



M'News

Issue No.13

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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EXPANSION JOINTS FOR NEW CHILCA POWER PLANT, PERU

MACOGA has completed the production of two Lateral DN1200, two Hinged DN1200 and one Axial DN3050 for the New Chilca Power Plant in Peru.

The purpose of the project is to extend the power of the complex that Enersur owns in Chilca (in the province of Cañete), 65 kilometres south of the capital of Peru, and which currently consists of the Chilca Uno power station. There will be a new combined cycle station, christened as Chilca Plus, which will have a General Electric gas turbine, a steam turbine, a recovery boiler and an air-condenser.

MACOGA has also delivered a large number of expansion joints for other power projects in Peru like:

- Kallpa Simple Cycle Power Plant (1x180 MW)
- Chilca I and II Simple Cycle (2 x 170 MW)
- Chilca Plus Project. Combined Cycle Power Plant (110 MW)

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EXPANSION JOINTS FOR SPEYSIDE BIOMASS CHP PLANT IN SCOTLAND, UK

MACOGA supplied **Elbow Pressure Balanced, Lateral** and **Hinged expansion joints** DN2000 for Speyside Biomass CHP Plant in Scotland, UK.

The new biomass Combined Heat and Power (CHP) plant will generate 87.4 GWh per annum of renewable electricity – enough to power more than 20,000 homes. It will also generate 76.8 GWh per annum of renewable heat. Together, the carbon saving equates to 42,000 tCO₂e per annum, the equivalent to taking over 18,000 cars off the road. The project will create 123 jobs (100 in peak construction and 23 permanent) and support one of Scotland's most important export industries.

The new CHP facility will contribute to reducing the cost of energy at The Macallan distillery by providing c. 90% of all of the steam needed in the distillation process. By using biomass to generate heat instead of natural gas, the distillery will reduce its greenhouse gas emissions by over 17,500 tCO₂e, equivalent to taking almost 8,000 cars off the road.

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QASSIM II & III SIMPLE CYCLE TO COMBINED CYCLE POWER PLANT SAUDI ELECTRICITY COMPANY

Qassim II & III Simple Cycle to Combined Cycle Power Plant Saudi Electricity Company

MACOGA is successfully supplying a large number of expansion joints for the Qassim II & III Simple Cycle to Combined Cycle Power Plant in Saudi Arabia.

The scope of work in this project includes 15 units **Lateral MWL** DN2100, 15 units **Hinged MWP** DN2100 and 3 units Turbine to Condenser expansion joints of 3100 mm diameter.

Qassim Power Plant serves the people of Buraydah, the capital of Qassim region, in the heart of the Arabian Peninsula. The power plant is being expanded to meet the increasing demand of power in this region through a conversion from simple cycle operation to combined cycle.



