



BELLOWS  
TECHNOLOGY





**BELLOWS  
TECHNOLOGY**

Bellows Technology is a leading manufacturer and supply a comprehensive range of expansion joints, bellows assemblies, flexible & thermal compensators and high-frequency decouplers.

Our product range has been built from experience working on numerous projects for a variety of industry sectors. We are in the business of providing tailored solutions to deliver outstanding customer service, comprehensive technical support and quick turnaround times with reliable delivery schedules.



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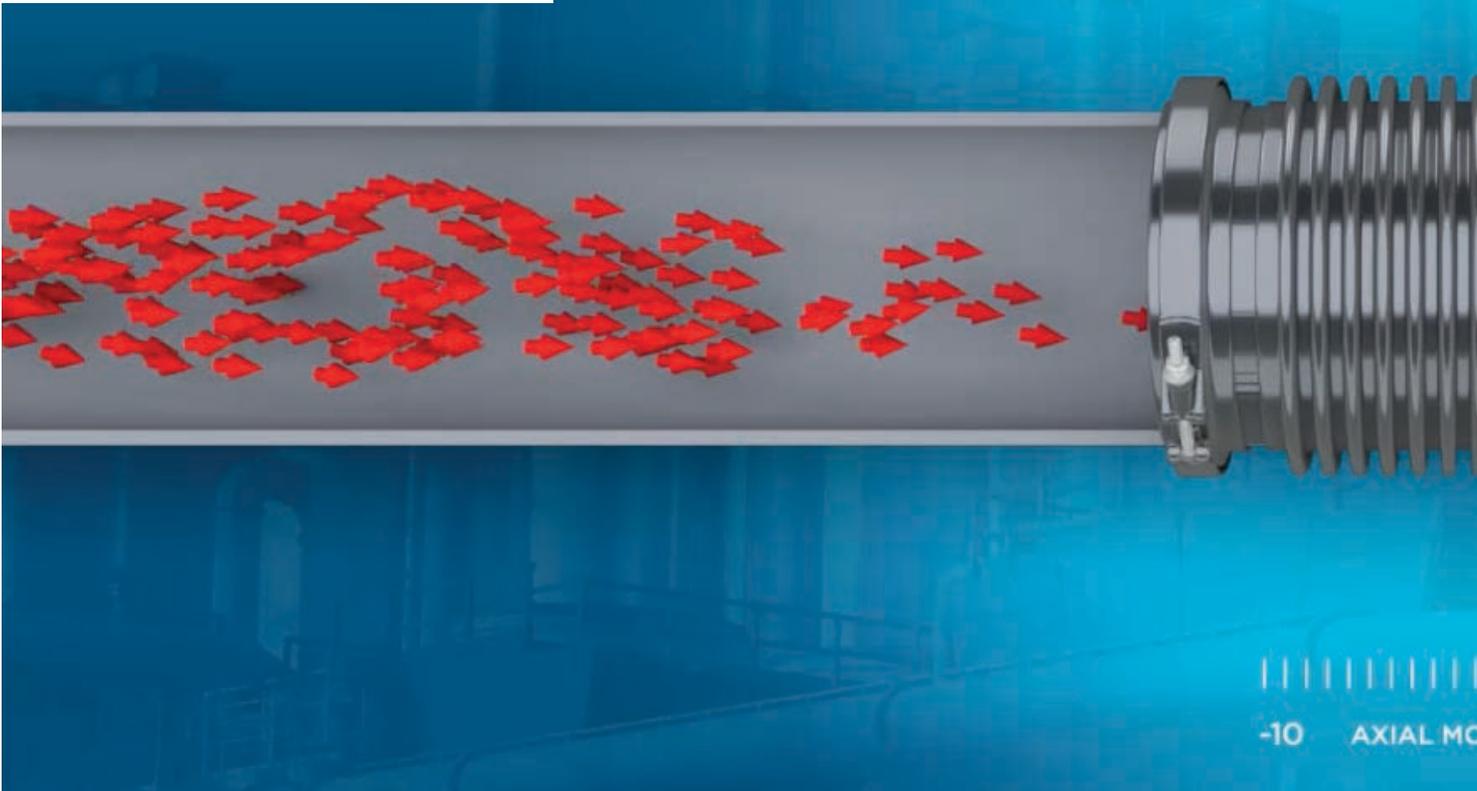
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# Who We Are

# Controlled



Bellows Technology is one of the fastest-growing solution providers of expansion joints, thermal compensators, and flexible components.

We operate across two UK sites, with our facility in Derbyshire manufacturing the larger diameter; industrial products and the facility in West Yorkshire produce the small diameter repeatable product ranges.

Our wide product range caters for multiple industry sectors, no matter where they are in the world.

We supply products to industrial and commercial customers supporting OEM (Original Equipment Manufacturer) build projects and urgent spare parts for aftermarket within marine, power & energy, utilities, offshore and rail amongst others.



# Movement



## Teconnex

MAKING CONNECTIONS



### Teconnex Ltd

In 2017, Bellows Technology Ltd was acquired by Teconnex Limited, a world leader in manufacturing joint solutions across its global facilities.

