

Welcome to our newsletter...

FlexDGrid is a £17 million project, which will revolutionise the power network in Birmingham using ground-breaking solutions to accommodate additional low carbon generation across the city.

Since our last newsletter we have made significant progress. Here are our main headlines and links to further information.

First Fault Level Monitor now active

We are pleased to announce that the first Fault Level Monitor (FLM) is now active at Elmdon, one of our ten FlexDGrid sites.

Works for the other FLMs are ongoing at the other sites and we plan to connect and energise FLMs at these sites within the next few months.

These will enable accurate Fault Level data to be gathered for various network running arrangements, and we can now start using this data to further validate our Enhanced Fault Level models developed in Method Alpha.

We aim to share early results with other DNOs at our next FlexDGrid event in May 2015 (event date tbc).

We plan to install FLMs at all ten FlexDGrid sites before the end of next year. Following further detailed design works, we have replaced two of the substations initially selected, with substations that provide better value for money in respect of installation costs.

We will be installing FLMs at:

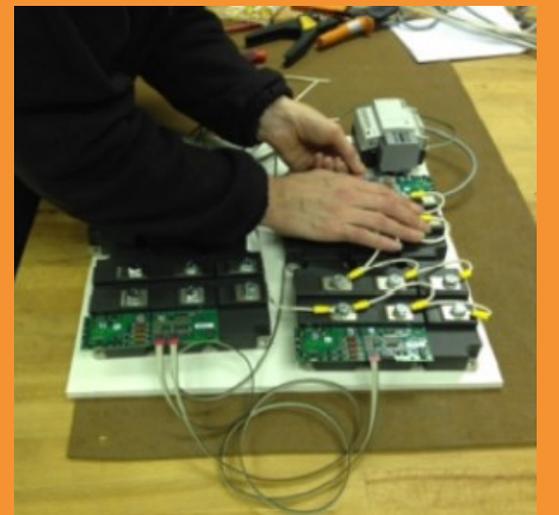
Elmdon	Chester Street
Chad Valley	Sparkbrook
Hall Green	Shirley
Castle Bromwich	Bournville
Kitts Green	Nechells West



Removal of wall to install FLM equipment



FCL in Factory testing



Connection of the Power Electronic FCL prototype



FCL on board vessel for transit to the UK

Fault Level Mitigation Technologies

Since our last newsletter we have signed contracts with the suppliers of our Fault Level Mitigation Technologies (FLMTs) and we are pleased to report that the first FLMT has successfully passed Type and Factory testing.

The first FLMT to be installed is the Pre-Saturated Core Inductive Fault Current Limiter, manufactured by GridON in to Castle Bromwich Primary Substation. The construction activities for this installation are currently underway - see our [short animation presented at the Low Carbon Networks and Innovation \(LCNI\) conference](#).

The device has been built and tested and is now en route. It will be arriving at Castle Bromwich on the 9th December ([see a map of the journey by road](#)).

Our next phase of construction works will be preparing the other four sites for the inclusion of FLMTs:

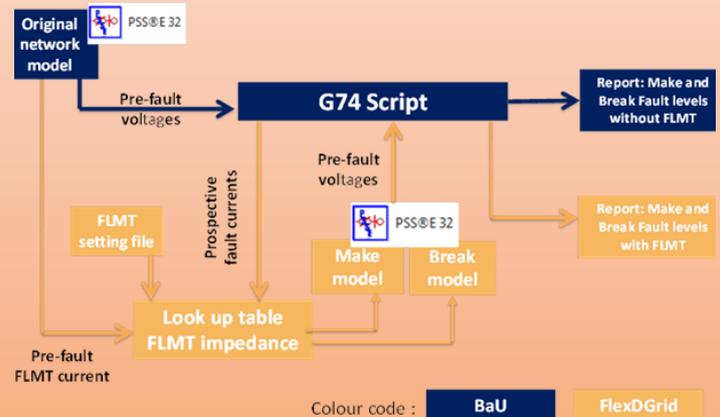
- Power Electronic Active Fault De-Coupler - Alstom (to be installed in Kitts Green and Sparkbrook); and
- Resistive Superconducting Fault Current Limiter - Nexans (to be installed in Chester Street and Bournville).

Modelling

At CIRED 2014 we presented our paper '[Sensitivity Analysis of Fault Level Assessments in HV Networks](#)' which investigated the effects of the accuracy of HV network parameters on calculated make and break fault levels.

Since then our modelling work has been mainly focussed on developing computer models of the three different FLMTs being trialled. The aim was to develop tools and methodologies for incorporating the FLMT models into the existing fault level study process.

We now have a PSS/E model for each of the FLMTs, which is being incorporated into our Fault Level Assessment process. We have also created a Fault Level guidance tool that aims to reduce the time required for connection studies, making this quicker and easier.



FLMT Modelling Process

Now that we have our first Fault Level Monitor installed we can begin to use this real-time fault level data to further refine our tools and models. We are also exploring how we can use this data to maximise the amount of distributed generation connected to the network and how to operate the network to provide greater security of supply to customers.

Policy Update

One of the main aims of FlexDGrid is to ensure that important elements of the work carried out for network modelling, monitoring, design and installation is captured and shared within WPD and the wider DNO community.

Four engineering policy documents relating to the connection and specification of FLMs and FLMTs have now been authorised by WPD Policy Department and are “live” WPD documents:

- EE201 – Fault Level Monitor (FLM) Devices for use on the 11kV Network (FlexDGrid);
- EE202 – Fault Current Limiter (FCL) Devices for use on the 11kV Network (FlexDGrid);
- SD4R – Application and Connection of 11kV Fault Level Monitors (FLM) devices for FlexDGrid; and
- SD4S – Application and Connection of 11kV Fault Current Limiters (FCLs) for FlexDGrid.

These documents have now been made available to all DNOs upon request. The value of creating and sharing these policies is to move a considerable step forward towards FLMs and FLMTs becoming part of main business roll-out.

In addition, we will be creating policies for the ‘Installation and Maintenance’ and ‘Operation and Control’ for each of the FLMTs and FLMs. These will be distributed in the same manner as the policies above.

Engagement with Customers

As part of FlexDGrid, the University of Warwick are researching the socio-economic impact of Combined Heat and Power (CHP) integration and Fault Level mitigation with specific focus on low income households in the Birmingham area.

The University of Warwick conducted a telephone survey of residential energy users in Birmingham. The purpose of the survey was to uncover the main influences that drive the household decision to connect to district heating and how the availability of district heating schemes could benefit vulnerable customers.

Detailed analysis of the survey results is now taking place and results will be shared at the end of the project. This research can support the successful and timely deployment of district heating whilst aiming to make a positive impact on fuel poverty in the Birmingham area.

Thank you to everyone who took part in the survey.



Birmingham City Centre

For more information on any of these stories please visit our webpage:

www.westernpowerinnovation.co.uk/FlexDGrid.aspx