Vallourec

High-performance sealing in extreme conditions

A methodology and tests to determine the primary parameters with regard to the leak tightness of Vallourec's seamless tube connections.

OUR CUSTOMER

Corporate name
Vallourec

Business activity
Word leader in the design and manufacturing of seamless tubes for the oil and gas industry

Turnover:
5 billion Euros

Context:
20,000 employees worldwide

Testing is a fundamental stage in order to thoroughly characterise the performance of equipment under specific conditions. Dispensing with this process is still an ideal, however, it is possible to optimise testing costs. Vallourec, the world leading manufacturer of seamless tubes for oil and gas drilling, mining and production decided to explore this option. The constraints specific to all tests are further compounded by the large dimensions of its parts and by the difficult conditions under which they are used. Vallourec therefore sought to prove the feasibility of sealing tests for a reduced portion (the connection area) of its Oil country tubular goods (OCTG) tubes while retaining the representativeness of their features.

Combined calculations

Vallourec's threaded connections Research and Innovation centre located in Valenciennes (France) launched a call for tenders to find a partner able to meet its expectations. This study was entrusted to Cetim and led to a close cooperation which helped to enhance their respective know-how. The combined finite element calculations performed by Cetim and Vallourec were used in particular to redimension the initial design of the test specimen in order to improve its mechanical strength during the test. Cetim also developed and manufactured the supports used to accurately measure the leak tightness of these test specimens for extreme conditions: compressive stresses of up to 1 GPa, fluid pressure levels up to 1,000 bar and temperatures ranging up to 150°C. The feasibility of the tests on reduced sized specimens was therefore proven. «Cetim's teams were very attuned to our requirements. We will be able to rely on their know-how to optimise the tests of future designs», confided Nicolas Baudet, Research and Innovation project leader at Vallourec.

Cetim's asset

- Identification and control of all parameters affecting leak tightness;
- Definition of a testing procedure;
- Design and implementation of testing equipment suited to the customer's extreme conditions;
- Results analysis.

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