With their continued investment in both people and equipment, Bellows Technology has strengthened its presence in the UK as well as reaching customers across Europe, Asia, and America.

Teconnex has now expanded from clamps and Bellows into the world of power, aerospace, automation, tooling and more in the future.



### Hexadex Ltd

Hexadex Ltd, based in Lincolnshire, UK, is the holding company for a global group of engineering companies.

Hexadex has five operating subsidiaries, including Teconnex Ltd, which manufactures high-quality engineering products in a diverse range of industries.

The group has successfully grown over 40 years and now has around 1000 employees based at 14 manufacturing locations in seven countries.

# Our Process

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We provide products for several industry sectors including power generation, Marine, Nuclear Power & Energy Sector, Offshore, Utilities, Hot Gas Exhaust, Automotive and Off Highway, Steam, Medical Gases, Instrumentation and Test Equipment.

At Bellows Technology every individual customer we supply has a slightly different technical requirement from the next, whether it is a different temperature, pressure, diameter, overall length, end connection type, or material. It is very rare that we supply exactly the same bellows product to more than one customer.

In order to offer product solutions competitively, wherever possible we utilise a standard range of tooling for bellows forming (Hydro forming and Punch forming) that will take us from 6mm tube diameter up to 1200mm diameter.

From 1200mm – 5000mm diameters parts are roll formed to specific diameter requirement.

Our modern manufacturing processes and equipment have been developed to provide design flexibility, reducing processing times, and offering repeatable product quality.



01

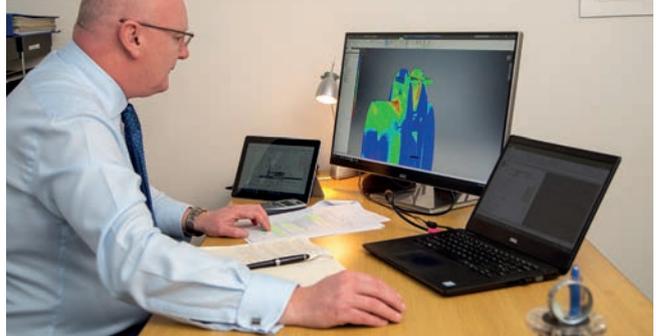
Product Design



Here we take into account all the application parameters and create a product design that follows EJMA guidelines, Pressure Equipment Directives and other relevant pressure pipe work codes and standards. Third-party design verification is available typically completed for critical applications.

02

Calculation & Analysis



As part of our ISO9001 quality system and PED compliance, a full set of supporting calculations is completed for every product we manufacture. This process allows us to confirm our design assumptions, advise on cycle life, and select the most appropriate and cost-effective solution for the project.

03

Product Integration



We offer a range of end connections to suit the individual application from simple weld ends for welding straight into a pipeline section to customer flanges and fittings or specialist assemblies where we need to solve problems of misalignment or provide axial compensation at installation.

04

Manufacture



Manufacturing starts when we receive our customer's design approval. Products are produced across 2 manufacturing sites; with small repeatable products - from 6mm up to 100mm diameter manufactured at Keighley, West Yorkshire, and larger industrial products from 100mm up to 5000mm made at our New Mills, Derbyshire facility.

05

Inspection & Test



All manufactured products are subjected to dimensional checks and pressure testing as a minimum. Other test processes are available upon request to include X-ray, NDT, Radiographic, DPI, and liquid penetrant testing to name but a few.

06

Customer Specific Testing



We can also support our customers with product validation by offering cyclic movement fatigue testing at temperature, leak test, burst test, cyclic pressurisation, and load cell testing.

