

Pilot project: Condition-based maintenance of substations

The pilot provides a basis for condition-based maintenance of substations. Currently, maintenance is calendar-based. This pilot includes three transformer stations. Glitre Nett has previously collaborated with Kongsberg Digital (KDI) on their digital twin of the power grid: Kognitwin Grid. By utilizing existing and available data from various specialized systems organized through Kognitwin Grid, Glitre Nett, together with KDI, further developed the product with a maintenance module in this pilot.

Challenge

Maintenance today is based on varying and fragmented information from substations. The current practice is therefore calendar-based maintenance. This is inefficient – many visits to substations turn out to be unnecessary. At the same time, faults can occur that are not detected until the next scheduled visit, leading to interruptions that could have been avoided with a more proactive approach.

Solution

A prototype, in Kognitwin Grid a Kongsberg Digital tool, has been established that allows Glitre Nett to perform condition-based maintenance instead of calendar-based maintenance as before. Version 0.1 has been launched and is being further developed. This version has been tested and evaluated, and routines for users are being developed. In this version, the transfer of maintenance data and all switch changes have made it possible to set up rules for triggering maintenance based on switching patterns, which consider factors such as the number of switching operations, time between each operation, switching under voltage, switching operations since the last maintenance, type of switch, manufacturer, etc. These rules trigger a traffic light model, allowing for a simple and clear overview of maintenance that should be performed and why.

Potential

This is also useful for other DSOs, nationally and internationally, as it will be available as a part of Kognitwin Grid.

References in CINELDI

- [Pilot "Tilstandsbasert vedlikehold av transformatorstasjoner" report \(in Norwegian\)](#)
- <https://www.kongsbergdigital.com/resources/glitre-nett-explores-condition-based-maintenance-with-kognitwin-grid>

Innovation type:
Tool/prototype

Innovation:

TRL: # 6

Year: 2024

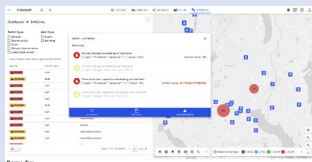
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Potential users:

User	X
DSO, TSO	X
Technology provider	
Member organisation	
Market operator	
Research/consultancy	
Teaching	



Screen shot from Kognitwin Grid