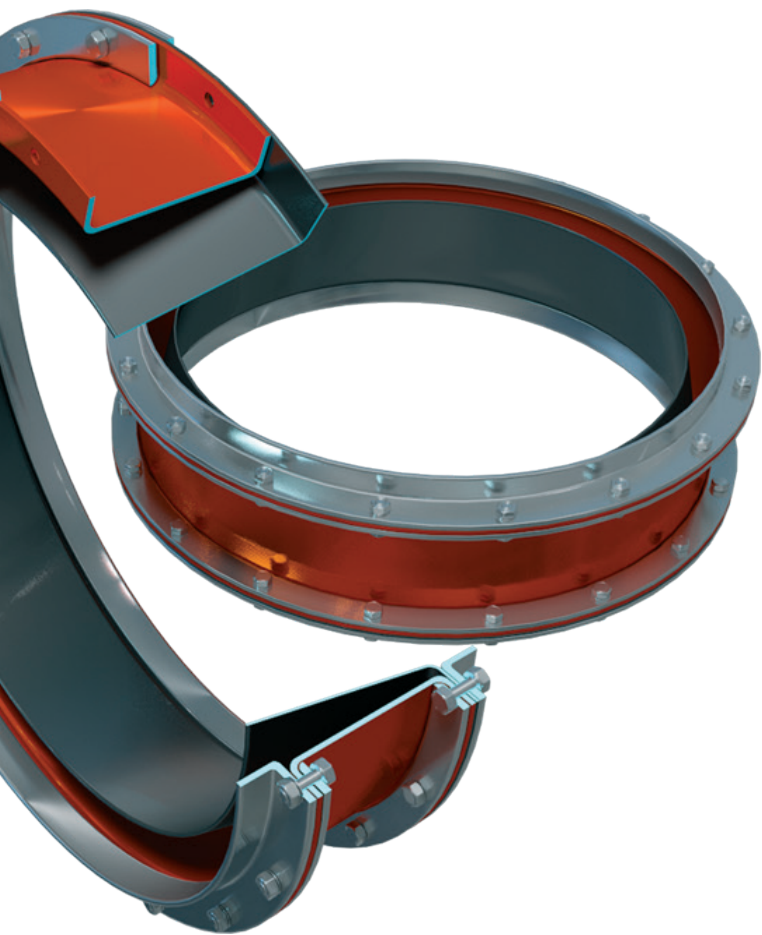
- based on basalt wool
- thermal resistance up to 500°C



POWERZ® FABRIC EXPANSION JOINTS
FOR CHIMNEYS AND COOLERS



POWERZ® FABRIC EXPANSION JOINTS FOR CHIMNEYS AND COOLERS



Used materials	
ELATEX-sil™	silicon-coated gastight material
ELATEX-iso 500™	NBR-coated gastight material
ELATEX-fluorine™	PTFE-coated gastight material

Definition	Advantages
<p>Fabric expansion joints for chimneys and coolers absorb vibration. Such type of expansion joints are manufactured by one or two gas-tight layers.</p> <p>Expansion joints for air operating media are made of materials with silicon coating which are resistant to temperatures up to + 200 °C. In case of exhaust gases with sulfur oxides and other chemical aggressive operating media we use PTFE-coated materials with high temperature resistance up to + 265 °C. For operating temperature more than 265 °C Powerz® develop and manufacture heat-resistant fabric expansion joints up to 500 °C.</p>	<ul style="list-style-type: none"> ▶ gastight; ▶ heat-resistant up to + 265 °C; ▶ high compensating capability; ▶ lower weight; ▶ unlimited size range; ▶ different cross-sections; ▶ freeze-resistant (flexible at -40° C); ▶ fast delivery; ▶ easy to maintenance and to replace.



To make a detailed calculation we need customer's information about technical data and operation conditions.

More information under www.powerz.co



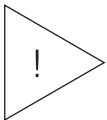
POWERZ[®] FABRIC EXPANSION JOINTS FOR CHIMNEYS AND COOLERS

Application areas

This type of fabric expansion joints is widely used at coolers and exhaust fans.