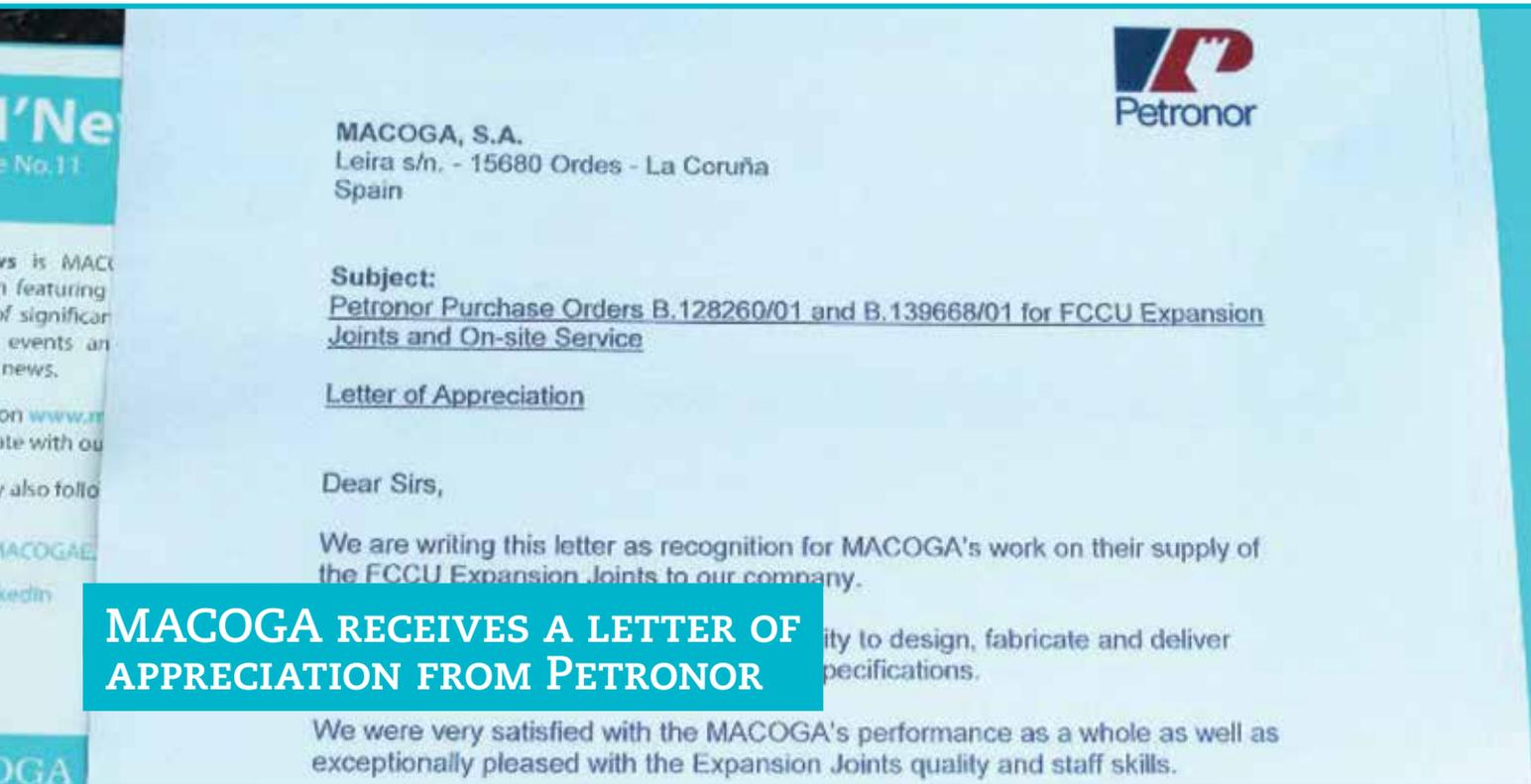
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ООО «ТИ-СИСТЕМС» ИНЖИНИРИНГ И ПОСТАВКА ТЕХНОЛОГИЧЕСКОГО ОБОРУДОВАНИЯ

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MACOGA RECEIVES A LETTER OF APPRECIATION FROM PETRONOR

We are honored to announce that we have received a new letter of appreciation from one of our clients for the supply of the FCCU expansion joints and for our On-Site professional services.

We take great pride in our working relationships with our clients and there is nothing more important to us than customer's satisfaction.

Our commitment to excellence is unsurpassed in the recognition industry. That is why it is rewarding to receive letters and notes of appreciation and we're proud to share them with you.

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MACOGA RUBBER EXPANSION JOINTS FOR GASCO ABU DHABI GAS INDUSTRIES LTD

MACOGA has successfully designed, manufactured and tested a MAC-FT Rubber Expansion Joint for GASCO (Abu Dhabi Gas Industries Ltd.).

GASCO is an ADNOC Operating Company engaged in the extraction of Natural Gas Liquids (NGL) from associated and non-associated gas.

The 48" diameter Expansion Joint is made of reinforced EPDM elastomer and incorporates a complete tie rod system. This unit has been effectively hydro tested at 20.3 bar.

MACOGA has a significant presence in the UAE and supplies high tech expansion joints to notable companies based in the area like ADNOC Abu Dhabi National Oil Co., Abu Dhabi Oil Refining Company (TAKREER), etc.

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ON-SITE SERVICES ANYWHERE IN THE WORLD

ON-SITE ASSISTANCE

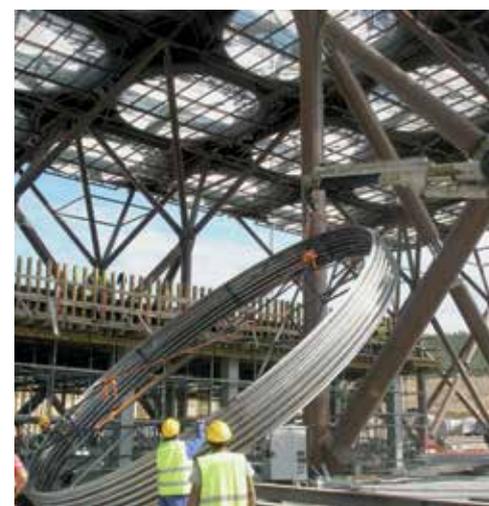
Proper performance of the expansion joints is an important factor to insure a safe and reliable system and plant operation. To install and maintain your expansion joints at the highest level, MACOGA offers the most complete after-sales support, including on-site assistance.

MACOGA provides a variety of professional **on-site assistance** to meet your needs.

