Equipment Qualification Challenges for Nuclear New Build in the UK

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Abstract

EDF is one of Europe's largest power companies and operates a diverse portfolio of over 140,000 megawatts of generation capacity in Europe, South America, North America, Asia, the Middle East and Africa. About 86% of electricity production in France is nuclear with EDF operating 58 reactors. The EPR reactor is currently being built in France, China, and Finland with further plans for plants in the UK.

The UK energy policy is based on a future energy mix which can provide safe, secure, low carbon and affordable supplies. Nuclear energy has been identified as forming an important part of this energy mix. NNB Generating Co Ltd (part of EDF Energy) intend to be a part of this supply and have recently been granted a Nuclear Site License by the Office for Nuclear Regulation (ONR) to build a twin EPR on the Hinkley Point C (HPC) site.

As part of the Regulatory framework within the UK, license holders are required to demonstrate safe operation including suitable arrangements for the provision of equipment qualified to withstand harsh environmental conditions (Equipment Qualification). HPC will be the first new nuclear power plant constructed in the UK since Sizewell B, over 25 years ago. As a result of this gap in construction, the level of expertise in several key areas has declined including Equipment
Qualification where there is limited capability. The EQ engineer roles within the HPC project are heavily reliant on EDF expertise in France; however, over the last year the project has been able to develop its own capability by utilizing and learning from this expertise.

The capability issue also extends to the UK supply chain, which now lacks experience in manufacture and testing to the high exacting standards required for a nuclear plant. The HPC project has been able to draw on the Learning from Experience (LFE) from the Flamanville EPR currently under construction in Northern France. This project has had to resolve similar supply chain issues and the resulting organizational learning has been fed back into EDF. It is recognized within EDF that EQ is a significant risk which has the potential to add significant time and cost to the schedule if it is not properly managed. Therefore the LFE is vital in de-risking this project."