# Our Products



INSTRUMENTATION & SCIENTIFIC



INSTRUMENTATION & SCIENTIFIC



INSTRUMENTATION & SCIENTIFIC



INSTRUMENTATION & SCIENTIFIC



INSTRUMENTATION & SCIENTIFIC



SINGLE AXIAL EXPANSION JOINT WITH BOLTED FLANGES OR VFLANGES



SINGLE AXIAL EXPANSION JOINT WITH BOLTED FLANGES OR V FLANGES



SINGLE AXIAL EXPANSION JOINT WITH PIPE ENDS



SINGLE AXIAL EXPANSION JOINT WITH SWIVEL (VANSTONE) END



SINGLE AXIAL EXPANSION JOINT WITH BOLTED FLANGES AND TIE RODS



DOUBLE AXIAL EXPANSION JOINT WITH BOLTED FLANGES OR V FLANGES



DOUBLE AXIAL EXPANSION JOINT WITH PIPE ENDS



**DOUBLE EXPANSION JOINT WITH FLANGES AND GUIDE OR TIE RODS**



**DOUBLE EXPANSION JOINT WITH PIPE ENDS AND GUIDE OR TIE RODS**



**SINGLE GIMBAL EXPANSION JOINT WITH FLANGES AND GIMBAL ASSEMBLY**



**SINGLE GIMBAL EXPANSION JOINT WITH PIPE ENDS**



**SINGLE HINGED EXPANSION JOINT WITH FLANGES AND HINGE ASSEMBLY**



**BESPOKE BELLOWS**



**BESPOKE BELLOWS**



**UNEQUAL FLANGE DIAMETERS**



**ELBOW PRESSURE BALANCED EXPANSION JOINT WITH FLANGE CONNECTION**



**INLINE PRESSURE BALANCED EXPANSION JOINT**



**INLINE PRESSURE BALANCED EXPANSION JOINT WITH INTEGRATED GIMBAL JOINTS (SEISMIC JOINT)**

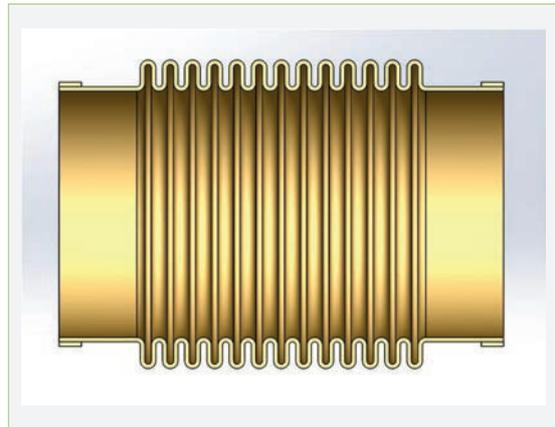
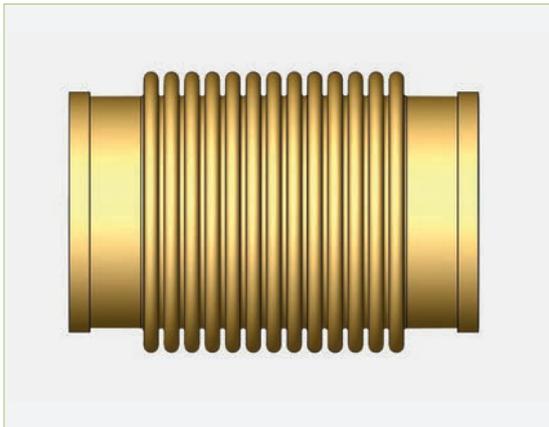


**INLINE PRESSURE BALANCED EXPANSION JOINT WITH EXTERNAL SHROUD**

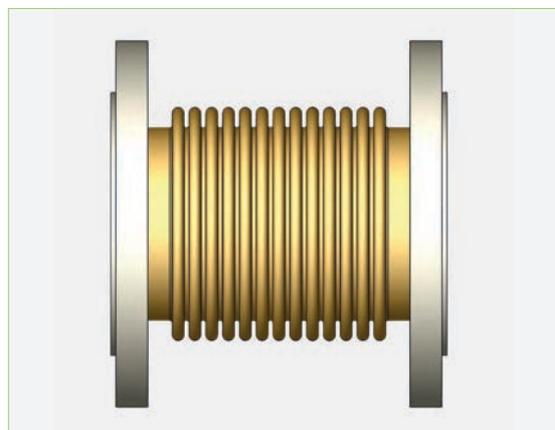
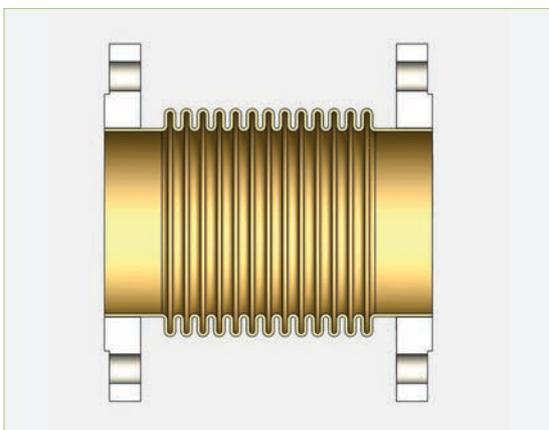
# End Connections

Here we have a range of standard end connections used for bellows integration into a pipework assembly. By bringing together Bellows Technology with Teconnex V clamps we also offer solutions to solve problems of pipework misalignment at installation.

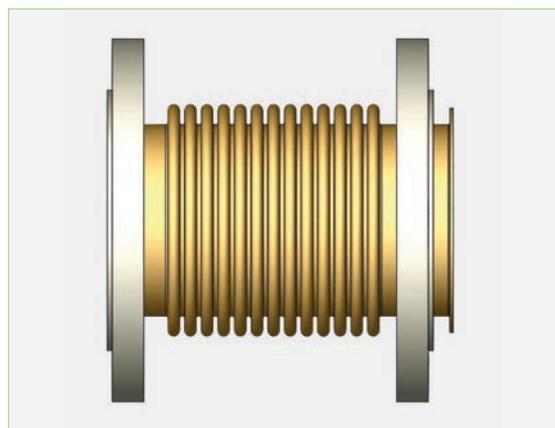
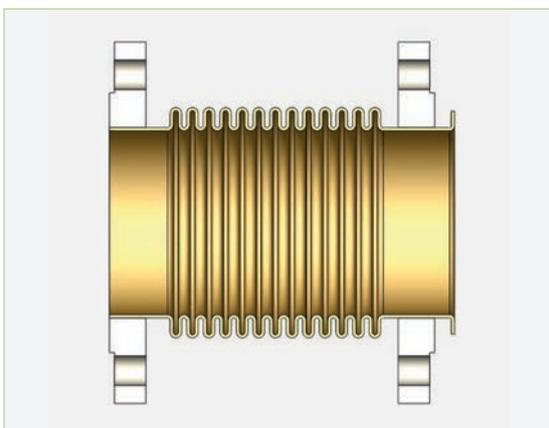
## Standard End Connections



