

# Entrepose Contracting

## Checking leak tightness by acoustic emission

To check the leak tightness of the LNG tanks it has built on the methane terminal in Dunkerque (France), Entrepose Contracting has decided to use the acoustic emission testing method. Read below our report at the heart of the cryogenic tanks.



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### OUR CUSTOMER

**Corporate name**  
Entrepose Contracting

**Activities**  
International company specialised in the design and implementation of industrial projects for the oil, gas and energy markets

**Turnover in 2014**  
340.4 million euros

**Workforce**  
295 employees

The methane terminal of Dunkerque features three LNG cryogenic storage tanks with a capacity of 190,000 m<sup>3</sup>. Each tank is comprised of a concrete enclosure and an inner vessel made of welded 9%Ni steel plates. This vessel contains liquid gas at a temperature of 163°C. Inside the concrete "shell", a 5 mm thick metal skin (the liner) provides leak tightness.

« After the construction of the first tank, the air pressure test at 260 mbar revealed a bubble phenomenon on the concrete shell », says Marcio Gomes Rodrigues, Project

Control Manager of the Entrepose Projets-Bouygues TP consortium. « Although the test results complied with the cryogenic tank construction standard, the appearance of bubbles led us to suspect a leak tightness defect in the metallic liner in some areas. »

### Sixty sensors installed

Thus, Entrepose Contracting decided to find the root cause of the bubbles. This turned into quite a challenge, given the dimensions of the tank (90 m in diameter, 50 m in height), the difficulty to implement tests in a confined space (50 cm) between the

liner and the vessel and the low test pressure!

« The acoustic emission testing method implemented by Cetim seemed to be the only one that could meet our expectations. Cetim provided us with a response within an extremely short deadline », continues Marcio Gomes Rodrigues.

The tests were carried out in three days, with difficult access and in hard climatic conditions. Sixty piezoelectric sensors were installed, every 5 m, on the periphery of the liner and made it possible to locate a small size problematic area at the junction between a pipe connection and the liner. At the end of the investigation, the root cause of the bubble phenomenon had been identified.

## Cetim's asset

Cetim has been a specialist in acoustic emission testing for more than 25 years. This technical expertise allows Cetim to define and implement action plans in a very short time.

