

Webinar: Network DC – The Why and How of DC Circuit Breakers

Date: Wednesday, 25th OCT 2023

Time: 14:00 to 15:00 UK Time

Description:

The need to connect increasing volumes of offshore wind and transfer large volumes of energy over long distances, including the benefits of international connections, means there is an emerging need for more complex HVDC networks that provide the same flexibility as interconnected AC grids. To support the development of HVDC grids there is a need to demonstrate the capability of DC Circuit Breakers (DCCBs) and understand how they will interact with HVDC control and protection.

The Network DC project aims to advance the readiness of the technology for implementation on the GB system, to enable the development of offshore HVDC networks and support our ongoing transition to a Net Zero energy system. This Strategic Innovation Fund (SIF) project has successfully completed its Discovery and Alpha phases and is at the beginning of its 3.5 year Beta phase.

This one-hour webinar will present the key technical outcomes from the project so far. Project partners from The National HVDC Centre, University of Edinburgh, and SuperGrid Institute will present details of modelling and analysis that has informed proposed DCCB specifications and overall system design. The webinar is aimed at all engineers seeking an introduction to DC circuit breakers, their potential use in the GB system, key challenges in modelling, and factors affecting DC system design.

Agenda:

1) Introduction – The National HVDC Centre – 5 mins

- Summary of the Network DC project

2) Use case and DCCB Specification – The National HVDC Centre – 15 mins

- DC Switching Station use case
- Preliminary studies
- DCCB specification

3) DC Circuit Breakers – University of Edinburgh – 15 mins

- Introduction to DCCB modelling
- Real-time simulation and open-source models

4) Protection system design and Techno-Economic Analysis – SuperGrid Institute – 15 mins

- Protection system design
- Techno-economic analysis

5) Future Work and Q&A – 10 mins

Details:

1 The National HVDC Centre:

1.1 Welcome and Introduction

- Agenda for the webinar
- Network DC objectives
- Project Partners
- TRL and CRL

1.2 Use Case and DCCB Specification

- About the Peterhead use case
- Preliminary study using real-time simulation
- Generic DCCB specification

2 University of Edinburgh:

2.1 Introduction to DCCBs

- How are DCCBs different from AC circuit breakers?
- Types of DCCBs

2.2 Real-time Simulation of DCCB

- Open-source modelling of DCCBs
- Test results

3 SuperGrid Institute:

3.1 Protection System Design

3.2 Techno-Economic Analysis

4 All:

4.1 Future Work

- Overview of Beta Phase WPs
- Q & A session (Slido?)