PIPE END FOR WELDING STRAIGHT INTO PIPE WORK

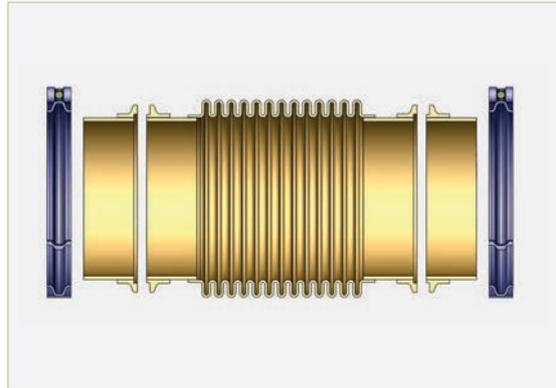
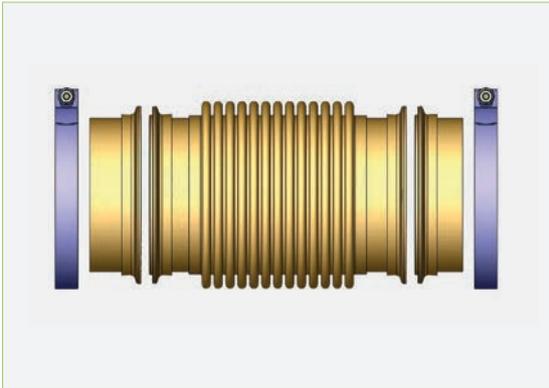


BOLTED FLANGES - WELDED. PN, ANSI, JIS, OTHERS

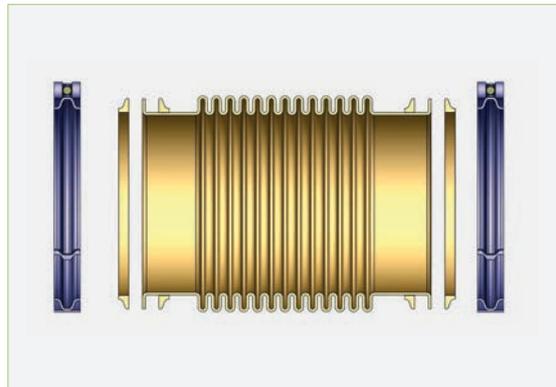
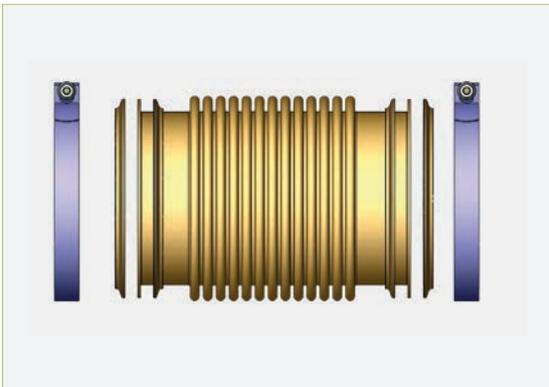


BOLTED FLANGES: 1 END WELDED, 1 END SWIVEL (VANSTONE)

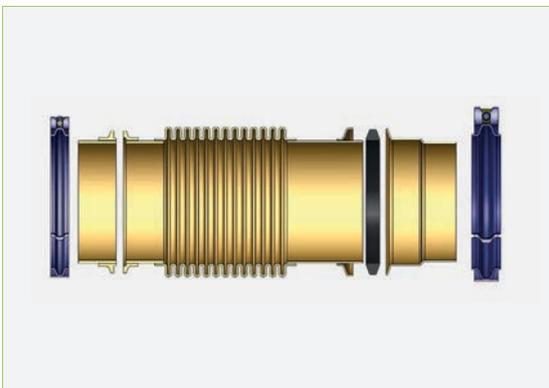
Specialist End connections



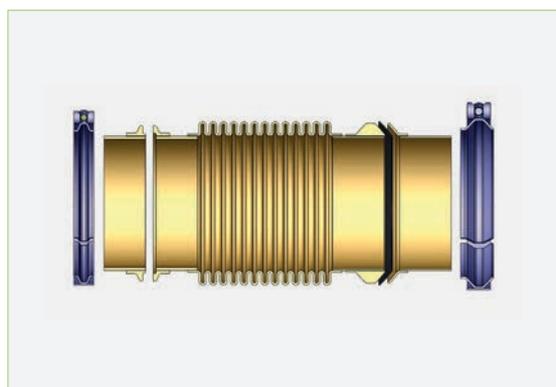
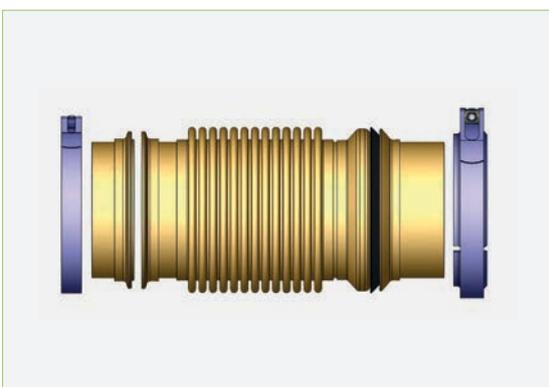
MACHINED V FLANGES WITH GASKET AND CLAMP ASSEMBLY



