

# Turnkey Expansion Joint Replacement for Gas Turbines





# Cost-effective fabric expansion joint material replacements for gas turbines

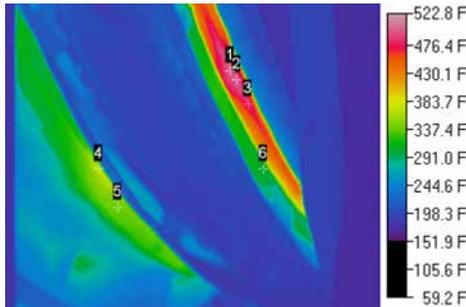
Recognizing the need for expansion joint replacements to meet the high temperatures, high gas velocity and varying pressure conditions existing in the gas turbine exhaust environment, EagleBurgmann Expansion Joint Solutions collaborates with leading turbine manufacturers to address the challenges unique to their engines.



Large diameter expansion joint for a MHI 701F gas turbine.



High cycle fatigue testing is performed on our fabric materials with test conditions of 650°C, frequency 90 Hz, and amplitude of 2.4 mm.

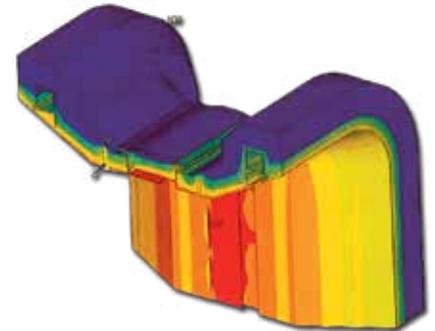


Examples of hot spot evaluation with a thermographic camera. The camera can measure surface temperatures without contacting the expansion joint. This means that an expansion joint located 20 meters above the ground on top of a boiler can be analyzed. A developing hot spot can be detected at early stages and its rate of development will indicate the seriousness of its cause.

## Designs

KE® fabric expansion joints with round or rectangular frames are installed to compensate for movements, vibrations and misalignments, often in exhaust gas and low pressure in ducting systems.

Gas turbine expansion joints are built using a combination of our high performance PTFE/woven fiberglass fabrics and steel (stainless or carbon) frames. Integrating high quality insulation, proven frame design and highly durable materials, this line of expansion joints are optimally engineered to withstand thermal shock and compensate for both movement and intense sustained heat.



Temperature of individual bolts, flanges and expansion joints can be analyzed. A thermographic analysis can estimate the life time of an expansion joint.

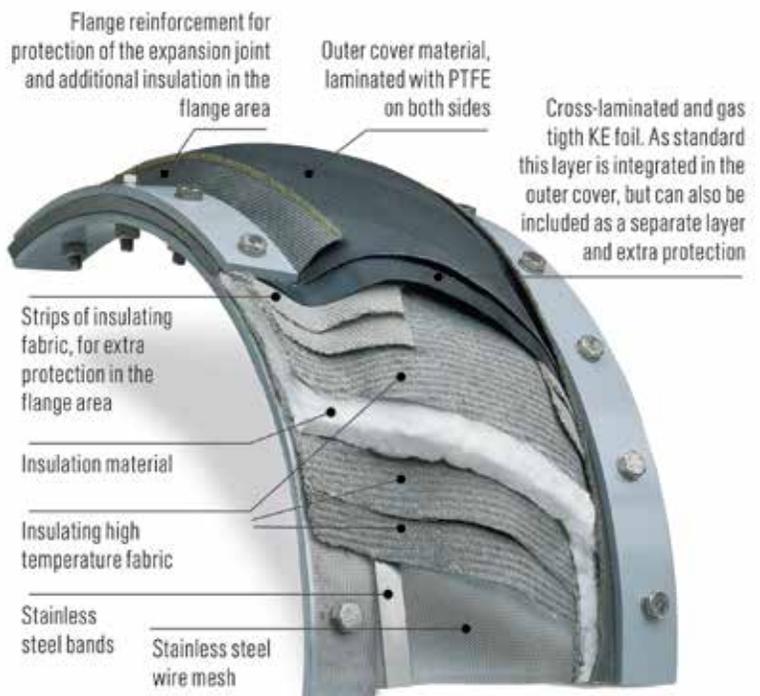
## Proven Technology

In 1995, our research and development team in Vejle began to focus on developing a fabric expansion joint replacement solution for turbine end users. As a result of extensive analysis, engineering and testing which included vibrations, temperature and high cycle fatigue testing, turbine owners worldwide can experience longer lasting expansion joints.



EagleBurgmann is testing a variety of fabric materials. Upgrading materials will improve life cycle. Low cycle fatigue (LCF) test rig.