Their main task is to eliminate oscillations and thermal movements of ducts. Based on heat-resistance values of gastight coating the operating temperature is up to 265 °C. or operating temperature more than 265 °C Powerz[®] develop and manufacture heat-resistant fabric expansion joints up to 1200 °C.

- ▶ expansion joints for coolers;
- ▶ expansion joints for chimneys;
- ▶ expansion joints for exhaust fans;
- ▶ expansion joints for air ducts.

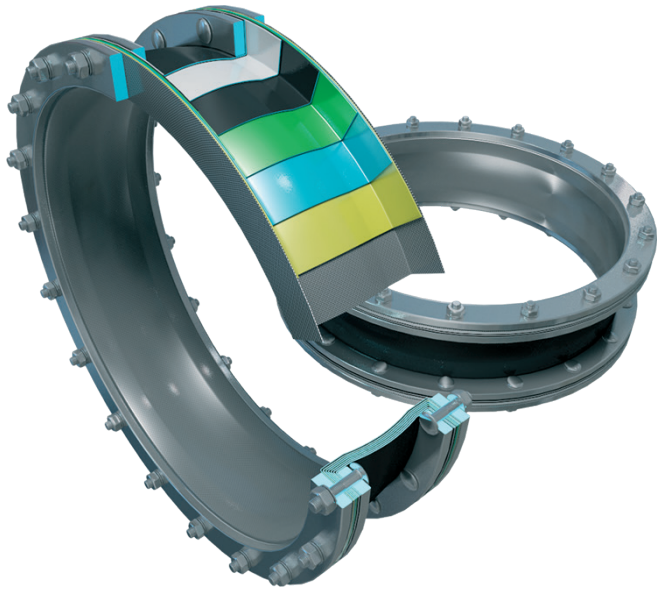


The main feature of such expansion joints is their gastightness as well as high thermal resistance. Other expansion joints based on PVC-coated materials with metallic strip are resistant up to 100 °C and cannot be considered as gastight because of their structure.

POWERZ® FABRIC EXPANSION
JOINTS FOR HIGH TEMPERATURES



POWERZ® HIGH-TEMPERATURE FABRIC EXPANSION JOINTS



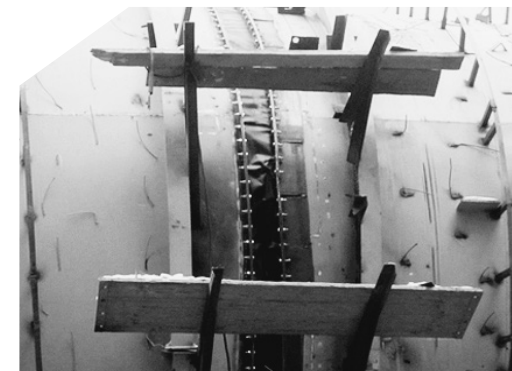
Materials	
ELATEX-sil™	gas-tight material with silicon coating
ELATEX-iso 500™	gas-tight material with NBR coating
ELATEX-fluorine™	gas-tight material with fluoroplastic coating
ELATEX-iso Arm™	flexible temperature insulation up to 700°C
ELATEX-cord™	flexible abrasion resistance

Structure	Advantages
<p>High-temperature fabric expansion joints are made of several heat-insulating and gas-tight layers. Material selection depends on operating temperature and installation place. We apply more than 10 types of different materials, choosing them within engineering and design stage. The most appropriate geometry of expansion joint is based on specified displacements and environmental parameters.</p>	<ul style="list-style-type: none"> ▶ low weight; ▶ low stiffness; ▶ unlimited sizes; ▶ high compensating capabilities; ▶ unlimited geometry of cross section; ▶ low temperature resistance (up to -40°C); ▶ fast delivery; ▶ easy to replace.