RETAINED MACHINED V SLIP FLANGE FOR EASY ASSEMBLY



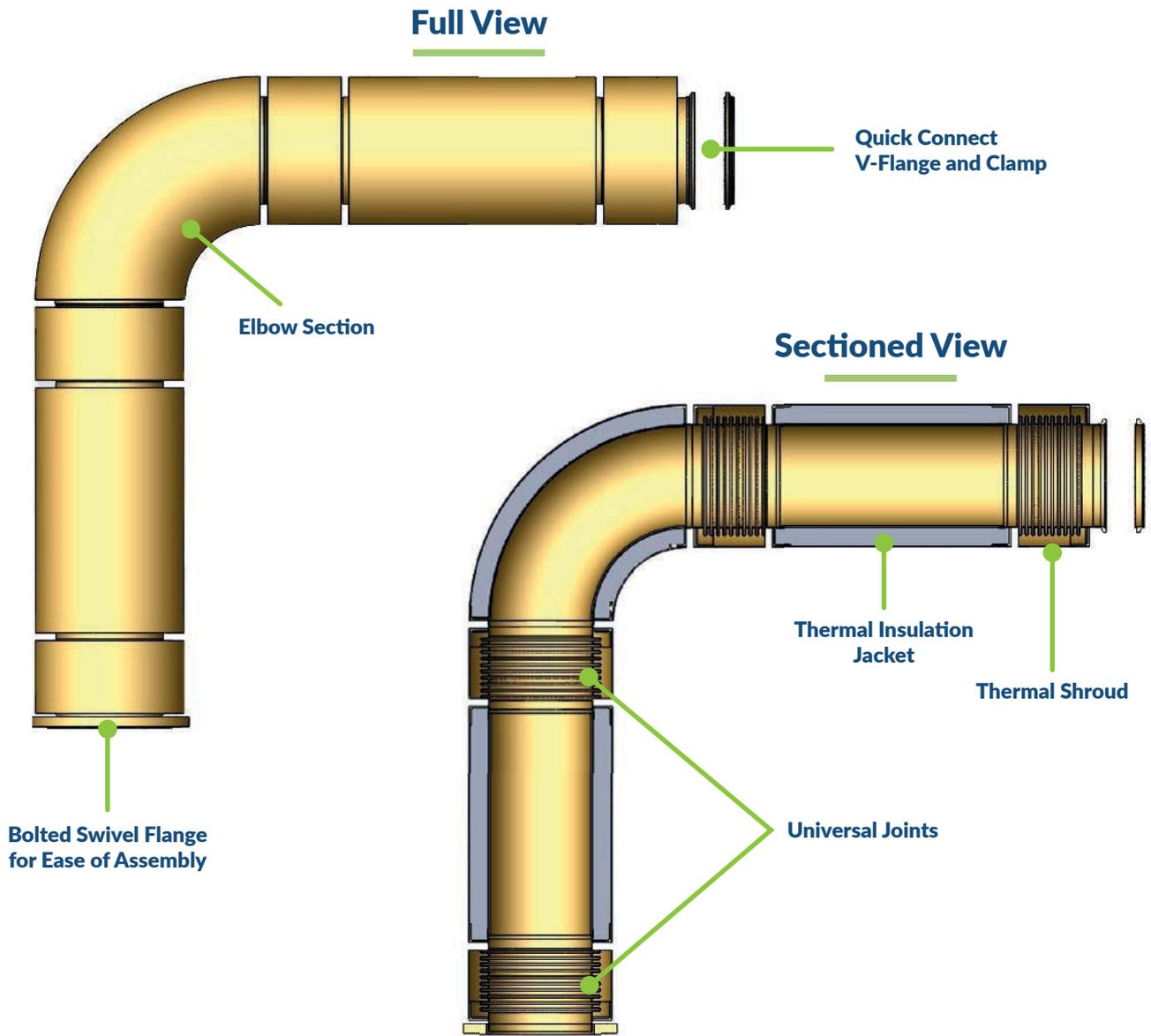
MACHINED FLANGE AND SLIP JOINT ASSEMBLY FOR AXIAL COMPENSATION AT INSTALLATION



MACHINED V FLANGE AND SPHERICAL JOINT FOR ANGULAR MISALIGNMENT AT INSTALLATION

# Special Assemblies

Here is a typical example of a multidirectional assembled system offering XYZ movement capability.



