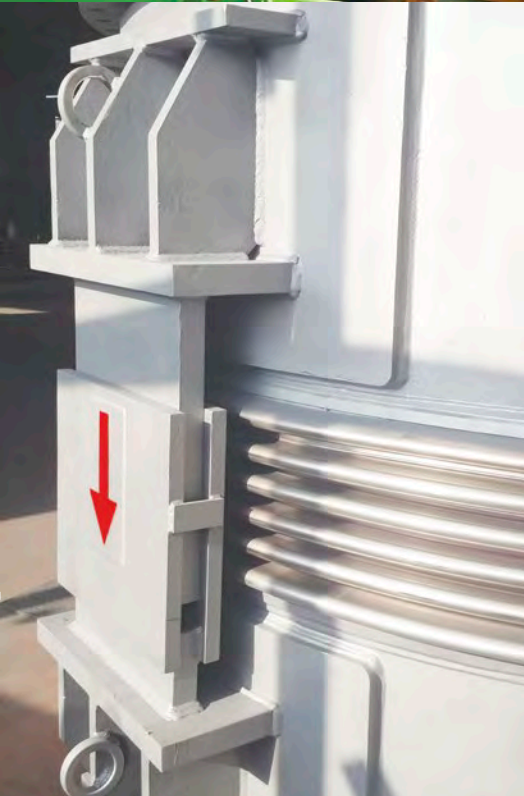
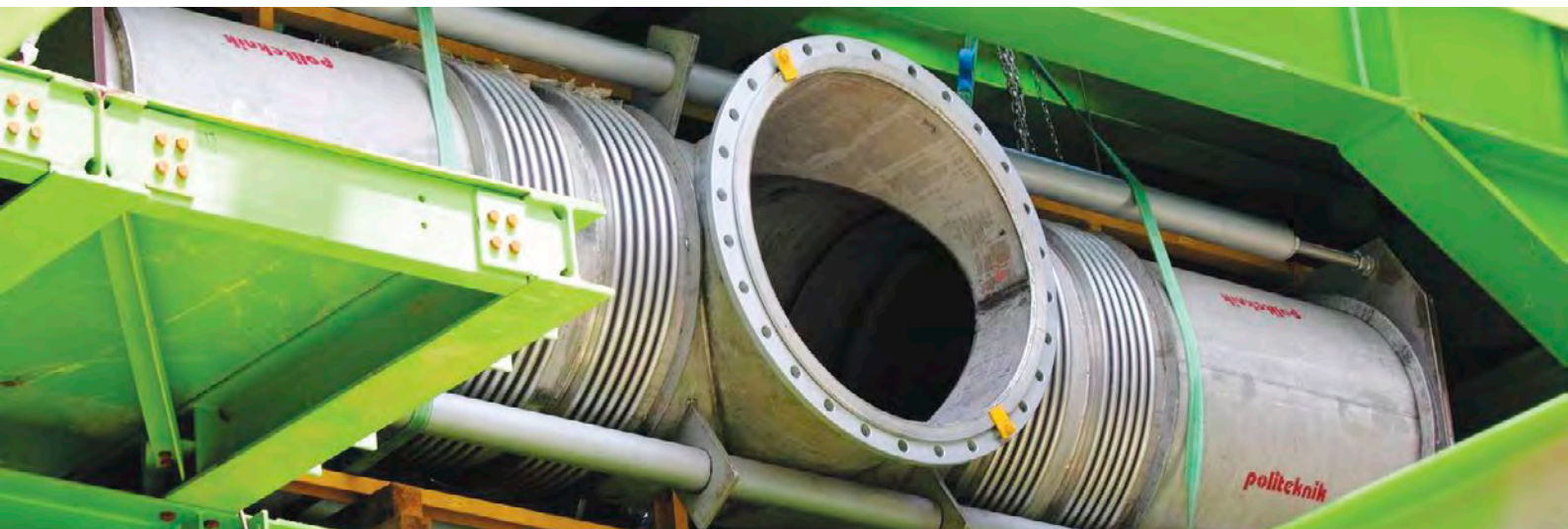




# EXPANSION JOINTS & FLEXIBLE HOSES



## manufacture

We can manufacture bellows from various materials such as 304, 316, 321, 309S, 310S, 904L, duplex 2205, duplex 2507, alloy 625 and other nickel alloys.