## Multi-layer KE Fabric Expansion Joint



## Turnkey Replacement

Within the gas turbine systems, the connecting duct is exposed to a combination of thermal stress, turbulence and considerable vibration; an environment uniquely ideal for fabric expansion joints. Designed to compensate for these extreme conditions, the expansion joint consists of a flexible fabric material connected to a steel frame.

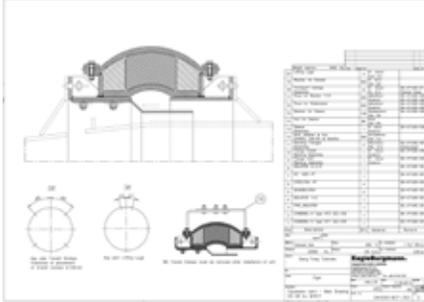
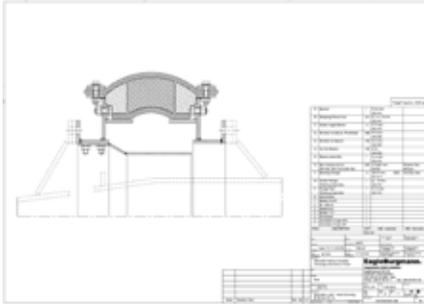
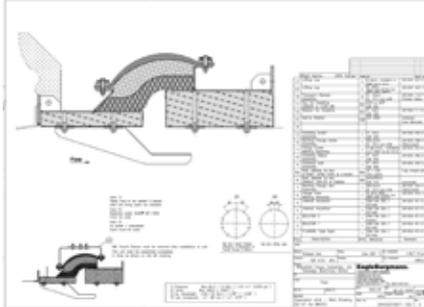
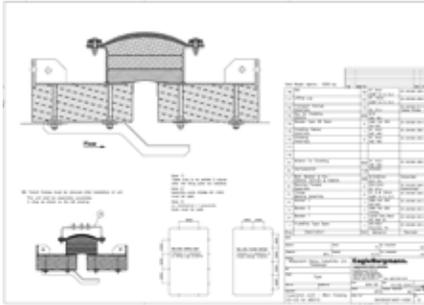
In addition to full frame drop-in units, a turnkey fabric belt replacement for existing steel frames provides our customers with significant cost savings. Turnkey fabric replacements have proven to offer turbine owners of Mitsubishi, and Siemens models long term reliability and quick turnaround.



EagleBurgmann can replace fabric expansion joints, eg. EE-00, EE-01, EE-02, EE-03, EE-04 and IE-01 in exhaust systems behind all generations of M251, M501 and M701.



Fabric material replacement for an expansion joint on a MHI 701F gas turbine exhaust at a Combined Cycle Power Plant in China. These durable fabric replacements have lasted 6 years in service with 1 200 cycles on 9 units.



Examples of EE designs for MHI gas turbines. The challenges of gas turbine exhaust systems place special engineering demands on expansion joints.



Soft part replacements for existing steel frames (as shown above) can provide turbine owners with a significant cost savings.



Replacement of fabric belt on a Siemens 501F series gas turbine. EagleBurgmann offers complete turnkey installation, inspection, and emergency services for fabric, metal and rubber expansion joints.

EagleBurgmann:

我们公司使用 EagleBurgmann 的织物膨胀节已经有近 6 年的时间，在此期间，产品的运作状态良好。根据我公司的现场记录，该产品每年约循环 200 次，到目前为止都没有出现过热的现象。经过长时间的使用，现在该产品依然维持着良好的工作状态。



To EagleBurgmann,

Our company has used the Fabric Expansion Joints of EagleBurgmann for almost 6 years, and the working condition of the products is good. According to our on-site record, the products provide approximate 200 cycles annually and no hot-spot was detected. After the long-term usage, the products are still keeping in very good working condition now.

Shenzhen Guangqian Electric Power Co.,Ltd.

6/21/2012

Today, more than 175 power stations and 300 gas turbines worldwide are equipped with EagleBurgmann fabric expansion joints and have experienced many years of successful operation. As an approved OEM supplier, EagleBurgmann works closely with Mitsubishi Heavy Industries to provide cost-effective, dependable replacement solutions for their end users.

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EagleBurgmann Expansion Joint Solutions is a leading global organization in the development of expansion joint technology; working to meet the challenges of today's ever-changing environmental, quality and productivity demands. Our flexible products are installed in thousands of plants, refineries and on equipment worldwide where reliability and safety are key factors for operating success. As part of the international organization EagleBurgmann Group, more than 5000 employees contribute their ideas, solutions and commitment to ensure our customers worldwide can rely on our products and services.

**For more information – visit [eagleburgmann-ej.com](http://eagleburgmann-ej.com) and [eagleburgmann.com](http://eagleburgmann.com).**

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expansion joint solutions