## RELATED PRODUCTS



HEAT SHIELD MOUNTING STRAP



MOUNTING STRAP



4 SEGMENT V CLAMP WITH LEVER AND HINGE



# Quality & Manufacturing Standards



We work with the latest design packages and best practices to ensure we work effectively within accordance with EJMA guidelines and the Pressure Equipment Directive (PED).

Through our careful calculations, we are able to confirm the product suitability and cycle life before any design is finalised. We also provide in-house testing to assist our customers in completing live validation testing at temperatures up to 800°C and 90 barg.

## Quality Accreditations, Approvals & Design Codes

### Manufacturing standards:

- Pressure Equipment Directive 2014/68/EU Modules D, DI, EI and H of Annexe III
- ASME B31.3 Process piping
- ASME Section VIII Div. 1 pressure vessels
- TEMA Class CShell and Tube Heat Exchangers
- EJMA 10th Edition (2016 ERRATA)

### Quality Systems:

- ISO9001: 2015
- AS9100
- IATF16949



# Applications



## Scientific

Our expertise in the instrumentation and scientific sector comes from years of experience working with precision bellows.

### Precision Bellows can be found in:

- Scientific Equipment
- Mass Spectrometry
- Vacuum
- Test Equipment
- Aerospace and Defence
- Control Systems
- Medical Equipment & Gas Supply
- Valve Assemblies
- Cryogenic Equipment

Using high levels of precision and our knowledge of small technical applications, we have provided solutions to scientific, medical and defence equipment. These include various applications of cryogenics, navigation, control systems and more.

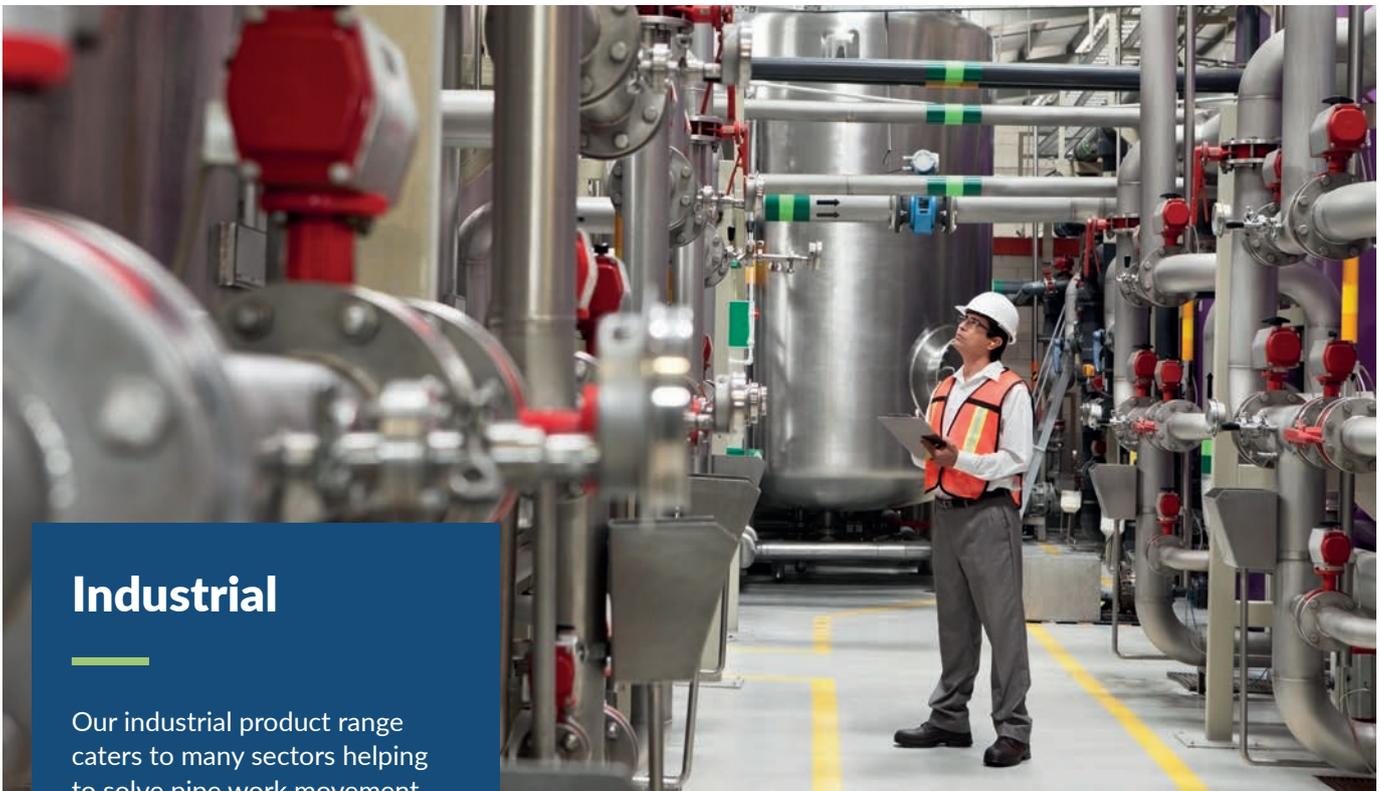
We have the ability to manufacture bellows in diameters from 6mm upwards and with material thicknesses from 0.1mm – 2mm thick in a single-ply configuration.