## quality

Klinger is fully committed to a quality management process with quality as a fundamental business principle. Core of the process is achieving customer satisfaction by meeting our internal and customer requirements on time.

## design

Designing for a wide range of parameters allows product solutions to be developed both quickly and effectively.

# We are

In 2016 Politeknik became part of the Klinger Group bringing over 40 years of experience in the design of expansion joints and production. We are proud of producing qualified, fast and economical solutions with our powerful engineering group which utilises modern technologies.

KLINGER was founded in 1886 as a family business and is known as a pioneer in sealing technology. Serving a global client base, it delivers trusted products worldwide for petro-chemical, chemical, process industries, infrastructure, and transportation applications. Today, the Group comprises of 40 companies and more than 60 manufacturing, distribution and service hubs worldwide.





# Expansion Joints

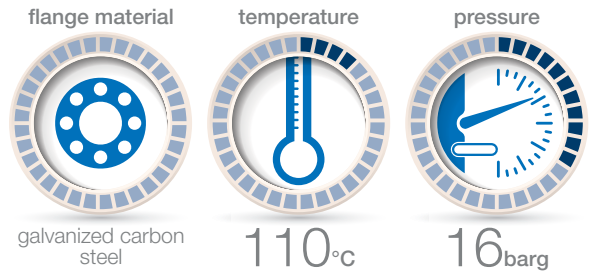
An expansion joint is a device containing one or more flexible elements used to absorb dimensional changes such as those caused by thermal expansion or contraction of a pipeline, duct or vessel.

Bellows type expansion joints require little to no maintenance and are capable of absorbing axial, lateral and angular types of movements in a compact space.

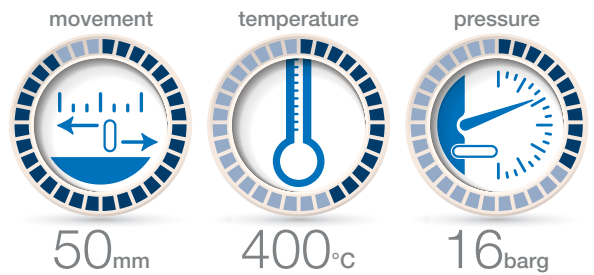
Since expansion joints are generally custom designed, they are highly specialized products. It is necessary to supply the expansion joint manufacturer with the necessary information for correct design. As a minimum the following information must be given: Diameter, design movements, pressure and temperature, materials of construction, connection type and length.



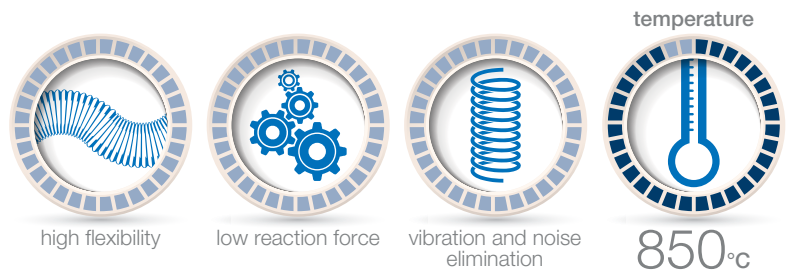
## RUBBER EXPANSION JOINTS



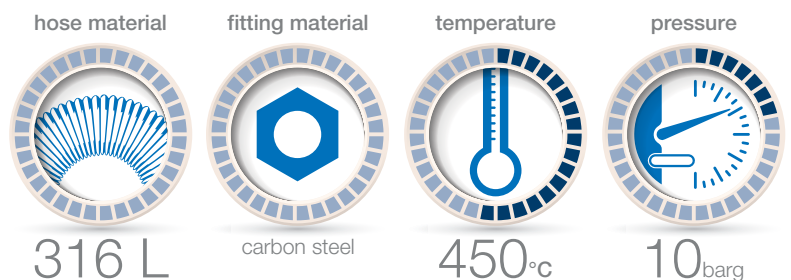
## CENTRAL HEATING SYSTEM PIPE EXPANSION JOINTS



