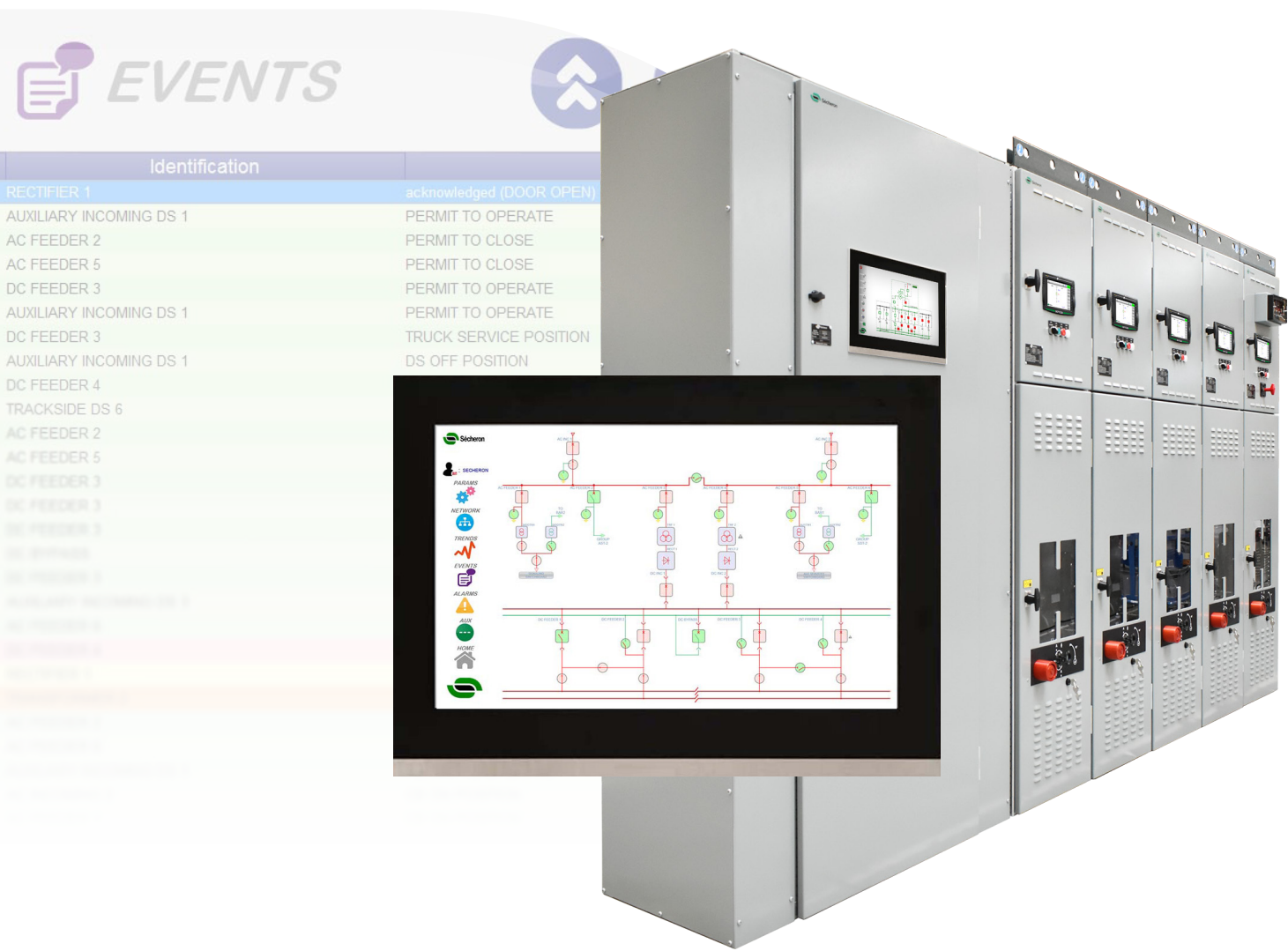


# CONTROL COMMAND & LOCAL SCADA

## STELLA-KEOPS



# STELLA

## PROTECTION & SUPERVISION



Sécheron has been developing and manufacturing safety devices for DC traction systems for the railway industry for decades. We have drawn upon our extensive experience with DC traction systems and the related industry standards to develop our STELLA product range.

All STELLA products, including control and protection devices (SEPCOS range), control and supervision (KEOPS), stray current monitoring system (SCMS) and for the help of operation and predictive maintenance (IOMS), are designed based on our strong experience in the field and customer feedback to answer the railway requirement and simplify our customer's follow up of their traction power substations.

