

Innovation type:  
Algorithm

Innovation:

TRL: # 8

Year: 2024

Contact:  
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Potential users:

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

## Pilot project: Added value from Smart meters

*Smart meters is now installed in all homes in Norway. Aidon smart meters in installed for Lnett' customers. These smart meters provide information and alarms related to earth faults which can be used to make earth fault management more automated and efficient. This includes tools for smart meter data analysis and algorithms that track and pinpoint the time and location of earth faults, which has been the focus of this pilot.*

### Challenge

All DSOs in Norway spend a lot of time on identifying, locating and repairing earth faults. It is important for the DSOs to rapidly identify if there is an earth fault and whether it is in the DSO grid or in a customer installation. If the latter is true, the customer must be informed about this and repair the earth fault at their own expense. Most of the earth faults in the low voltage distribution grid are occurring in the customer installations. If the earth fault is in the customer installation, it can be quite costly to establish contact, inform the customers about earth faults and make sure that the customer repairs the earth faults. But smart meters is now changing this.

### Solution

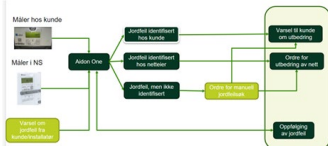
The smart meter vendor, Aidon, developed their software (Aidon One) to support location of earth faults, which is a difficult task, and this was tested in Lnett grid and in The Norwegian Smart Grid Laboratory in Trondheim. An algorithm, called StateMachine, has been made to categorise earth faults in grid related (create work order) or in customer installation (notify customer), based on earth fault characteristics. In addition, new firmware in Aidon smart meters and software in Aidon One, supporting StateMachine, has been made.

### Potential

There is a large potential for more efficient handling of earth faults in Norway. DSOs use a lot of resources on this today and more data from smart meters has potential for reducing the time and cost of earth faults handling. This makes the grid safer and improve customer relations, as DSOs can inform their customer about the earth fault and not the other way around, which is the case today.

### Reference in CINELDI

- [Pilot "Added value from Smart meters" report](#) (in Norwegian)
- "Test av jordfeildetektering ved hjelp av AMS", Henning Taxt, Kjell Ljøkelsøy, CINELDI WP2 memo, 2022



Earth fault work process