

Project abstract

Title: DIGEST: Digitalization of HVDC (High Voltage Direct Current) grids via smart data discovery

Objective

The goal of DIGEST is to establish a framework of smart data processing to support monitoring and real-time analysis of HVDC grids. This framework will be equipped with new methods and techniques that are capable of:

- selecting the most discriminative features to describe HVDC cases
- discovering the most significant HVDC cases to build the smart case base
- incrementally updating the smart case base in real-time to adapt to varying operation conditions
- fast identifying the fault (together with the root cause) in real-time by similarity-based reasoning with the smart data

Abstract

High Voltage Direct Current (HVDC) technology receives growing attention for transmitting large amounts of electricity. HVDC systems are advantageous in offering higher power transmission over long distance whereas with low energy loss. It also provides the possibility to connect two AC networks with different frequencies.

This project will develop a new digital solution to monitoring and assessment of the operation of a HVDC grid. The main idea is to transform the large volumes of raw data collected from the network into meaningful insight to support real-time analysis. This will be achieved by smart data discovery along the process of electricity transmission. Investigation will be made on how to identify and update the smart case base comprising a minimum set of the most important and interesting cases. Simultaneously the smart case base will be utilized to offer real-time awareness of the network leading to fast fault identification and protection of the HVDC grid.

The project is driven by totally new ideas, rather than a continuation of any previous project. It will be carried out with cooperation between ABB and Mälardalen University.

Co-ordinator: ABB AB

Project manager: Urban Wijk

E-mail project manager: urban.wijk@se.abb.com

Phone: +46 240784873

Other project partners: Mälardalen University

Total cost of project: 9 164 541 kronor

Total grant: 4 000 000 kronor

With support from:



STRATEGIC
INNOVATION
PROGRAMMES