MACOGA Site Staff of expert technicians is available on an as-needed basis. Our service teams consist of highly-qualified technicians and engineers specialized in expansion joints.

MACOGA on-site staff can provide you:

- Installation guidance, supervising and technical support during installation
- Inspection in cold conditions (plant shutdown)
- Inspection in hot conditions (plant in operation)
- Periodical Inspections
- Maintenance and refurbishment
- Problem resolution
- Immediate response to site inspections needs
- Quick-turn expansion joint replacement during shutdowns and turnarounds
- Assembly and installation of the expansion joints



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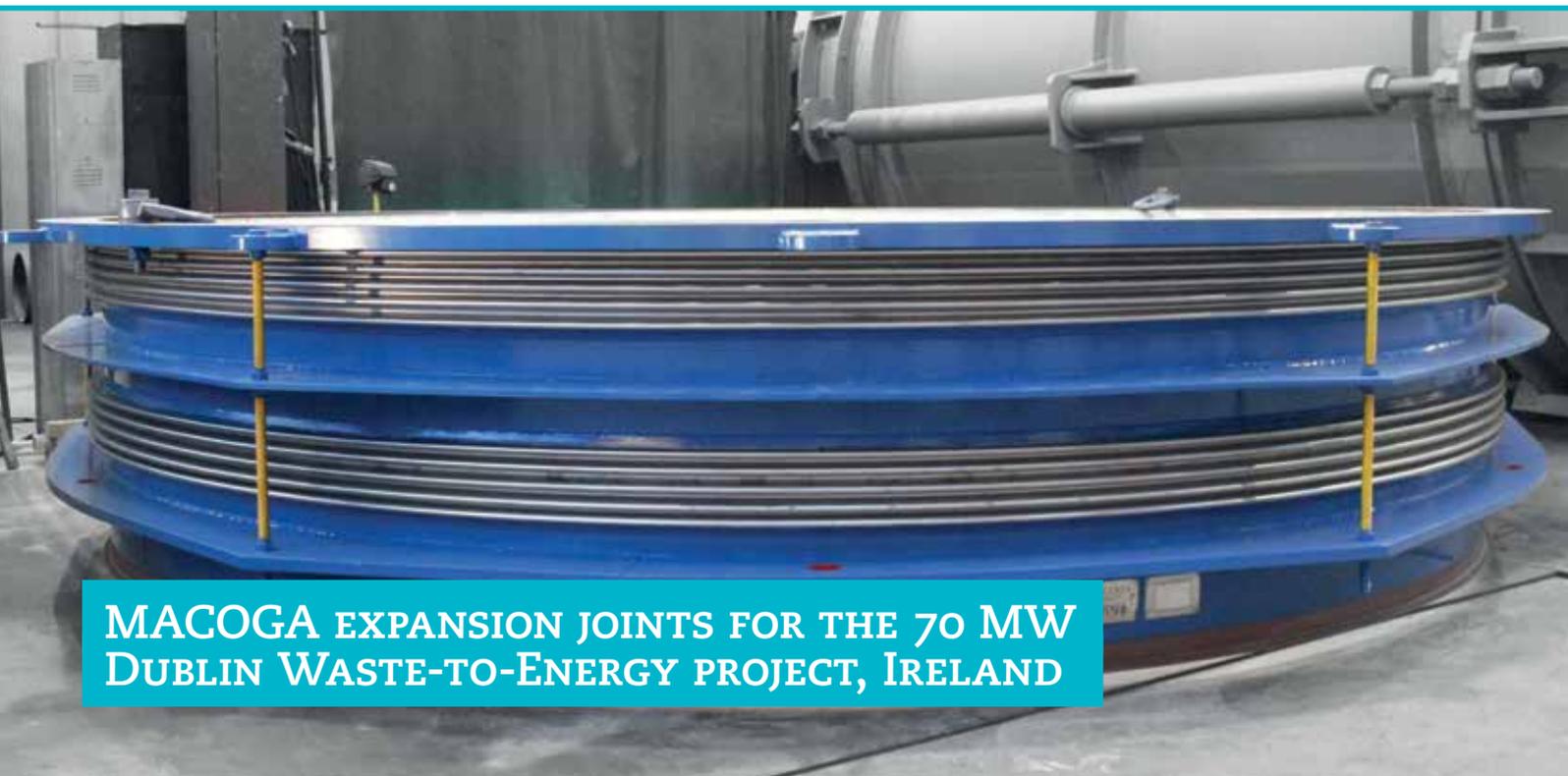
PRESSURE BALANCED FOR CSP-ORC PILOT PROJECT IN MOROCCO

MACOGA supplies a 32" MPB-E **Pressure Balanced Expansion Joint** for the CSP-ORC pilot project, a concentrating solar power (CSP) project in Morocco.

