



## M'News

Issue No.18

**M'News** is MACOGA's online news bulletin featuring the latest development of significant projects, achievements, events and expansion joints related news.

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## MACOGA EXPANSION JOINTS FOR SULPHURIC ACID PLANTS IN SOUTH AMERICA

MACOGA has been awarded with a large order for the engineering, design, manufacturing and testing of Gimbal, Universal Restrained, Hinged, M-Lens and Single Unrestrained for the construction of two Sulphuric Acid Plants in South America.

These two acid plant projects incorporate the best-in-class MACOGA engineered Expansion Joints and very special and custom-made designs like the M-Lens thick wall Gimbal units.



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## MACOGA at ACHEMA 2018 - WORLD FORUM & LEADING SHOW FOR THE PROCESS INDUSTRIES HALL 8.0 STAND L73

We are delighted to announce you our participation at the ACHEMA 2018 exhibition, which will take place from 11 to 15 June 2018 in Frankfurt am Main, Germany.

ACHEMA is the world leading forum for chemical engineering and the process industry and a platform for innovations and a technology summit.

MACOGA will be displaying a range of high tech expansion joints and our team will be there to talk about the latest developments and technologies in expansion joints.

We are looking forward to seeing you there!

For details and appointments, you may please contact us.

**ACHEMA 2018**

11 – 15 June 2018  
Frankfurt am Main, Germany  
[www.achema.de](http://www.achema.de)

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## FCCU EXPANSION JOINTS FOR EUROPEAN REFINERY

Universal Untied and Single Untied **FCCU Expansion Joints** has been designed, manufactured, tested and delivered for a large refinery in Europe.

The Universal Untied Expansion Joint incorporates 2 ply testable & packed Bellows in Alloy 800H, Internal and external insulation and sealing anchors and sealing rope

Medium: Flue Gas at 760 °C  
Design Pressure: 3,94 bar (g)  
Test Pressure: 5,9 bar (g)

The Single untied units incorporate 2 ply testable Bellows in Inconel 625LCF and Internal and external insulation.

Medium: Flue Gas at 538 °C  
Design Pressure: 0,28 bar (g)  
Test Pressure: 0,5 bar (g)

These FCCU Expansion Joints undergo a comprehensive quality control and testing program including:

- Review Drawings
- Advanced Review of Calculations
- Check Material and welding consumables certificates
- PWHT diagram if applicable.
- Review and update WPS, PQR and WQR
- Review NDE Procedures & Operator Qualification
- 100% Visual inspection of welds.
- 100% RT- Radiographic Examination
- 100% PT - Liquid Penetrant Examination
- MT - Magnetic Particle Examination when applicable
- Hardness Testing of Welds
- Pressure & Leak Detection Test
- 100% PMI - Positive Material Identification
- 100% Inspection of Refractory Lining by API Inspector
- Surface Preparation & Paint System

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## LARGE SIZE EXPANSION JOINTS FOR TEES BIOMASS POWER PLANT IN THE UK

Tees Renewable Energy Plant will be one of the world's largest biomass power stations, providing electricity for 600,000 homes by burning wood chips and pellets.

The plant, which is due to send its first energy to the National Grid in 2020, will create around 100 permanent full-time jobs, including port handling and offloading and support at least 600 construction jobs.

MACOGA scopes include the design, manufacturing, testing and shipping of a 5 units **Universal Tied Expansion Joints DN 3800**, 5 **Hinged Expansion Joints DN 3800** and a Universal Tied unit of 8500 mm nominal diameter.



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## MACOGA BELLOWS FOR MILITARY VEHICLES

We offer the widest range of expansion joints possible. From small size bellows for engines to the largest units ever manufactured for the industry, from low pressure exhaust to very high pressure expansion joints and from cryogenic applications up to temperatures of more than 1000 °C.

A very large number of bellows are being manufactured by MACOGA for one of the largest high-quality military vehicles manufacturer in Europe.

These bellows are manufactured in a high temperature special material designed to withstand temperatures up to 850 °C.



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## FCCU ON-SITE INSPECTION AT BP OIL REFINERY

MACOGA FCCU On-Site team has successfully completed the site inspection of an FCCU In-Line Pressure Balanced Expansion Joint at the Flexicracking Unit Reactor.

The inspection included in-depth analysis and visual review of the Expansion Joint in cold conditions. Our staff collected any monitored data and operating schedules available from the facility to aid in the analysis.

MACOGA specialists have carried out a 2 ply testable check to confirm that both the inner and outer plies are operating properly, dye penetrant test to all accessible welds, visual and dimensional control, internal visual inspection of sealing system and refractory material, etc.

Why FCCU Expansion Joints On-Site Inspection?

