Energy

Converteam

Tightness test for long-term immersion

Converteam tested the tightness of all the components and 1,400 connections for a compression system immersed at a depth of 1,000 meters. The aim was to ensure that the assembly could operate smoothly for five years without the need for maintenance.

© Shell-Fred Jonny Hammerø

Operated by Shell, the Ormen Lange gas field lies 120 km off the coast of Norway. A compression system will be needed by 2015 to continue extracting gas. Consequently, the oil company is keen to study a solution involving subsea compression that would help it to reduce the costs of setting up an off-shore platform.

Converteam - the power conversion company now known as General Electric Energy - designed a pilot system comprised of a high-speed motor to operate the compressor, a second motor to drive a pump and all the subsea auxiliary power equipment.

The entire assembly is set up in a cone-shaped waterproof casing three meters in diameter and ten meters high. The equipment has to be able to operate at a depth of 1,000 meters and without the need for maintenance for a period of five years.

Pushing back the boundaries of drilling

"All the power electronics were water-cooled by an installation consisting of pumps, exchangers, hydraulic connections and pipes", explains Guillaume Godfroy, research and development engineer at General Electric Energy. *"To guarantee the reliability of the different items for five years, we had to make sure that they would remain tight for the entire period"*.

The company called on the experts at Cetim to qualify the tightness of the components and sub-assemblies. Every critical component (fittings, valves, pressure sensors, manometer, flexible, seals, etc.) was then tested and qualified. Subsequently, as and when the various items were assembled, the 1,400 tightness connections were closely examined by means of helium mass spectrometry. The pilot equipment is today immersed in a basin in the Nyhamna field in Norway. If the trials prove to be successful, identical compressor trains will be installed at a depth of 1,000 meters – a solution that could push back the boundaries of drilling.

Cetim's asset

Cetim measures leaks using a variety of methods (tracer gas, pressure, etc.). The centre boasts technical resources that are unique in Europe for testing equipment and materials in extreme pressure and temperature conditions.

NOTRE CLIENT

Corporate Name
Converteam (General Electric Energy)

Activity
Power conversion using solutions based on rotating machines, variators, automatisms and process controls

Turnover
Over a billion euros

Workforce
5,600 employees across the world

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