ADVERTORIAL

Innovative fault level management project goes live

RESPOND

The Department of Industry wrote in 2005 that active fault level management will help electricity distribution network operators to quickly connect customers' low carbon demand and generation, and at a lower cost than traditional reinforcement. By combining innovative technical and commercial solutions with existing assets, the £5.5 million Respond project will make that vision a reality.

electricity north west

Bringing energy to your door

Electricity North West is leading the way in developing smart solutions to meet the UK's future energy demands.

As the regional electricity operator, the company is responsible for keeping the lights on for five million people in the North West of England. It's also their job to plan for the future and look at smarter ways of meeting the expected increase in electricity demand as we start to reduce our reliance on fossil fuels.

What is the Respond project?

In 2014 Electricity North West won funding from Ofgem's Low Carbon Networks Fund to launch the revolutionary Respond project which will deliver an intelligent approach to managing fault current – the instantaneous surge of energy that occurs under fault conditions.

> Respond uses network data to calculate fault level in near real time

An increase in demand for electricity and the connection of additional sources of generation will increase the potential fault current on the network, known as fault level. If fault levels exceed the current safety rating of network equipment, it will need to be replaced, which can be disruptive, lengthy and expensive.

The Fault Level Assessment Tool

Using an intelligent Fault Level Assessment Tool, Respond uses network data to calculate fault level in near real time. When fault level approaches or rises above network equipment ratings, the tool will "enable" or "disable" one of three Respond fault level mitigation techniques: Adaptive Protection, the I_S-limiter or the Fault Current Limiting service, at various trial sites around the Electricity North West network.

Following a number of workshops, factory acceptance testing and site acceptance testing with project partner Schneider Electric, the Fault Level Assessment Tool is now active and has been successfully integrated into the company's network management system (NMS).

Adaptive Protection

Also known as sequential tripping, Adaptive Protection re-sequences the operation of circuit breakers to reduce the fault level. The Adaptive Protection installations can be retro-fitted and cover five 11kV and two 33kV substations. The Adaptive Protection installations have been designed to ensure they are easily translated to other electricity network operators as either standalone or retrofitted units.

I_S-limiter

This current-limiting fuse detects the rapid rise in current when a fault occurs and responds within 1/200th of a second to break the current. The I_S-limiters have been through a number of factory acceptance testing stages during construction and are now installed at two Electricity North West substations.

Fault Current Limiting service

The Fault Current Limiting service (FCL service) is a commercial solution which provides a unique opportunity for large demand and generation customers to financially benefit from selling a fault current limiting response to Electricity North West through a managed service agreement.

> The Fault Level Assessment Tool has been integrated into the network management system

> An extensive customer survey has shown an appetite for FCL services

When a fault occurs, all sources of generation connected to the electricity network contribute to fault current. Using the Fault Level Assessment Tool and other new technology which will be trialled as part of Respond, a customer's motor or generation source can be turned off for a few minutes, so that it no longer contributes to the fault current.

An extensive customer survey across a range of industrial and commercial market sectors has shown that there is an appetite among customers, primarily in the non-manufacturing sector, to provide this kind of service. Electricity North West is now seeking up to five large industrial business customers, with operations in the North West, to trial the FCL service. Organisations that are able and willing to trial the FCL service will enter into a fixed-term managed agreement.

Next steps

Over the next few months the project team will be focusing on the following key activities:

- Publish equipment specifications and installation reports for Adaptive Protection and the IS-limiter
- Publish the NMS interface and configuration specifications and commissioning reports
- Publish a summary of each fault event three months after each event
- Publish a report on validation of the Fault Level Assessment Tool
- Engage with customers who may be willing to trial the FCL service
- Continue to keep stakeholders informed on progress using the project website, advertorials, newsletters and webinars.

The Respond project runs from January 2015 until October 2018.

To find out more visit **www.enwl.co.uk/respond.**

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