Whether your operations follow predictive maintenance or corrective maintenance procedures, detecting early signs of Expansion Joint fatigue or failure can save you on costly repairs and extend your asset lifecycle for optimal refining operations.

The life of the expansion joints varies with the design, storage conditions, installation practices, application, and service. Appropriately timed inspections, repairs, and/or replacement of critical joints will ensure the reliable operation of the associated equipment and of the whole refinery.

Premature or unexpected failure of the expansion joints and emergencies can be avoided carrying on-site scheduled inspections. On-site Inspections will provide valuable information about the conditions of the Expansion Joints and will allow the refinery to take appropriate actions in due time.



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## MACOGA EXPANSION JOINTS FOR USA PETROCHEMICAL COMPLEX

MACOGA has completed the detailed engineering, manufacturing and testing of **Single Tied** (MFT Series) and **Universal Tied** (MFL Series) Expansion Joints for Sasol's Ethoxylation (ETO) and Guerbet Alcohol Plants, located in Sasol's ethane cracker and derivatives complex in Westlake, Louisiana, USA.

The massive Lake Charles Chemicals Project includes a 1.5 m tone/year ethane cracker and six downstream chemical production facilities. The total project is expected to achieve beneficial operation in H2 2019.

Sasol is an international integrated chemicals and energy company that leverages the talent and expertise of our more than 30,000 people working in 33 countries. Sasol develops and commercializes technologies, and build and operate world-scale facilities to produce a range of high-value product streams, including liquid fuels, chemicals and low-carbon electricity.

In North America, Sasol is building this world-scale petrochemical complex and already has operations in Arizona, Louisiana, Pennsylvania and Texas. This petrochemical complex near the Lake Charles Chemical Complex will roughly triple the company's chemical production capacity in the U.S.



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## LARGE IN-LINE PRESSURE BALANCED EXPANSION JOINT FOR A STEEL PLANT IN EUROPE

MACOGA has completed the detailed engineering, manufacturing and testing of a large DN2500 and 6 meters long In-Line **Pressure Balanced Expansion Joint** for a steel plant in Europe.

The Expansion Joint incorporates three Alloy 825 bellows and internal V Anchors for on-site refractory lining.

A pressure balanced expansion joint accommodates axial and lateral movements and counteracts the bellows pressure thrust. An additional bellows is incorporated into the unit and is subject to the line pressure to generate a force equal and opposite to that on the main bellows. Tying these bellows together neutralizes the pressure load on the unit.



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## MACOGA RECEIVES LARGE ORDERS FOR POWER PLANTS IN ALGERIA

The orders include the design, manufacturing, testing and packing of a 36 units **Universal Tied Expansion Joint** and 36 **Hinged Expansion Joints** 2500 mm and 2400 mm diameter.

The expansion joints will be installed at NAAMA, BISKRA & JIJEL Combined Cycle Power Plants.

These new projects are added to the extensive portfolio that MACOGA has conducted in Algeria for the Société de Production de l' Electricité (SPE), where MACOGA has delivered the expansion joints to many power stations including Ain Arnat 1, II and III, Djelfa, Hadjret en Nouss, etc.



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## FCCU SPENT CATALYST STANDPIPE EXPANSION JOINT

A high-tech FCCU Spent Catalyst Standpipe Expansion Joint has been designed, manufactured, tested and delivered for a refinery in South America.

The FCC Hot Wall Design Expansion Joints (ID: 780 mm and 4000 mm long) incorporates:

- 2 ply testable & packed Bellows in ASTM B443 Inconel 625 LCF
- Pantograph system
- Internal and external Super Wool insulation
- Hexagonal Mesh in AISI 410S
- Sealing anchors and sealing rope
- Abrasion Lining Rescobond AA 22 S

Medium: Catalyst  
 538 °C Bellows  
 566 °C Pipe Design  
 Pressure: 6,99 kg/cm<sup>2</sup> (g)  
 Test Pressure: 10,5 kg/cm<sup>2</sup> (g)

This FCCU Expansion Joints undergo a comprehensive quality control and testing program including:

- Review Drawings
- Advanced Review of Calculations
- Check Material and welding consumables certificates
- PWHT diagram check for components made in 1 1/4 Cr. 1/2 Mo.
- Review and update WPS, PQR and WQR
- Review NDE Procedures & Operator Qualification
- 100% Visual inspection of welds.
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# MACOGA

ENGINEERED EXPANSION JOINTS



## GLOBAL PRESENCE WORLD-CLASS COMMITMENT

Our expansion joints are present in more than 80 countries across all continents performing demanding tasks. MACOGA is always ready to provide support exceeding customer expectations.

We are conveniently located in NW Spain near two international airports (SCQ and LCG) and two deepwater oceanic sea ports (Vigo and La Coruna).