
Andy Howard
Agenda

• Whilst Project Dissemination will try and focus on session topic of:
  Powering the Future: Enabling Net Zero Electricity

• Quest
  • Background to Project
  • Main Aims and Objectives
  • Our Project partners
  • How does that Enable Net Zero Electricity?
  • Where are we up to?

Questions (and hopefully Answers)
In November 2020, ENWL was awarded £7.95 million funding by Ofgem’s Network Innovation Competition (NIC) for QUEST. The project runs from April 2021 to April 2025.

QUEST is a whole-system voltage optimisation system, comprising software held centrally within a network management system, alongside intelligent devices fitted in substations.

QUEST will co-ordinate the actions of multiple voltage control and optimisation techniques, including CLASS, Smart Street and Active Network Management (ANM), holistically across the whole system to optimise their use and facilitate the increased use of Low Carbon Technologies (LCTs).

**Why is QUEST Needed?**

QUEST will allow DNOs to cater for the increased uptake of LCTs and the subsequent increase in demand on the network. Over the years, DNOs have deployed a number of discrete voltage management techniques which have been successful in helping to manage the network. QUEST will address their inherent limitations by fully coordinating their use.
The problem

**Historical**
- Passive traditional distribution network operation
- Predictable customer demand profiles
- Simple, independent voltage control techniques

**Today**
- Decarbonisation drives uptake of low carbon technologies
- Increase in demand and generation leads to highly variable voltage profile
- Voltage management techniques not co-ordinated which could reduce effectiveness
The Project

- New Distribution OLTC Install (Smart St standard) & access to existing units
- Upgrade to 33/HV Voltage Control systems
- Application of enhanced 33/HV solution to 132/33 system
  - First time functionality at this Voltage level
- New QUEST Overarching Control System software
  - Full Control at all Voltage levels below Whitegate Grid Supply Point
  - Optimise / maximise voltage control at each voltage level
  - Interface with other elements of Network Management e.g. ANM, Emergency situations
  - Interface with External / 3rd Party ANM systems
  - Development of Digital twin – to inform and corroborate results
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<td>Schneider Electric</td>
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**Our current NMS partner**

- NMS provides end to end real time network visibility required

**Leading ANM provider to GB industry**

- Enable project to prove transferability

**Experts in voltage control and leading AVC provider to GB industry**

- Facilitates transferability

**Operator of the GB transmission network**

- Enables project to examine issues at TSO / DSO interface

**Leading consumer research consultancy with proven experience in NIC projects**

- Provides independent customer feedback
How does that Enable Net Zero Electricity?

QUEST contains three highly innovative, and as yet untested, aspects

1. **For the first time ever, network operators will have the ability to resolve voltage constraints at one voltage level through the action of voltage controllers at another.**

2. **Ability to look holistically at total network, determine and deploy voltage profiles that deliver optimised outcomes for network operation and connected customers.**

3. **By fully co-ordinating the operation of previously discrete systems, QUEST will boost their effectiveness to provide a fully optimised system.**

By integrating discrete voltage management techniques into one overarching voltage control and optimisation system, QUEST will give network operators the ability to manage system voltages more efficiently by using the full range of voltage control available in a holistic manner.
Four Project Deliverable Reports published to ENWL website alongside Project Progress Reports
(https://www.enwl.co.uk/go-net-zero/innovation/key-projects/quest/)

Digital twin of Whitegate network completed and expected performance of QUEST modelled
AVC relay software updates and tested in ENWL environments, ready for installation
Installation of the additional AVC monitoring of Generation plant in progress
Delivery & successful Factory Acceptance Testing of QUEST software
Customer engagement domestic pre-trial baseline complete

Building new IT infrastructure within the ENWL Real Time Systems Operational IT Estate, whilst meeting both the flexibility required by the project and the Security required by Critical Infrastructure
Integrating project elements within and between systems
Rollout of updated software to units installed on site prior to whole system testing
Commencement of trials
Customer Engagement – inc HV & EHV
Responding to learning

Challenges:
Integration of Innovation Systems into BaU Real Time critical systems
Questions ??

https://www.enwl.co.uk/go-net-zero/innovation/key-projects/quest/