STELLA products are designed with the latest technology, with the modular design allowing the customer needs to be met even on the most complex of projects.

## GENERAL INFORMATION

The solution provided by Sécheron for local control and monitoring of traction substations is a significant step in supporting operations and maintenance of the power supply network. In order to meet high demands in reaction time and cost efficiency, the powerful control and supervision system is based on modern communication protocols and combined with user-friendly interface.

In addition, all information, documents, events, detection curves, substation history and diagnostic are available to be transmitted to the centralized SCADA system of the network.

## STANDARDS

Our products are fully compliant and type tested according to the following standards:

- **IEC 62351 (EN 62351)** | Power systems management and associated information exchange – Data and communications security
- **IEC 61131** | Programmable controllers

## MAIN BENEFITS

- ✓ Supervision of the complete substation: graphical display of measurement values, positions of breakers, alarm management, trending management, disturbance
- ✓ Command of all motorized devices including mV breakers and DC breakers
- ✓ Parameter setting of all protection relays
- ✓ Possibility to define special control sequences
- ✓ Historical visualization of relevant data
- ✓ Wide range of communication protocols
- ✓ Safe and reliable

# HARDWARE

The control command/local SCADA is generally composed of the following equipment:

- The heart of the system: an industrial **PLC** (SEPCOS or other) to control and command all equipment
- The local SCADA runs in a rugged industrial-grade **PC** suitable to operate in the harsh environment of the substation (panel PC with a multi-touch screen)
- The local SCADA communicates using industrial **buses** to all the field-level controllers and optionally to the remote customer supervision SCADA
- **Digital and analog inputs/outputs** modules to control the equipment directly by wire when required
- **Ethernet switch(es)**
- **Media converters** (copper cable or optical fiber) or protocol gateways if necessary



## COMMUNICATION

The control command/local SCADA developed by Sécheron is a modular system designed for communication and/or control of each part of traction power substations.

The control command/local SCADA allows required interactions between different panels of a traction power substation using specific power network protocols and/or standard industrial network protocols (such as IEC 61850, IEC 60870-5-101/104, DNP 3.0, Modbus-TCP, Profinet) and serial protocols (Modbus-RTU, Profibus-DP).

The system is an interface between the traction substation and the external customer control systems (e.g. overall SCADA supervision system).

### Flexible connectivity

- Copper cable
- Optical fiber

### Physical layer

- Ethernet
- Hard wire

### Redundant networking possible

### Redundant server possible

### Communication protocols

- IEC 61850
- IEC 60870-5-101/104
- DNP 3.0 (Serial/Ethernet)
- Modbus-TCP
- Profinet
- Modbus-RTU
- Profibus-DP

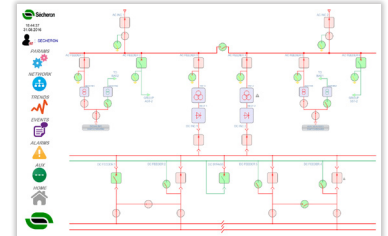
### Time synchronization

# SOFTWARE

## VISUALIZATION OF THE COMPLETE SUBSTATION

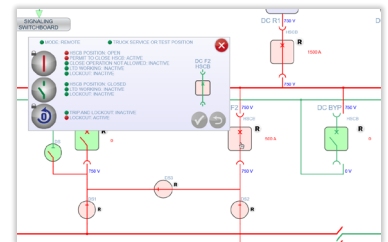
/// **The substation** is represented by a detailed single line diagram which displays several functions:

- Command key components (closing or opening order) via the touch screen by authorized operators
- Automatic line coloring to show which line sections and components are under voltage
- Display of the measured analog data (current, voltage)
- Display of the communication status between the local SCADA and the different PLCs



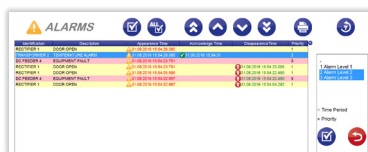
/// **The cubicle** is represented by a single line diagram, which displays the following information:

- Local/remote status
- Control of the circuit breaker, disconnector or change-over switch
- PLC status
- Measured values (including the circuit breaker's or/and disconnector's counter)
- Possibility to view the feeder schematic
- Possibility to view the detection curves of the feeder
- Configuration/modification of the set parameters in the cubicle's PLC
- Advanced parameter setting of circuit breaker protection functions



## ALARM AND EVENT MANAGEMENT

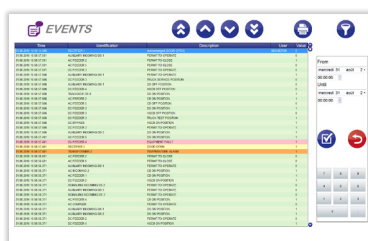
All events and alarms occurring in the substation are recorded by the control system. They are stored for a year and can be recalled by the local SCADA.



