SBM Offshore validation testing of a low voltage offshore swivel in extreme temperatures and humidity conditions

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SBM Offshore is a global group of companies developing systems and services to the offshore industry. Its constituent companies started their offshore activities in the early 1950s and SBM Offshore subsequently became a pioneer in the development of single point mooring (SPM) systems. The firm leases and operates floating production storage and offloading (FPSO) vessels, and is involved in the design and engineering, the construction, the installation, the operation and the life extension of floating production solutions for the offshore oil & gas industry.

Some of the company's core products have been developed for SPM's which require the use of fluid and electric swivels to allow the flow of fluids and the transfer of power and information (data) between the fixed and rotating parts of the various systems. In this case, SBM Offshore recognized the need to test and evaluate the general behaviour of a low voltage swivel under extreme environmental conditions, in particular to guarantee the suitable operation in the field as per SBM design life. As these systems that SBM Offshore develops are used in different worldwide markets they need to operate in the harshest environments that are encountered in the world.

Test campaign in large climatic test chamber

A test campaign was organised in the large climatic test chamber of Sirris in the Port of Antwerp. The objective of this testing campaign was to verify that the enclosures and seals can survive and operate in the field conditions with extreme temperature and humidity variations. Due to the large dimensions of the swivel (5 m x 3 m x 3 m), the choice of Sirris's large climatic test chamber has been of great value to accommodate the full test set set-up (chamber dimensions: 10 m x 7 m x 8 m); on top of this, and more crucial for the fulfilment of the test requirements, the ability of the climatic chamber to perform environmental tests in a wide range of temperatures (from -60 °C to +60 °C) and humidity (RH% up to 98%) has been a beneficial asset.

By performing several temperature and humidity cycles (ranging from -20 °C to +55 °C with a RH% level up to 95%), Sirris's testing team has been able to validate the swivel for offshore harsh environments following the test specifications of SBM Offshore.



Authors