

Tailor-made Bellows and Expansion Joints
for Energy and Power Generation

About kompaflex

With over 40 years of experience kompaflex is a specialist in the design and manufacturing of custom-made metallic expansion joints.

Established in 1981 in Switzerland, kompaflex is a family-owned and run company. With manufacturing facilities in Switzerland and the Czech Republic, as well as an established specialized representative and sales network, we meet the demand of our clients worldwide.

Expansion joints experience

kompaflex success is the product of a longstanding and close cooperation with producers of turbines (steam/gas) and plant components. To guarantee a customized expansion joint solution that meets the high requirements of our customers, kompaflex is involved in most of these projects already in the stage of development.

Steam turbines

extraction pipes, exhaust system, condenser crossover piping



Gas turbines

bypass line, exhaust system, diffusers



ACC

air cooled condenser (system)



Waste-to-Energy



District heat

steam pipe, hot water pipe



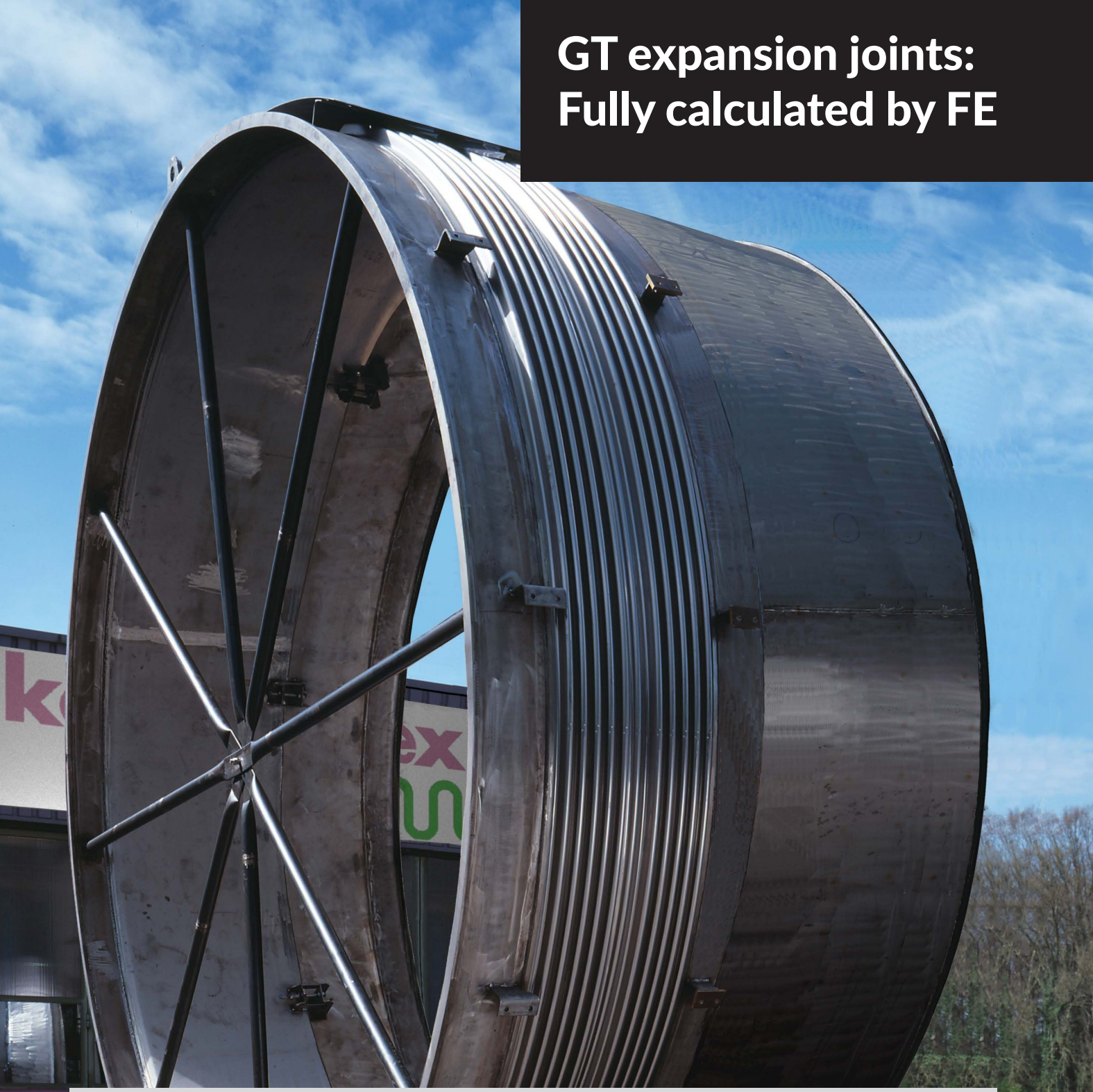
Diesel and gas engine

exhaust system, turbocharger, pipe systems



**kompaflex specialized in tailor-made expansion joints
designed to customer needs**

**GT expansion joints:
Fully calculated by FE**



GT expansion joints

To guarantee efficient and economic operation of the power generation plant, expansion joints are important components of a gas turbine ducting system and their reliability is essential. kompaflex is proud to be the main supplier for GT expansion joints for major GT manufacturers. With over 400 delivered and installed large GT expansion joints, we can rely on over 25 years of field experience. The advantages of a multi-ply steel GT expansion joints are:

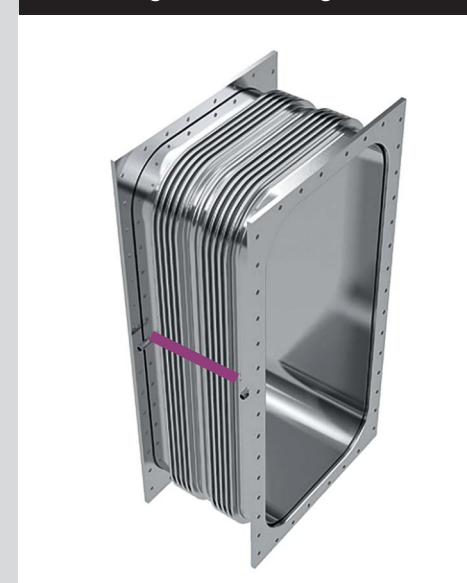
- ✓ Long-lasting, no breakdowns during plant life
- ✓ No maintenance work/replacements needed compared to fabric expansion joints
- ✓ Low spring rates
- ✓ Compact design
- ✓ Thus the most economic solution

Rectangular multi-ply bellows

Multi-ply rectangular bellows



One welding seam in the longitudinal area









kompaflex is the inventor of rectangular and oval expansion joints featuring multi-ply bellows with only one welding seam in the non-critical longitudinal area. The steam turbine and the condenser are among the most important components of a power plant and determine its performance essentially. In rectangular condensers kompaflex unique rectangular multi-ply expansion joints are used. Our technology produces many advantages for this specific application:

- ✓ High flexibility due to multi-ply bellows, this allows axial, lateral and angular movements within a short building length
- ✓ No welding seams in the critical corner area of the bellows, resulting in a very high reliability and long life span
- ✓ Lower spring rates, lower forces on the condenser
- ✓ Absorbing of predefined assembly tolerance possible
- ✓ Proven concept with over 40 years at field experience

**World innovation:
Multi-ply rectangular
bellows**

Innovative green technologies

kompaflex is proud to be the world leader in innovative technologies for a green future. For 40 years, we have made an important contribution to the development of innovative future technologies:

-  **Co2 reduction**
-  **Co2 storage / Oxy fuel**
-  **Fusion energy**
-  **Fuel cell**
-  **H2 Hydrogen**
-  **Solar fuels**