To make a detailed calculation we need customer's information about technical data and operation conditions. More information under www.powerz.co

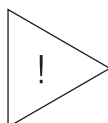
POWERZ® HIGH-TEMPERATURE FABRIC EXPANSION JOINTS



Application areas

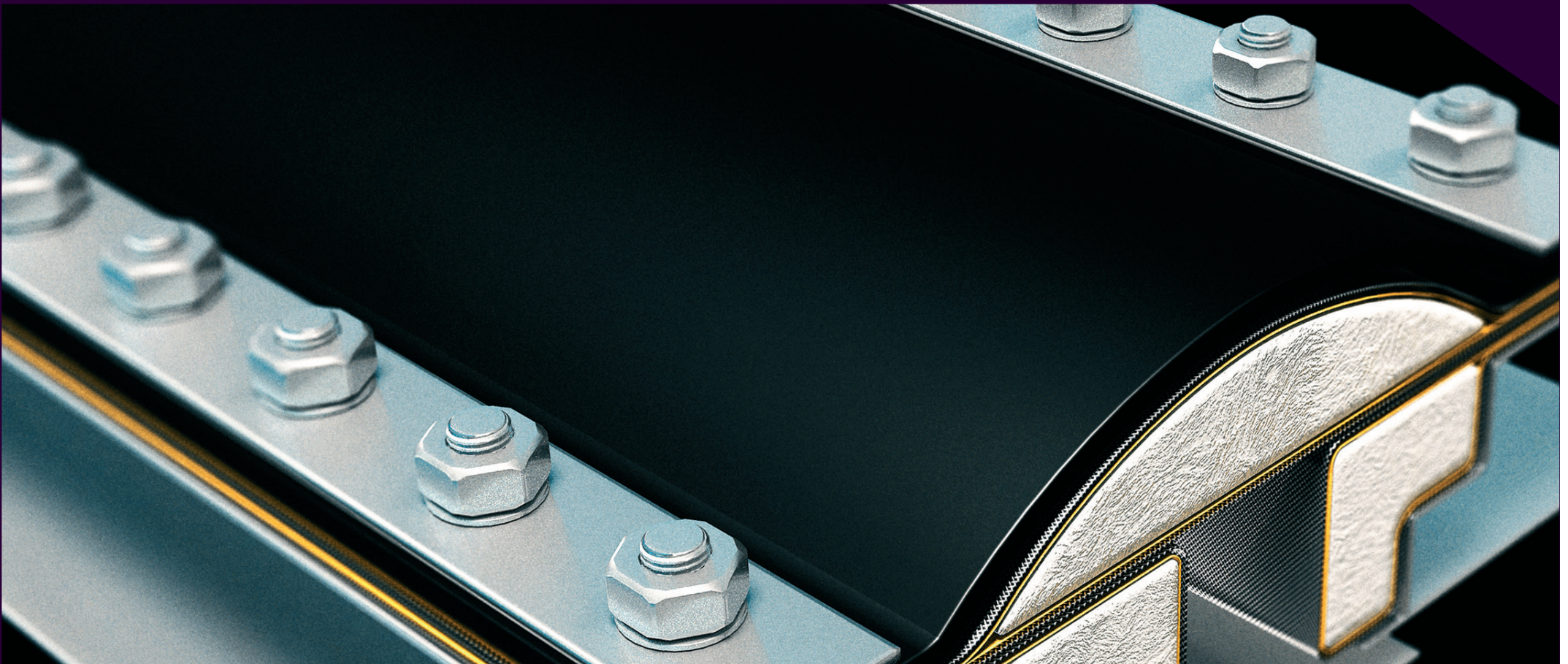
Fabric expansion joints are intended for such operating media as air, combustion products and other gases. Special design allows to use fabric expansion joints for media with a lot of abrasive components such as coal, dust and ash. The common installation places are boiler equipment, gas-air-ducts, exhaust systems, where the operating temperature can reach 500°C.

- ▶ thermal power equipment;
- ▶ gas ducts;
- ▶ air ducts;
- ▶ fans and smoke exhausters.

