



LOW EMISSIONS

Virtual Statcom

Client	Western Power Distribution	nationalgrid
Country	UK	
Year	2018 - 2020	

National Grid Electricity Distribution (formerly Western Power Distribution) in the United Kingdom has engaged PSC to deliver an innovation project known as the Virtual Statcom project. The project is being run by National Grid and funded under the Ofgem Network Innovation Allowance (NIA).

Challenge

As an increasing number of Low Carbon Technologies (LCTs) connect to distribution networks such as renewable generators and electric vehicles, technical constraints arise that can limit the total amount of LCTs a network can host.

To overcome the technical limitations associated with distributed generators and continue to operate a safe, secure and reliable network, National Grid implements traditional network reinforcements as well as initiating and leading innovation projects to develop new solutions. A key focus of innovation projects is to increase the utilisation of existing assets to defer network reinforcements; the Virtual Statcom project fits in this category.

Project solution

PSC was engaged by National Grid as external experts on harmonic. The objective of the Virtual Statcom project was to determine the technical feasibility of increasing the network hosting capacity, for both generation and load, by implementing an algorithm to optimise and coordinate the reactive power output of existing generators in the distribution network.

PSC worked closely with National Grid and was responsible for the following aspects of the project:

- Data gathering/validation and study zone selection
- Power flow simulations and Virtual Statcom algorithm
- Graphical User Interface
- Time series comparison studies
- Virtual Statcom feasibility study reporting
- Project management
- Project closedown reporting

The Virtual Statcom project proved that it is technically feasible to utilise reactive power, without the need for network reinforcement, to:

- Increase load hosting capacity
- Manage network constraints
- Reduce network losses

The system study specialists at PSC have extensive experience in the modelling, analysis, and planning of transmission and distribution networks. The global nature of our business means we can provide our clients with the right project solution anywhere in the world.



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