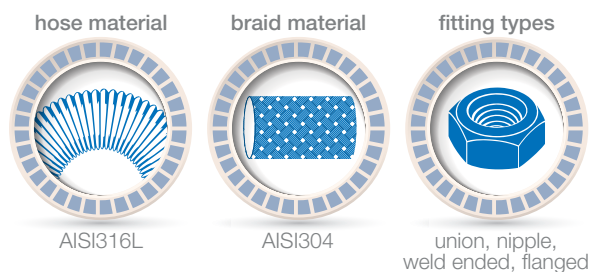
## FABRIC EXPANSION JOINTS



## FAN-COIL FLEXIBLE CONNECTORS



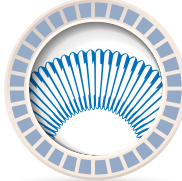
## FLEXIBLE METAL HOSES





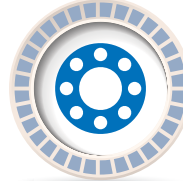
## WELD END EXPANSION JOINTS

standard bellows  
material



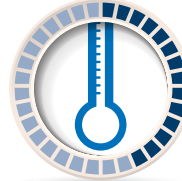
304ss

weld end material



carbon steel

temperature



400°C

pressure

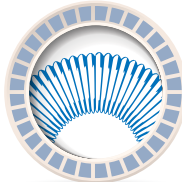


16<sub>barg</sub>



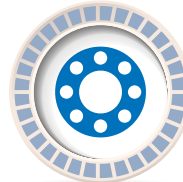
## FIXED FLANGED EXPANSION JOINTS

standard bellows  
material



304ss

flange material



carbon steel

temperature



400°C

pressure

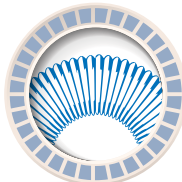


16<sub>barg</sub>



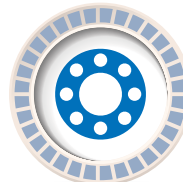
## FLOATING FLANGED EXPANSION JOINTS

standard bellows  
material



304ss

flange material



galvanized carbon  
steel

temperature



400°C

pressure

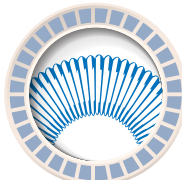


16<sub>barg</sub>



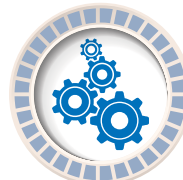
## EXTERNALLY PRESSURIZED EXPANSION JOINTS

standard bellows  
material



304ss

balance of materials



carbon steel

temperature



400°C

pressure

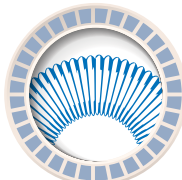


40<sub>barg</sub>



## SEISMIC EXPANSION JOINTS

standard bellows  
material



304ss