Materials are selected to suit the customer application but 321, 304, 316, and Monel Stainless Steels, Inconel 718 and 625, Brass, and Phosphor Bronze are common.

### RELATED BELLOWS



# Applications



## Industrial

Our industrial product range caters to many sectors helping to solve pipe work movement challenges for thermal expansion, vibration, equipment cycling, and seismic movements.

We help to solve pipe work problems for Industrial and Process facilities. Whether process media is chemical, water, oil or gas we can expertly assess the expansion joint requirement for every application.

### Industrial Bellows can be found in:

- Chemical
- Oil and Gas
- Marine and Offshore
- Exhaust Systems
- Green Energy
- Power Generation
- Recycling
- Machinery
- Steam Generation

Using the latest design packages, combined with careful calculations, we can supply robust cost-effective products in any diameter from 25mm to 5000mm.

### RELATED BELLOWS



# Applications



## Exhaust Gas

Our expertise in the industrial exhaust market is second to none with our technology featured on applications for industries such as power generation, marine, refineries and transportation on rail and sea.

Historically our most common expansion joint application, from the smallest micro engines to the largest cathedral engines and power stations, we have manufactured a wide range of product solutions for exhaust manifolds and exhaust stacks.

Bellows Technology can be found in:

- Power stations
- Diesel generators
- Ship engines
- Marine
- Green energy
- Combined heat & power
- Gas turbine
- Refineries
- Rail industry

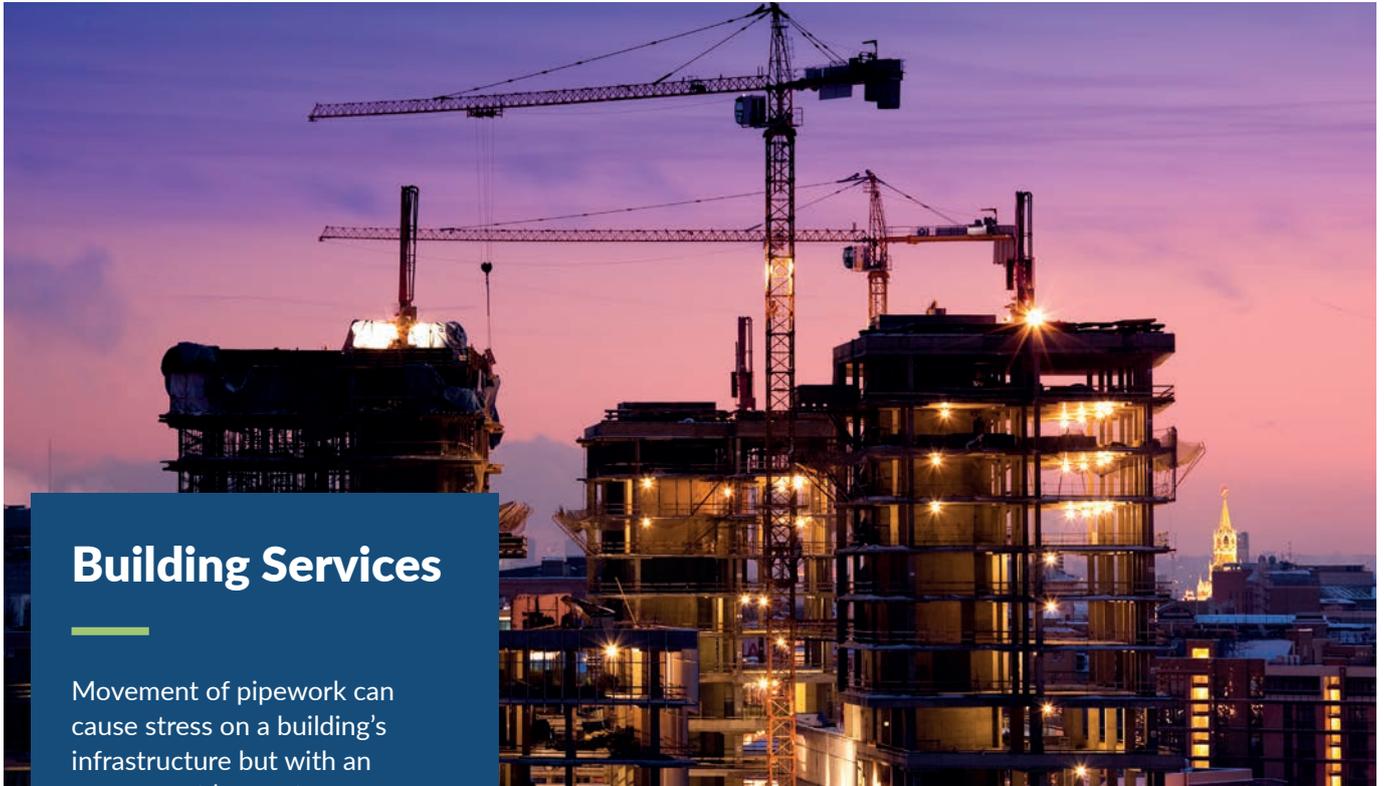
Our expertise in developing solutions in the sector is second to none, with our team responsible for working on some of the most sophisticated systems, dealing with movements across 3 axis.