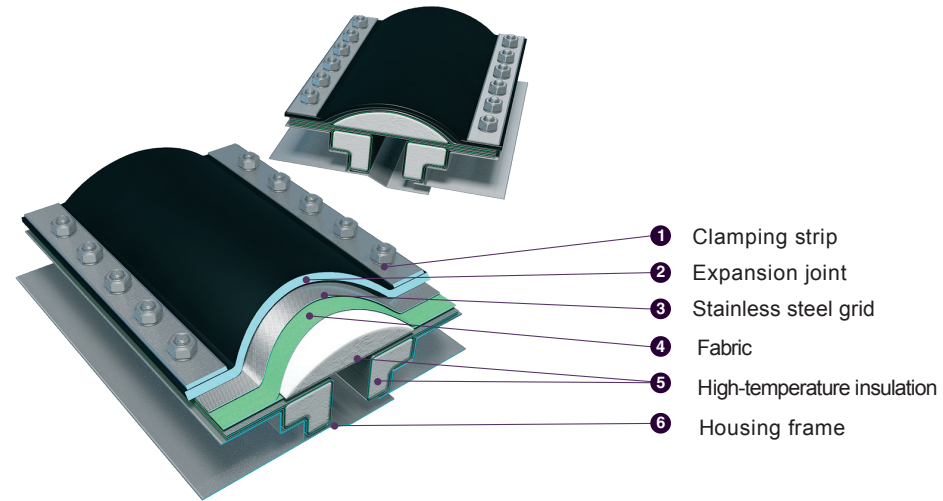


Powerz® manufactures fabric expansion joints of all geometry shapes and dimensions. Flexibility of materials allows to manufacture fabric expansion joints without any size limits.

POWERZ® MULTILAYER FABRIC
EXPANSION JOINT WITH INTERNAL
INSULATION



POWERZ® MULTILAYER FABRIC EXPANSION JOINT WITH INTERNAL INSULATION



Structure

Advantages

Materials

Construction and type of internal insulation depend on operation conditions and can be designed in different modifications.

This type of fabric expansion joint is configured with an internal insulation.

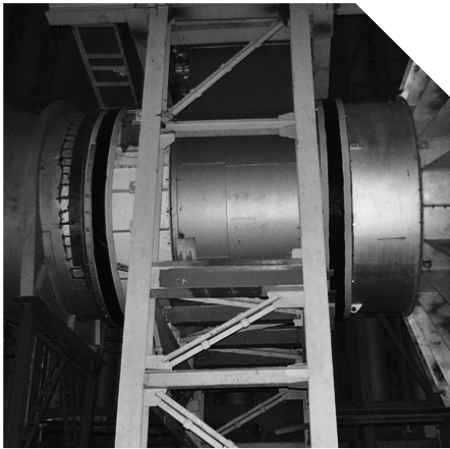
It consists of several heat-insulating and gas-tight layers. Internal insulation is made of heat-insulating fabrics acting as framework and of heat-insulating padding based on ceramic fiber.

We apply more than 10 different types of materials, choosing them within engineering and design stage. The most appropriate geometry of expansion joint is based on specified displacements and environmental parameters.

- ▶ In case of transportable cross-sections, expansion joints can be supplied as ready-made unit for their further welding on the gas duct
- ▶ In case of oversized dimensions the expansion joint is delivered disassembled for further on-site mounting



To make a detailed calculation we need customer's information about technical data and operation conditions. More information under www.powerz.co



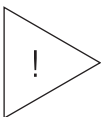
POWERZ® MULTILAYER FABRIC EXPANSION JOINT WITH INTERNAL INSULATION

Application areas

Common installation places are sensitive equipment points with temperatures up to 1200° C.

Fabric expansion joints with small dimensions involve high compensating capacity: axial up to 300 mm and shifting up to 100 mm

- ▶ expansion joints for gas pumping compressor stations;
- ▶ expansion joints for power generating gas turbines;
- ▶ expansion joints for media with heavy dust content;
- ▶ expansion joints for convection shaft and boiler furnace;
- ▶ expansion joints for blast furnace gases.



To achieve the full safety and gastightness we use only fireproof materials .

POWERZ® FABRIC EXPANSION
JOINTS FOR GAS AND AIR DUCTS



POWERZ® FABRIC EXPANSION JOINTS FOR AIR, DUST AND GAS DUCTS



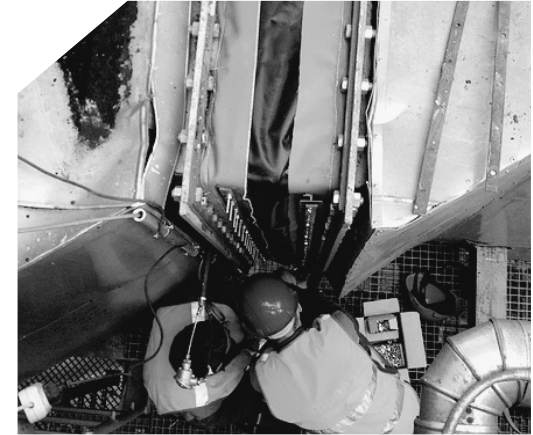
Materials	
ELATEX-cord™	flexible abrasion resistance
ELATEX-iso 500™	gas-tight material with NBR coating
ELATEX-fluorine™	gas-tight material with fluoroplastic coating

