Liander LiveLab

A living lab for the distribution grid

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IEA DSM Agreement, Task XVII
Integration of DSM, DG, RES and storages
There are many questions about the deployment and potential advantages of a smart grid. How can a smart grid support the energy transition? Which instrumentation is required in the medium voltage stations? Which security and privacy measures are required and feasible? Which data can be provided and what is the reliability of this data? What is the value of data for fraud detection, power quality, failure location detection, etc.? What are the consequences for a distribution control center? How should maintenance of the smart grid be organized?
The Liander LiveLab is a valuable asset in helping answering these questions

Characteristics:

• End-to-end chain, from the instrumentation in the medium voltage stations to the central IT Systems (and vice versa)

• In an operational part of the medium voltage grid (‘real’ operational data):
  • Charging stations
  • Island operation, Decentral power generation (by market gardeners)
  • Residential area

• Dedicated monitoring and maintenance of the chain

• Flexible, adjustable infrastructure

• Available for internal and external users (customers)
What is LiveLab?

- Controlled and secure part of the existing medium voltage grid around Zaltbommel
- Instrumentation with distance control, telecom, IT Systems and dedicated processes and organization
- Quality and continuity of supply for customers and safety for employees
- Platform to facilitate innovations in the medium voltage grid
- Open for internal and external customers, e.g. Universities, Innovation institutions, Industry
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LiveLab High-Level Architecture

- Data Analytics
- Data Historian
- Configuration Management
- Device Management
- Telecommunication
- MSR-Box

Existing systems
(SAP, NRG, KLAK, etc.):
- • MatLab
- • Infra
- • Osisoft PI
- • Siemens PowerCC
- • GRPS
- • (CDMA)
- • Jomitek
- • PowerSense
- • Locamation

LiveLab Customers/Users
Direction & Maintenance processes

Monitoring & Maintenance
SCADA/DMS Test environment
Data Collection

Actuator
Sensoren
Liander has a large variety of medium voltage stations, resulting in a lot of (practical) challenges.
There is already much interest in using LiveLab

- **Data Oriented Project**
  - Smart Grid Analytics
  - Toon frequent metingen
  - Laad profielen snelladers
  - Crisalis
  - CDMA Pilot
  - PoC Physical Access Control

- **Infrastructure Oriented Project**
  - Bommelerwaard energie neutraal
  - SEC Project Heerhugowaard
  - E-Laad
  - C-Dax
  - Tennet, Decentral Generation
  - ENCS

- **Internal Customer**
  - Selection of projects / interests

- **External Customer**

**ENCS:** Cooperation with the European Network of Cyber Security. LiveLab will be used for security tests.

**Heerhugowaard:** Cooperation with the SEC project Heerhugowaard (Power measurements in a PV Neighborhood. LiveLab will be used to collect and analyze measurements.

**CDMA Pilot:** Test of CDMA for communication purposes.

**PoC Physical Access Control:** Test of Physical security equipment (access control video in MSR’s for security, safety, and monitoring and support.)
More info / contact?

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