

ukpowernetworks/innovation

Funding mechanism: NIA

Funding amount: £2.4m (NIA funded)

Status: 20 months
Start date: September 2017
End date: May 2019



Loadshare

The Challenge

The connection of distributed generation is paramount as we move towards a low carbon economy. There has been a significant increase in renewable generation connections and applications at distribution level in Great Britain. However due to network constraints and limited network capacity, the uptake of renewable generation could be costly to customers in constraint areas due to reinforcement required to accommodate renewable generation. This could lead towards renewable curtailment and or slow down the transition to a low carbon economy.

Project overview

- Trial new technology to resolve network constraints between Bramford GSP and Lawford Grid 132kV substation.
- Utilise the under-utilised circuits by controlling power flows and avoid the need for reinforcement.
- Create network capacity for new generation or demand customers through more efficient utilisation of existing network.
- Increase ability for UK Power Networks to address system constraints quickly and meet short term network needs.

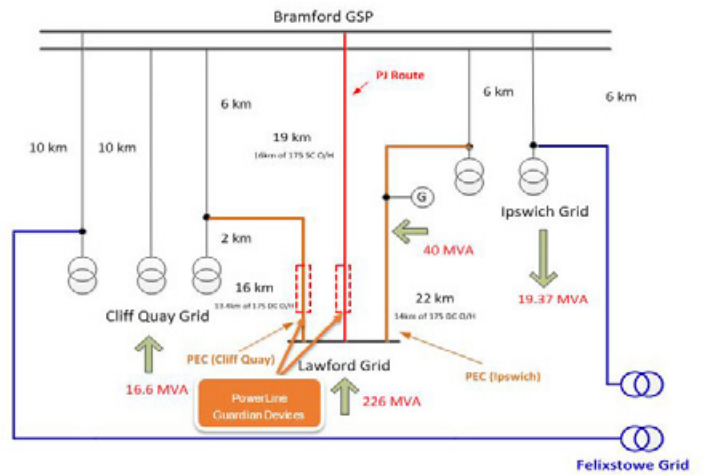
What are we doing about it

UK Power Networks is testing an innovative technology that releases extra capacity on the circuit to connect more renewable generation without the need of reinforcement. An innovative device called "PowerLine Guardian" from SmartWires will be trialled on 132kV circuit near Colchester.

This circuit has three electricity distribution tower lines running between two substations. Because one of the three lines is shorter than the other two, it currently channels more 'load' while the other two lines have ample spare capacity. This project will enable UK Power Networks to balance the power flowing across the three. The project will trial a combination of Power Guardian devices to ensure the load can be shared more equally between the three lines. They work by impeding the line carrying the most electricity, and route power to alternative routes with more capacity.

Benefits

- Release about 95MW of additional capacity in the constraint part of the network without the need of reinforcement to connect additional renewable generation.
- The additional capacity released will be enough to power more than 45,000 homes [1] Based on an industry standard usage of 2KW/household]
- The project uses new SmatWire devices that could save £8million to customers and avoid significant reinforcement
- Once it is proven on the 132kV network, it’s hoped the device can be used on lower voltage networks as well as being a cost-effective alternative to traditional reinforcement on the network
- Avoid the traditional reinforcement and disruption to landowners, road users or customers.



Next steps

- Design installation
- Install devices and run trial
- Report on findings

Partners