Structure	Advantages
<p>Compared with outdated metal expansion joints, this type of fabric expansion joint is made of compound chemical and thermal resistant composite materials. These gas-tight materials based on PTFE are considered as the most chemical resistant materials and enable the use of fabric expansion joints at gas media with higher sulphur oxides content.</p>	<ul style="list-style-type: none"> ▶ low weight; ▶ low stiffness; ▶ unlimited dimensions; ▶ high compensating capabilities; ▶ unlimited cross-section geometry; ▶ low temperature resistance (up to -40°C); ▶ fast delivery; ▶ easy to replace



To make a detailed calculation we need customer's information about technical data and operation conditions. More information under www.powerz.co

POWERZ® FABRIC EXPANSION JOINTS FOR GAS AND AIR DUCTS



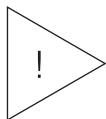
Application areas

Critical section points of gas scrubbing and removal systems are typical application area of such expansion joint .

Expansion joints with small dimensions as well as low stiffness and high compensation capabilities in all directions show high resistance to acids and alkalis . Materials with high humidity resistance enable to use such expansion joints within humid operating medium.

Powerz® fabric expansion joints for gas and air ducts were successfully installed at the steam boilers of leading european companies and proved their durability.

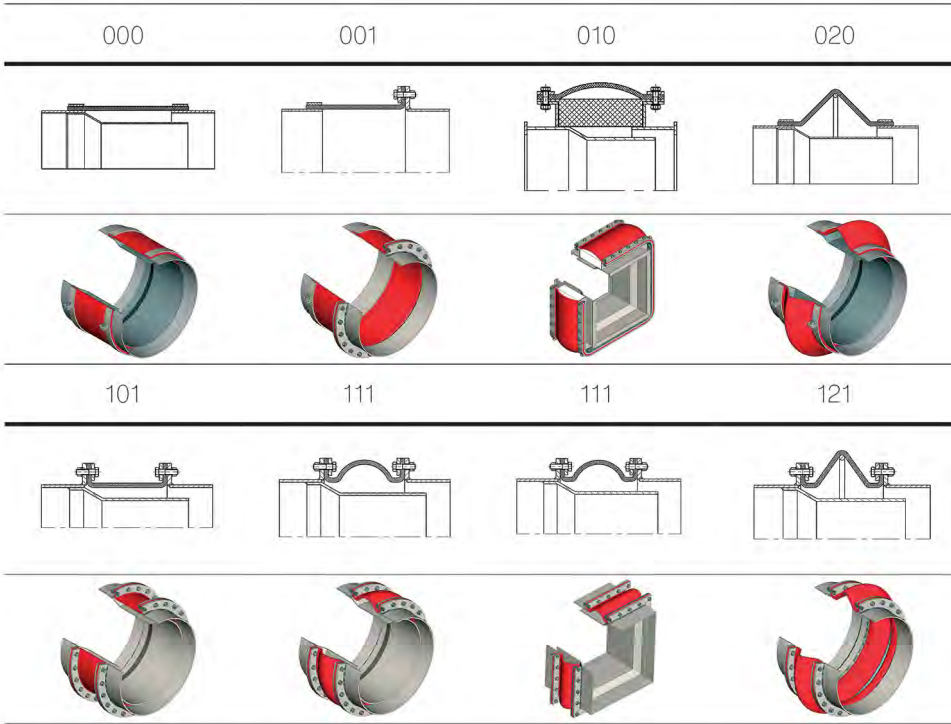
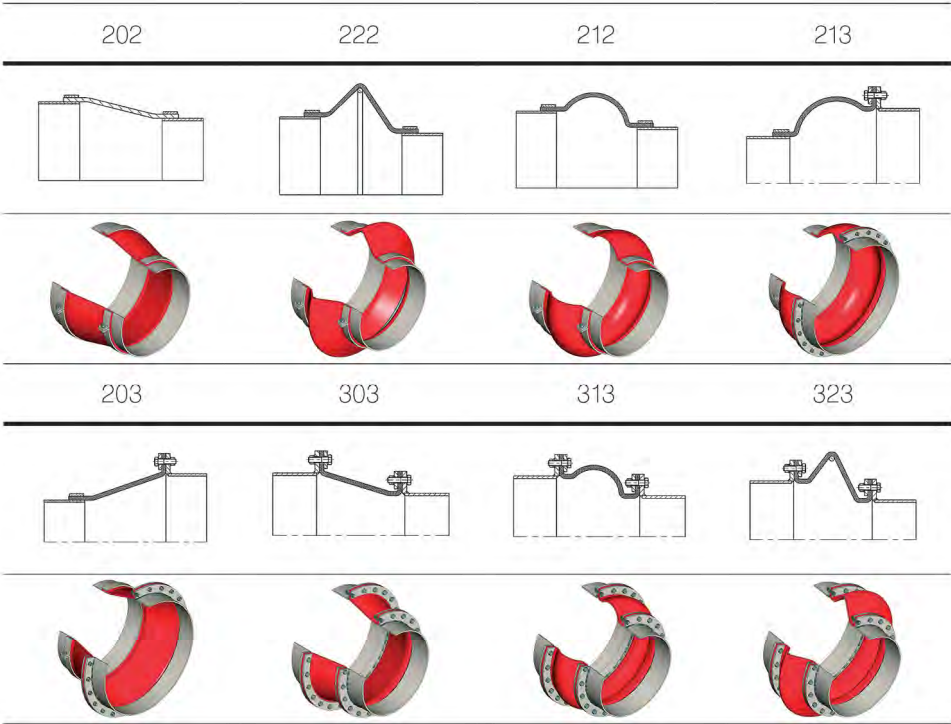
- ▶ fans;
- ▶ smoke exhausters;
- ▶ air ducts



