

## Vendor independent typicals and simulators compliant with IEC 61850 standard for the renewal of AIS-GIS substations

In the Netherlands, TenneT plans to retrofit more than 145 AIS and GIS high-voltage (110kV) substations over a period of 10 years. Elvexys has been selected by Strukton Systems as privileged IEC 61850 technology provider for TenneT's Bay Replacement Programme (BRP).

The vendor-independent standardised top-down engineering will offer TenneT significant time saving and flexibility, thus cost reduction during the massive substation rollout ahead.

Elvexys, together with its long-term partner CESSA, is providing its expertise to Strukton in the implementation of the secondary technology, including the IEC 61850 engineering and protection concept.



### Services

- Development of protection functions and parameters for the standard feeders available in substations, including IED selection
- Development of IEC 61850 templates, called "typicals"
- IEC 61850 training and user support
- Redundant substation network engineering
- Supply of simulators for protection functions validation
- Tests with local integrator and final customer (FAT/SAT)
- Supply of a documented system validation report
- Maintenance and disturbance data engineering

### Profits

- Standardisation of IEC 61850 engineering concept
- Cost reduction of the substation retrofits
- Fast and vendor independent IED configuration
- Optimised IED and Gateway configuration
- Advanced remote management and maintenance solution
- State of the art substation engineering according to customer-specific requirements
- Standardisation of installations

## Hardware & Software

### XPG Gateway

XPG is a multi-protocol communication gateway that runs on ISOS (Industrial Secure Operating System) and host of the StreamX solution, both engineered and designed by Elvexys. It is also a chosen hardware or virtual appliance which is used for all communication applications, data processing and protocol conversions.

Furthermore, the Maintenance Application, a virtual XPG Gateway, allows to pool on request or automatically store the Disturbance recording files (COMTRADE) in a dedicated storage location as well as pooling Measured Values (MV) on IEC 61850 and save in a formatted database.

### GIS/MGU/AIS and A200 cubicle Simulator

The simulator infrastructure is mainly designed to simulate the GIS, the Mobile GIS Unit (MGU) and the AIS system with their respective IEDs. The goal in setting up this infrastructure is to extensively test the complete substation configuration and protection functions before the deployment in the field.

### Helinks STS-SD

Helinks STS-SD is a vendor-independent IEC 61850 power system engineering tool that provides system specification and configuration files. Using this tool, the entire IEC 61850 substation design and architecture is created, and the safety and control functions are defined.

### StreamView

For this project, the StreamView application has been chosen to visualise the Goose Supervision.



## Protocols & Standards

### Communication

- IEC 61850
- IEC 60870-5-104
- IEC 61850 DR (Disturbance Recording)

### Management

- SNMP V3 (Client & Agent)
- NTP
- Syslog Client
- Radius (for IED)
- LDAP-S Client (for Gateway and IED)