

## Pilot project: AGI - Artificial Grid Intelligence for detecting earth faults in HSP distribution networks

*Using artificial intelligence, Siemens, together with Glitre Nett, trained a model to detect high-resistance earth faults in the grid. A data model was created for training, followed by numerous physical tests and verification tests with faults in the grid. The model was then tested in additional grid areas than the original model was trained to verify that the model is general. The results from the tests show that AGI (Artificial Grid Intelligence) also works in grid areas it was not previously trained on. AGI has good detection of high-resistance earth faults and can function as an alert system.*

### Challenge

After several large fault situations in 2018, where a significant number of faults proved difficult to detect, Glitre Nett began working to see if there were solutions for detecting so-called high-resistance earth faults. High-resistance earth faults are faults with such high transition resistance at the fault location that they cannot be detected with conventional protection devices. Unfortunately, they cannot be detected by increasing the sensitivity of conventional protection devices, as this would result in operational challenges. Glitre Nett has been working on this issue for a long time and eventually collaborated with Siemens to explore new possibilities for detecting this type of fault using methods that were not previously available on the market.

### Solution

AGI is developed into an alarm-giving protection system that can alert about potential high-resistance earth faults and, through sectioning, identify which section has the high-resistance ground fault.

### Potential

The pilot project has learned a lot about which type of grid that have a higher probability for high-resistance earth faults and AGI can be a good tool for many other DSOs. High-resistance earth faults is a potential health and safety risk as the power line might be on the ground and also start fires.

### Reference in CINELDI

- [Pilot "AGI - Artificial Grid Intelligence for detektering av jordfeil i HSP distribusjonsnett" report](#) (in Norwegian)

Innovation type:  
Product

Innovation:

TRL: # 8

Year: 2024

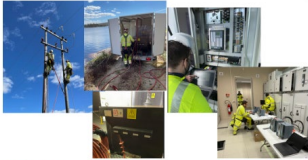
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Potential users:

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



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AGI has been tested in the grid of Glitre Nett