

July 2023

Power-Electronics Fault Current Limiting Interrupter (FCLi)

Operational experience from field trial in National Grid Electricity Distribution's network

National Grid Electricity Distribution (formerly Western Power Distribution) has engaged with GridON to develop and demonstrate GridON's innovative fault current limiting interrupter (FCLi), as a means to handle the ever increasing new distributed generation connections into National Grid's distribution network.

The 11kV, 5MW (6.25MVA) FCLi was designed, built and tested by GridON with close supervision from National Grid, including extensive witnessed short circuit and internal arc tests in KEMA high power labs.

Following successful testing, the FCLi device was installed in a primary substation near Birmingham, connecting a 4.2MW CHP generation plant into a 33/11kV substation that operates two 40MVA transformers running in parallel. After commissioning, the FCLi was put into full service in March 2022.

Since it was put into service, the FCLi is continuously running in the network, without causing any problems or disturbances to the network. It is remotely controlled by National Grid's network management system, and is maintained by National Grid staff (maintenance is minimal and includes air filters replacement annually).

The FCLi has already experienced real-life network fault events. The FCLi performed interruption operations during these events, as expected, eliminating the fault current contribution from the generation plant into the network. These events occurred on June 1st 2022 and April 15th 2023.

Following these fault current interruption operations, after the fault events were cleared, the FCLi was quickly restored to normal operation. This device does not require any parts replacement following interruption, and is simple to put back into service.

National Grid is very pleased with the operation of the device, with its quality and robustness, and with the availability and responsiveness of GridON's team to promptly support with any question or issue.

National Grid will be happy to host visitors to site, either in person or via video conference.

About National Grid

National Grid operates the electricity transmission network in England and Wales and is the distribution network operator for the Midlands, South West England and South Wales.

The company invests £1 billion in its distribution network every year.

About 10% of the average household electricity bill – around £100 a year or 27p a day – is used to fund this essential work.

National Grid is committed to creating a smarter, more efficient energy system for customers – and to helping the UK achieve net zero - through its industry-leading innovation programme.

National Grid is involved in a number of ground-breaking projects to support the mass adoption of electric vehicles and decarbonisation of power, placing it at the forefront of the country's green recovery.

You can find out more about National Grid's distribution network here: www.nationalgrid.co.uk