Linear Fresnel reflectors use long, thin segments of mirrors to focus sunlight onto a fixed absorber located at a common focal point of the reflectors. These mirrors are capable of concentrating the sun's energy to approximately 30 times its normal intensity. This concentrated energy is transferred through the absorber into some thermal fluid (this is typically oil capable of maintaining liquid state at very high temperatures). The fluid then goes through a heat exchanger to power a steam generator.

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MACOGA EXPANSION JOINTS FOR THE 70 MW DUBLIN WASTE-TO-ENERGY PROJECT, IRELAND

MACOGA supplied a turbine to condenser **MFWD DN4400** expansion joint for the 70 MW Dublin Waste-to-Energy project in Ireland.

By generating energy from residual waste, the power plant will offer environmentally friendly solutions by maximizing recycling and minimizing waste disposal. It features high efficiency incineration technology and complies with the EU's conditions on energy waste processing.

When complete, the power plant will annually process up to 600 thousand tons of waste, which would have otherwise ended up in landfills and will generate energy for up to 80,000 households. It will also produce enough heat for up to 50,000 homes in the district.

The project was commissioned as a public-private partnership with Dublin City Council acting on behalf of the four local bodies of Dublin and the American company Covanta. The EPC supplier for the contract is Hitachi Zosen Inova AG. The power plant will be owned and operated by the American Covanta Holding Corp.

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M-LENS TITANIUM EXPANSION JOINTS

Two MACOGA **M-Lens expansion joints** in TITANIUM Gr. 2 (3.7035) have been successfully designed and manufactured at MACOGA.

The DN 2000 and DN 2800 expansion joints will be installed in a High-Tech Pressure Vessel in Austria.

Grade 2 titanium possesses good weldability, strength, ductility and formability. This makes Grade 2 titanium the prime choice for many fields of applications: Architecture, Power generation, Medical industry, Hydro-carbon processing, Marine industry, Exhaust pipe shrouds, Airframe skin, Desalination, Chemical processing, Chlorate manufacturing, etc.

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DESIGN & CALCULATION SERVICES

ANALYSIS AND DESIGN PRACTICES

Our analysis and design practices include:

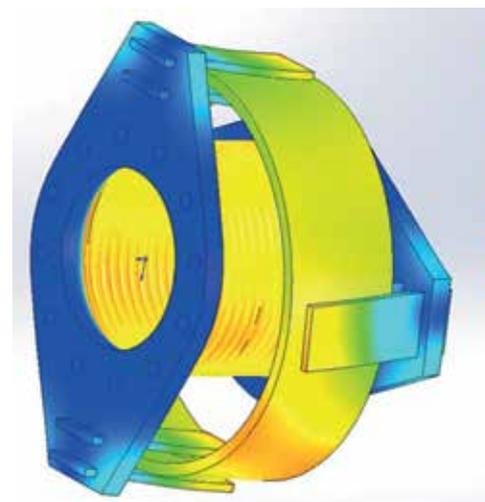
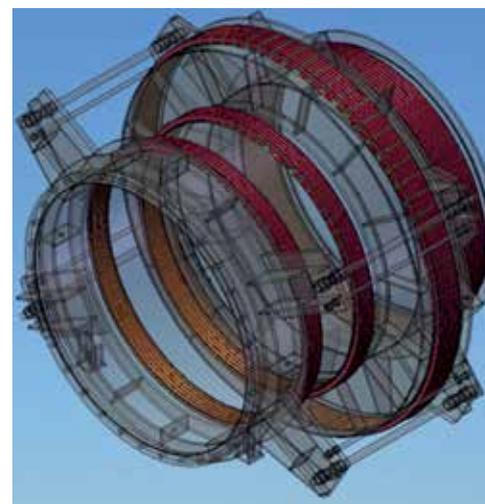
- Design calculations (EJMA, ASME, AD-Merkblätter)
- Finite Element Analysis (FEA)
- Pipe Stress Analysis
- CAD
- 3-D Modelling

COMPUTER AIDED DESIGN

When it comes to expansion joints we offer overall solutions to meet your particular needs.

We use the most sophisticated analysis and calculation software to design your pipe systems and select the most appropriate expansion joints providing you a complete pipe stress analysis when required.

With our 3D mechanical CAD software our engineers design expansion joints to the same conditions that they'll experience in the real world before they have been built. This is a design validation tool that helps our engineers to test the designs earlier in the design cycle and against real-world conditions. This lead us to improved design quality and manufacturing efficiency, while reducing time to market, costs, and materials waste.



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MACOGA
ENGINEERED EXPANSION JOINTS

40
YEARS

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).