FLOWSERVE

ENERGY ADVANTAGE PROGRAM CASE STUDY
NUCLEAR POWER PLANT, GERMANY

Pump Hydraulic Rerate prevents significant energy waste

Project scope

The operator of a boiling water reactor (BWR) nuclear power plant contacted Flowserve's Energy Advantage specialists to investigate energy savings on their overhung auxiliary cooling water pumps. Following a government mandated permanent shut down, the fuel elements required continuous cooling which drastically changed the demand on these pumps. Rated flow dropped from 5500 to 720 m3/hr, resulting in significant energy waste and reliability issues associated with off-BEP operation unless significant design changes were made.

Methodology

Flowserve hydraulic specialists designed a bespoke back pull-out retrofit design with a low flow impeller with an updated bearing frame and stuffing box. The existing volute casing was fitted with a suction insert and diffuser ring. This provided efficient pressure recovery and covered the radial gap that was created by the much smaller impeller. The design ensured no changes were required to the motor, baseplate, pump casing or prime connections. The on-site retrofit installation was completed in one day, and it can be reversed if the duty conditions change again.

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ADVANTAGE PROGRAM
DECARBONIZE BY DESIGN

Quantified and Qualified Benefits

- Combined power consumption reduced by **4249 MWh p.a.**
- Financial Benefit **€255k p.a.**
- Reversible design installed in one day
- Increased reliability through operation near design point
- New back-pullout improves reliability

Contact us for further details - **EnergyAdvantage@flowserve.com**

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