### /// Alarm monitoring

All active or non-acknowledged alarms are displayed in real-time.

An alarm is an event that interferes with the normal functioning of the substation (detection trip, interlock, communication problems, etc.).



### /// Event history

All events are stored and the last ones are displayed in real-time. It is possible to download the events from a specific period of time into an external USB drive.

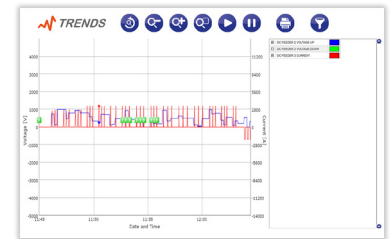
Events include alarms and any change in the substation (orders from operators, operation of substation components, logging in/out in the local SCADA, etc.).

## TRENDS

The analog values retrieved by the local SCADA are stored in an internal database and shown in real-time in the trends view.

On this screen, the user can:

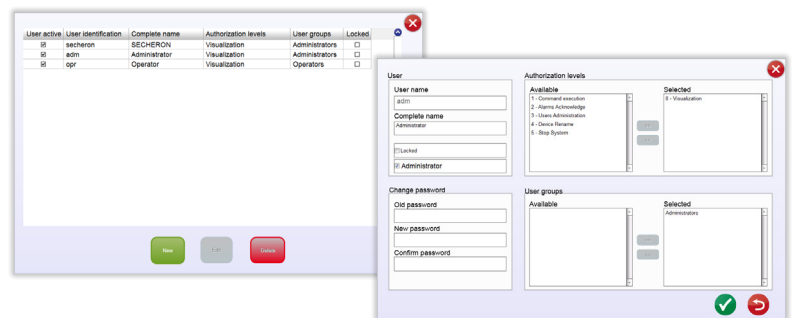
- Select the data to show the input voltage, output voltage and current for each feeder
- Filter by feeder (show only the data of one specific feeder)
- Change each trend curve color
- Zoom in and out (easier thanks to the multi-touch screen and its user-friendly interface)
- Export the trending data to a USB data storage key in CSV format



## OTHER FUNCTIONS

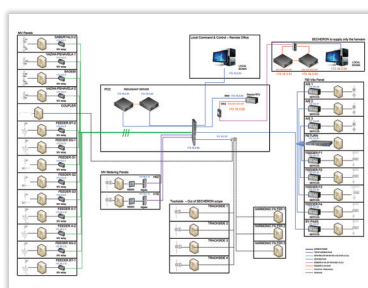
### User administration

The proper system administration is protected by a sophisticated access control functionality. A hierarchical access rights structure ensures that only authorized operators are able to view information, release switching commands, administrate the system, etc.



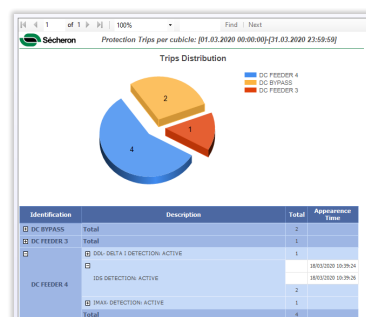
### Network monitoring

Through this screen, the user can see the communication status between the different devices of the substation.



### Reporting

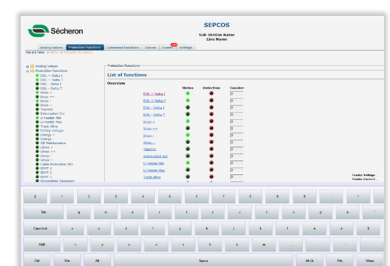
Useful reports created for statistical analysis, which can be exported to PDF or sent by e-mail.



### Web-server technology

Two options:

- Observer functionality only
- Full command and observer functionality



### Multilingualism

The user interface can be switched online between different languages and is realizable in any language.