Expansion joints for a Co2 reduction plant



Expansion joints for Fusion projects



Expansion joints for a Solar Tower



Expansion joints for Fuel cell industry



Expansion joints for Solar fuels



Expansion joints for Hydrogen application

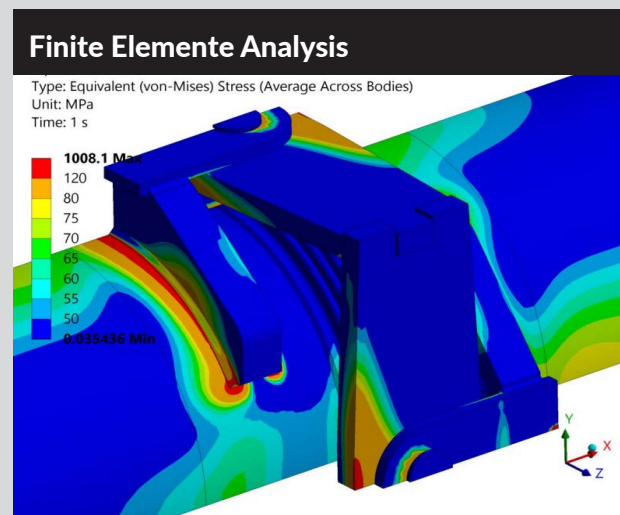


**Innovative bellows
for a green future**

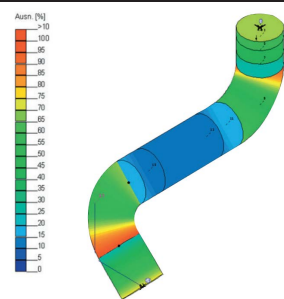
Engineering and documentation

Our specialized engineering team designs and analyses expansion joints in close collaboration with the client. In order to offer clients the best engineering solution, we provide the following services:

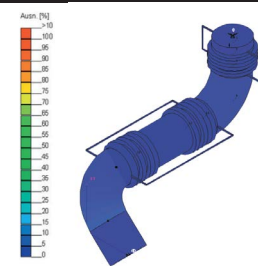
- ✓ Preliminary design study at FEED or Pre-FEED stage
- ✓ Custom design and calculation of critical expansion joints
- ✓ Assigned project manager for the entire engineering and contract execution (single point of contact)
- ✓ Verification and, critically, optimization of bellows design
- ✓ 3D model including movement study
- ✓ Structural Finite Element Analysis
- ✓ Thermal Finite Element Analysis
- ✓ Pipe stress analysis
- ✓ CFD analysis



Excessive tension in the pipe section



Tension permitted by using restrained expansion joints



Documentation

Proof of product quality in written form for the final documentation, has become an important part of the product. We meet all requirements individually according to the customer's needs. Our documentation management works in close cooperation with the quality management and testing team.

Quality and testing

Standards

- ✓ ISO 3834-2
- ✓ ISO 9001
- ✓ DIN EN 13445
- ✓ DIN EN 13480
- ✓ DIN EN 14917
- ✓ AD 2000
- ✓ European Pressure Equipment Directive (PED) 2014/68/EU
- ✓ PED Module H/H1 certified
- ✓ ASME codes
- ✓ EJMA
- ✓ and further

In-house Non-Destructive Testing

- ✓ **RT-D**
Digital Radiography (X-ray)
- ✓ **UT**
Ultrasonic Testing
- ✓ **PT**
Penetrant Testing
- ✓ **MT**
Magnetic Particle Testing
- ✓ **LT**
Bubble Leak Testing
Helium Leak Testing
Hydrostatic Pressure Testing
Pneumatic Pressure Testing
- ✓ **PMI**
Positive Material Identification
- ✓ **VT**
Visual Testing
- ✓ **Further**
Spring Rate Testing
Pressure Thrust Force Testing

Helium-Leakage test with overpressure





Destructive Testing

- ✓ Mechanical Fatigue and Life Cycle Testing
- ✓ Squirm Testing
- ✓ Burst Testing
- ✓ Movement test outside geometrical limits



kompaflex ag
Kompaflexstrasse 2
9314 Steinebrunn
Switzerland



 +41 71 414 71 00
 info@kompaflex.ch

www.kompaflex.com

kompaflex ag