### RELATED BELLOWS





# Applications



## Building Services

Movement of pipework can cause stress on a building's infrastructure but with an assessment by our team, we can advise what joints to use to combat the expected movement.

We are here to help ease the stress on your building's infrastructure by designing technology through extensive analysis.

### Bellows Technology can be found in:

- High-rise building
- Commercial and Industrial facilities
- Leisure & Hospitality structures
- Hospitals & Educational buildings
- Building renovation and Upgrade

The movement of pipework without stress is pivotal for any building structure because when fixed pipework sees temperature variation or infrastructure movement, the result can be costly and time-consuming with the system potentially breaking free from fixing and anchor points.

Bellows Technology are the only UK company who technically specify and manufacture expansion joints as well as provide the pipework stress analysis and supporting guides and anchors to the Building Services sector. Making us the one-stop-shop for any new construction project and giving you the confidence that you are talking to the pipework movement experts.

### RELATED BELLOWS



# Applications



## Automotive & Off Highway

Commonly used in hot gas application with products developed for commercial vehicles through to high performance racing cars.

We have the capabilities to develop Bellows Technology for a wide range of automotive & Off-highway applications. Our skilled designers can quickly assess your technical problems to provide easy to install serviceable solutions.

### Bellows Technology can be found in:

- Turbo Charger assemblies
- Turbo to after treatment pipework
- Exhaust Manifolds
- Exhaust outlet stack
- EGR Cooling

Solutions can be designed to handle higher temperature applications considering vibration, axial, lateral, and angular movements ensuring we tackle all the challenges your project faces.

As part of the Teconnex Ltd family, we are also able to combine our latest clamp technologies as part of any assembly, to reduce product weight, allow easy installation, solve problems of pipework misalignment and reduce connection leakage.

Our in house testing facilities allow us to complete cyclic fatigue testing at operating temperatures as well as a leak, proof pressure, and load testing. Helping our customers with product validation wherever possible.

### RELATED PRODUCTS





# Applications



## Custom Design

Our specials and custom design department is available for the creation of very bespoke Bellows.

Our customers often ask us to design products that don't fall with our standard range, in many cases bespoke mounting or bracketry solutions maybe required to aid installation or improve operational performance.

Products are regularly designed for critical applications:

- To incorporate components to monitor leakage in service
- To operate in high vibration conditions
- For high pressure or vacuum applications
- For high-temperature operation incorporating external insulation packages
- For aggressive or corrosive fluids
- With bespoke bracketry or connection types
- To provide significant movement capability in a confirmed space package

## RELATED PRODUCTS



# Mission & Values

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## Our Vision of the Future

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“Our Vision is to be the world’s leading ‘engineered solutions provider’ enabling environmental change, preferred by our customers, powered by our people.”

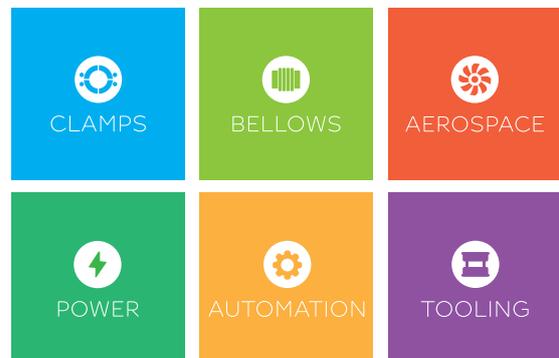
## Our Mission

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**CONNECTING OUR CUSTOMERS  
TO A CLEANER WORLD**

**Teconnex**  
MAKING CONNECTIONS

BELLOWS TECHNOLOGY  
IS PART OF THE  
TECONNEX GROUP





## Our Values

Here are our core values that are demonstrated by staff across our sites on a daily basis. These values are integral to our operations and what we encourage new staff to strive for.

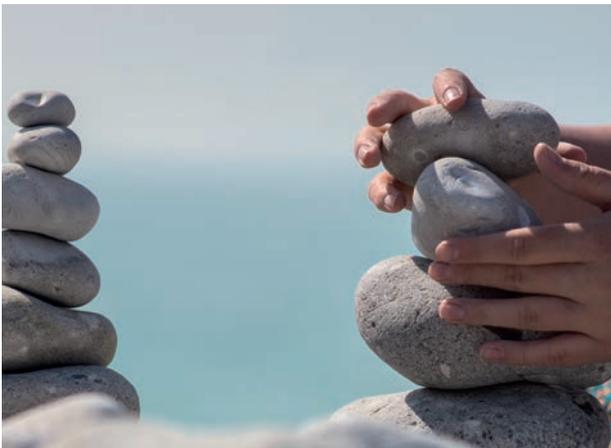
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### **Do the right thing**

Be authentic. Build trust. Be committed.  
We do what we say with openness and honesty.

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### **Create our future**

Look ahead. Think differently. Be bold.  
We strive to improve and delight our customers.

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### **Work as one team**

Get involved. Be accountable. Respect each other.  
We learn, grow and achieve together.







**BELLOWS  
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