

# EDF Energy - Auxiliary Cooling Water Pump Package



## CASE STUDY >>

### EDF Energy Introduction

The accident at the Fukushima Dai-ichi Nuclear Power Plant in Japan in March 2011 is one of only a few serious nuclear accidents in the history of the global nuclear industry. The focus of nuclear operators worldwide, and at EDF Energy, continues to be on safety as the nuclear industry emerged from this tragedy with an even stronger commitment to nuclear safety. The Japanese Earthquake Response (JER) programme, set up after the latest nuclear accident in Japan, has a unique safety focus at a level not explored before; to enhance the safety margins of EDF Energy's entire fleet to protect against those unpredictable, extreme, 'beyond design basis' events.

Beyond design basis (BDB) events are those catastrophic and severe events that exceed the normal design basis requirements of a plant. They are rare initiating events. Fukushima has brought into the scope of worldwide nuclear safety that additional protection is required against these events to prevent a large uncontrolled release of radioactivity.

### Design Criteria

Design and build lightweight, high pressure auxiliary cooling water pump packages capable of being deployed on demand throughout the UK. The packages must be able to operate within a range of flows and pressures to suit the specific requirements of the power stations. The maximum fully fuelled weight of Package 1 to be 5 tonnes, and Package 2 to be 10 tonnes. Package 1 to provide high pressure emergency cooling through the existing cooling system. Package 2 to be dual use. In addition to high pressure cooling, the units are to be capable of flooding the reactor containment vessel.

### Solution

Utilizing the latest 3D software and FEM analysis, and drawing on their extensive experience of producing bespoke pump packages for operation in some of the harshest environments worldwide, Calder designed and built 12 units which not only met but exceeded the customer's expectations.

With reliability paramount, Calder selected Hammelmann high pressure plunger pumps coupled with diesel engines and transmissions and mounted them on a robust baseframe. The units are installed in weather enclosures designed to ensure easy access to components. Powered hose reels (high pressure) and lay-flat hoses (flooding) are stored within the enclosure making the packages self-contained. Calder hosted the unit/vehicle interface trials, provided operation and maintenance training, and offer full product support.



Package 2

**"EDF Energy chose Calder based on the quality of the proposed solution and the confidence gained during presentations that Calder understood the requirements."**

EDF Energy



Package 1



# EDF Energy - Auxiliary Cooling Water Pump Package



- Design
- Manufacture
- Test
- Install
- Commission
- Service

## Features

- Lightweight for deployment by off-road vehicle
- Versatile handling
  - hook lift
  - single-point crane lift
  - fork truck slots
- HMI control for easy selection of required parameters
- On-board powered hose reels for ease of use during high pressure pumping operations
- Lay flat hose for easy storage and deployment during flooding operations



Calder Ltd reserve the right to alter specifications and data to incorporate improvements in design.

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