

John Crane Seals submitted to EPR requirements

The manufacturer tested its mechanical seals on a test bench in order to meet the new requirements for third generation nuclear power plants (EPRs). This bench now serves the entire profession.

John Crane France had to use a test bench adapted to new requirements in order to obtain EDF and Areva approval for its mechanical seals designed for the pumps of third generation nuclear reactors (EPRs). The aim was to simulate the normal and accidental operating conditions of the mechanical seals in difficult environments, with pressures greater than 60 bar, speeds of 1,500 rpm and thermal shocks reaching temperatures of 130°C.

Modified bench

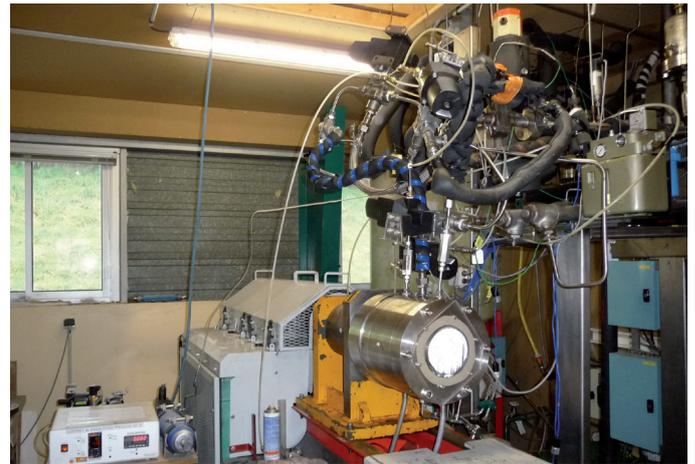
Cetim's engineers modified an existing bench to meet the company's requirements. Heating components were installed in the hydraulic system together with a screw

pump to allow demineralised water to circulate at a high pressure and temperature. To bring about thermal shocks, two circuits of cold and hot water were linked to the bench by a system of four three-way valves.

A number of subsequent seal tests have been carried out on this modified bench, including on the LHSI (Low Head Safety Injection) pumps from the Finnish OL3 and Flamanville power plants, as well as on the latter's intermediate cooling system (RRI) pumps.

Shared tests

Initially reconfigured for the needs of the nuclear industry, this bench is now used for many other tests across the profession.



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"For example, we are studying the influence of vibrations on the behaviour of the seals as well as roughness defects and the unevenness of the friction faces on changes in the rate of leakage", says Guillaume Braun, technical and quality director at John Crane France and Artema's industrial contact. These tests and many others have resulted in the drafting of an assembly and maintenance guide for seals and have strengthened the content of the training provided by Cetim, Artema and the University of Poitiers (France) on dynamic sealing and mechanical seals.

OUR CUSTOMER

Corporate name
John Crane France
(Smith Group)

Activity
Designer and manufacturer of mechanical seals and power transmission couplings

Sales turnover
48 millions euros

Workforce
200 employees

Cetim's asset

Cetim's test benches, which are made available to the entire profession, can be quickly transformed and follow changing needs. The skills of our workforce make timely, high-performance testing a reality.

