

Paris Session 2022



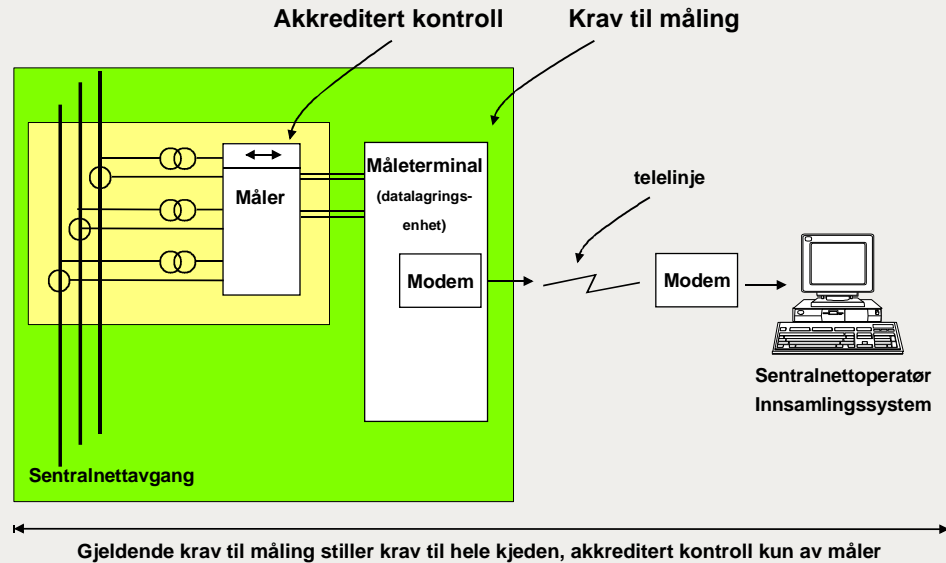
LPIT – Driver or a challenge for DSAS

B5-PS2_Question 2.01: What are the challenges in the development of digital substations and how to address the problems caused by the digitalization?

Nargis Hurzuk _ Norway



Challenges with DSAS and LPIT



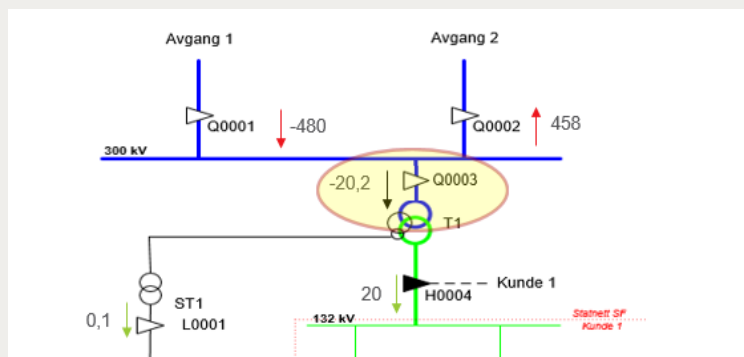
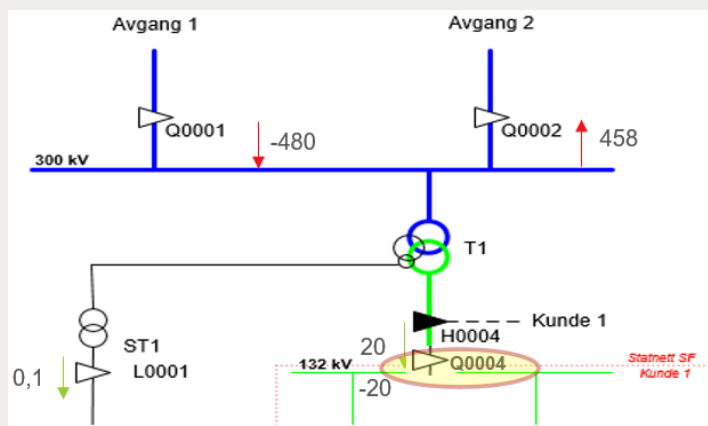
- Metering control shall be performed on all meters. Control intervals:
 - First control after installation
 - Thereafter control:
 - every 8 year if the gross exchange is below 10.000 MWh (average) per week
 - every 4 year if the gross exchange is over 10.000 MWh (average) per week

Group Discussion Meeting

• Risk assessment

- Regulatory requirements- EMP
- Time synchronization
- LPIT and energy metering
- Emergency control
- Redundance in the system
- Testing and network architecture
- Verification of the protection chain-LPIT and MU
- Vendor lock
- IT security
- Documentation
- Competance

Suggestion: A requirement for the transformer metering balance



Tap trafobalanse i MWh: $-20,2 + 20 + 0,1 = -0,1$ MWh

A maximum deviation for the whole metering balance to be 0,4% of the absolute loss/balance of the total absolute flow in the balance

$$(Q0003+H1004+L1001) < (\text{abs}(Q0003) + \text{abs}(H1004) + \text{abs}(L0001)) * 0,4\%$$

A metering balance showing a negative loss around a transformer for a defined period will not be accepted.

Metering station balance/loss in MWh: $-480 + 458 + 20 + 0,1 = -1,9$ MWh

Balance around a transformer in MWh: $-20,2 + 20 + 0,1 = -0,1$ MWh

Group Discussion Meeting

This suggestion must be thoroughly tested before implemented. Statnett must observe developments related to calibration on digital metering chains.