balance of materials



carbon steel

temperature



400°C

pressure



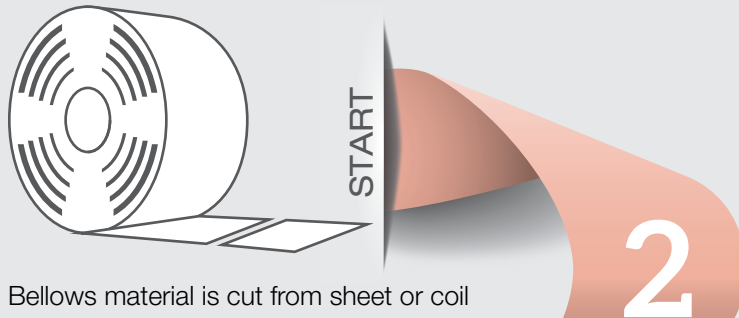
16<sub>barg</sub>



BUREAU VERITAS

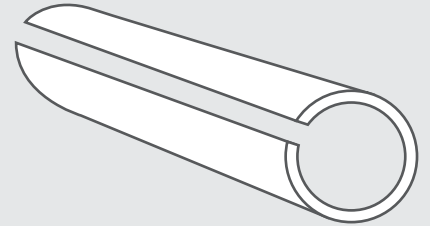


# Manufacturing of expansion joints

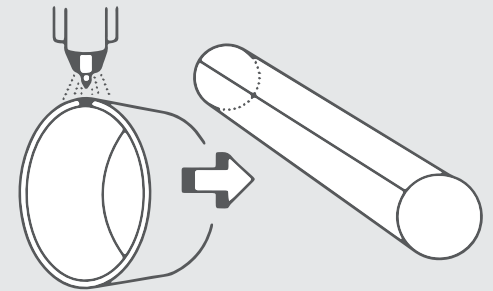


Bellows material is cut from sheet or coil

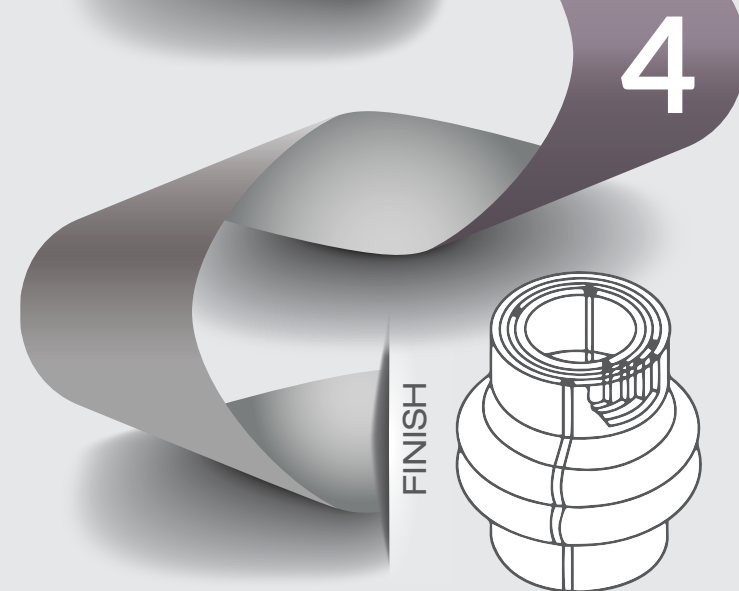
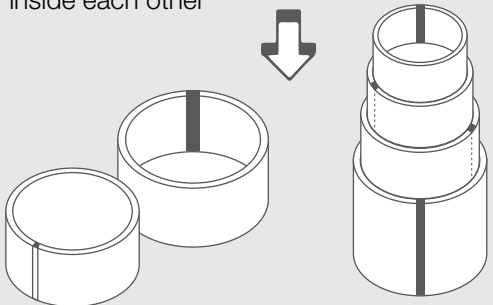
Material is rolled to required diameter



Rollled tubes are longitudinally welded



If bellows is multi ply each tube is put inside each other



Convolutions are manufactured by mechanical or hydroforming.



# Lens

## Expansion Joints

Dents and gouges create stress risers in thin ply bellows which result in fatigue cracks over time. Lens bellows have the advantage of holding up to mechanical damage better than thin wall bellows. Other advantages of lens bellows are:

- Weld repair can be performed by plant maintenance staff on thick walled bellows
- Thicker wall of lens bellows holds up better to corrosion attacks
- Common use of carbon steel material
- Drain couplings can be added to the bottom of the convolution to prevent condensate build up

Thick walled, high convolution is durable and lasts for a long time.



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