Fabric expansion joints for gas and air ducts can totally replace metal expansion joints. The main gas duct configuration remains unchanged.

POWERZ® ENGINEERING PHASE: TYPES OF EXPANSION JOINTS

MOUNTING METHODS



POWERZ® EXPANSION JOINTS: CHOOSING OF COMPENSATING CAPABILITY

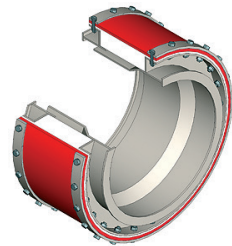
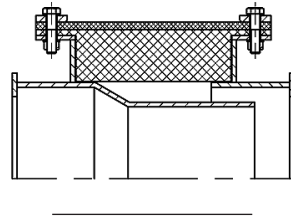
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Compensating capability as a percentage of installation width			
Axial movements: - 25% Shifting: - 10%			

010	010	020
Compensating capability as a percentage of installation width		
Axial movements: - 25% Shifting: - 10%	Axial movements: - 35% Shifting: - 15%	Axial movements: - 60% Shifting: - 30%

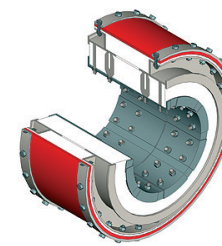
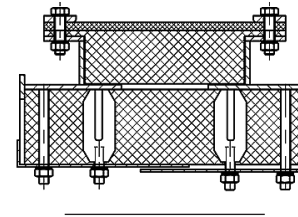
POWERZ[®] EXPANSION JOINTS: CONFIGURATIONS ACCORDING OPERATING TEMPERATURE

Configurations without internal insulation are possible for temperatures below 500°C. If operating temperature goes over 500°C, it is necessary to provide internal insulation. Internal insulation structure depends on many factors and is designed individually.

Main types of insulation modification are presented below.



Internal insulation for operating temperatures from 500 up to 750°C



Expansion joints with additional inner liner are used for temperatures over 750°C and gas flues with internal insulation.

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