

Flowserve

Even safer pumps

The centrifugal pumps classified “safety equipment” by EDF and manufactured by Flowserve for the EPR reactors at Flamanville and Taishan, underwent 400 hours of tests - all in an effort to ensure that they will be capable of operating for 60 years, the estimated life span of the reactors.

The components of the future pressurised water reactors (European Pressurised Reactor - EPR), classified “safety equipment” by EDF, must be successfully subjected to operation tests for 400 hours. Successful completion of these tests guarantees the proper operation throughout the facilities’ service life, i.e. 60 years.

This is the case of the centrifugal pumps manufactured by Flowserve to supply the secondary cooling system of the future EPRs of Flamanville (France) and Taishan (China). Flowserve possesses all the equipment necessary to test the items it manufactures, however “the testing platform would have been devoted to these tests for several months, and this would have been detrimental to our other customers”, says Eric Ekindi, in charge of Flowserve nuclear activity in Arnage (Sarthe - France). “This is why we called upon Cetim.”

The test cycles are comprised of three steps. The first step was a conventional test carried out in the customer’s presence

at the Arnage plant in order to check that the target hydraulic and mechanical performance of the pumps were achieved.

50 shutdown and start cycles

The product was then transferred to the Cetim plant in Nantes (France) for the endurance test. A test loop meeting specific standards was dedicated to each pump. The pump was then subjected to 50 shutdown and start cycles with flow changes over 400 hours. The aim was to check hydraulic performance, flow, height, and efficiency data. Vibration sensors were installed on the bearings of the motor and the pump in order to constantly monitor the pump’s mechanical behaviour. Upon completion of these

tests, the pump was subjected to a last performance test over one day, in order to check that its characteristics had remained unchanged.

The Flowserve pumps underwent approximately fifteen tests of this type in Nantes, which were all successful.



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OUR CUSTOMER

Corporate Name
Flowserve

Activity
Centrifugal pumps for the nuclear, petro-chemical and chemical sectors and industry as a whole

Turnover
EUR 100 million

Workforce
300

L'tout Cetim

Cetim offers manufacturers to perform their long-term tests on its own equipment. These tests are carried out by hydraulic experts approved by Cofrac (French approval committee) – Laboratory Section No. 1-0037.