### Redundancy

- "Hot Standby"
- Automated replication between active and standby server

### Database and archive

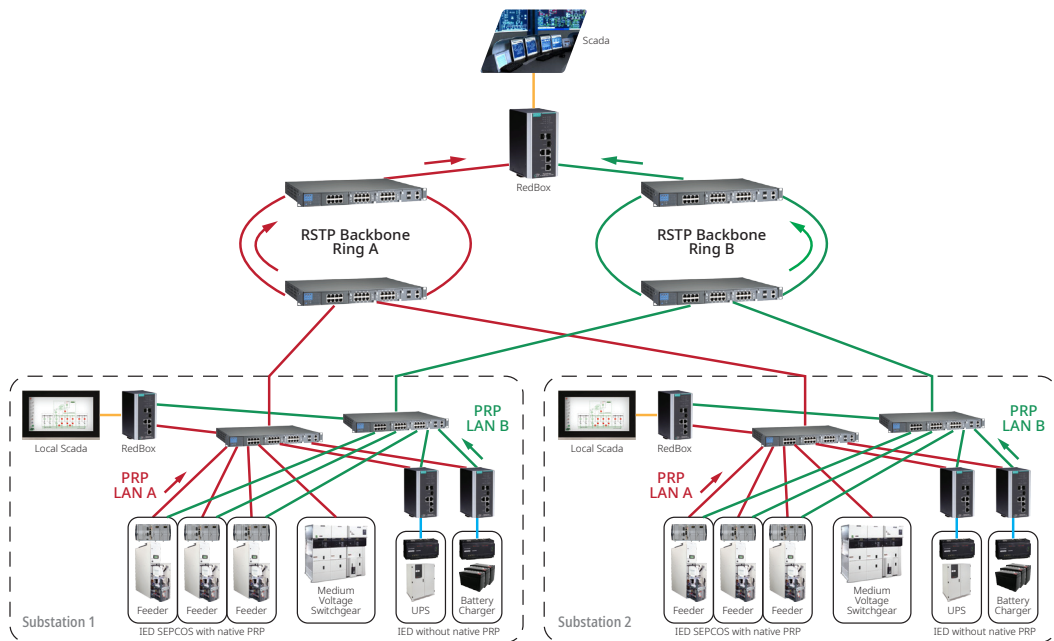
- Unlimited number of archives
- Automated data export to XML, CSV or dBase

# EXAMPLES OF CONFIGURATIONS

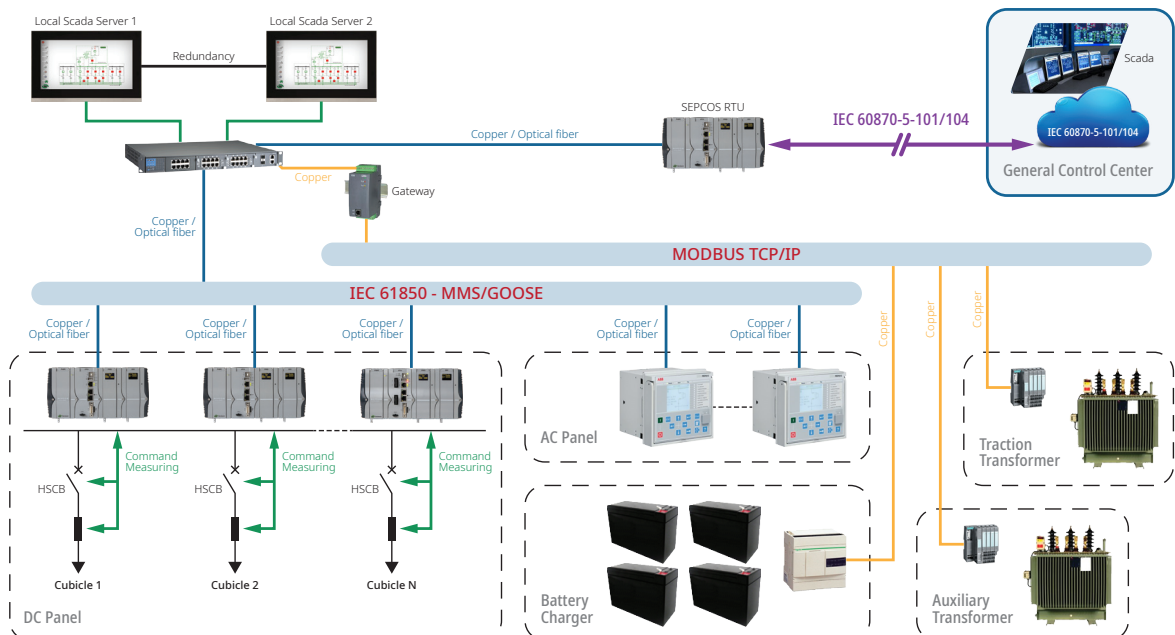
Control panel with local SCADA is a customized equipment which can be adapted to meet specific customer requirements:

- Complete system control command/local SCADA
- Local SCADA only for visualization of complete substation
- Local SCADA only as interface for the control panel of customer

## Redundancy star network using PRP

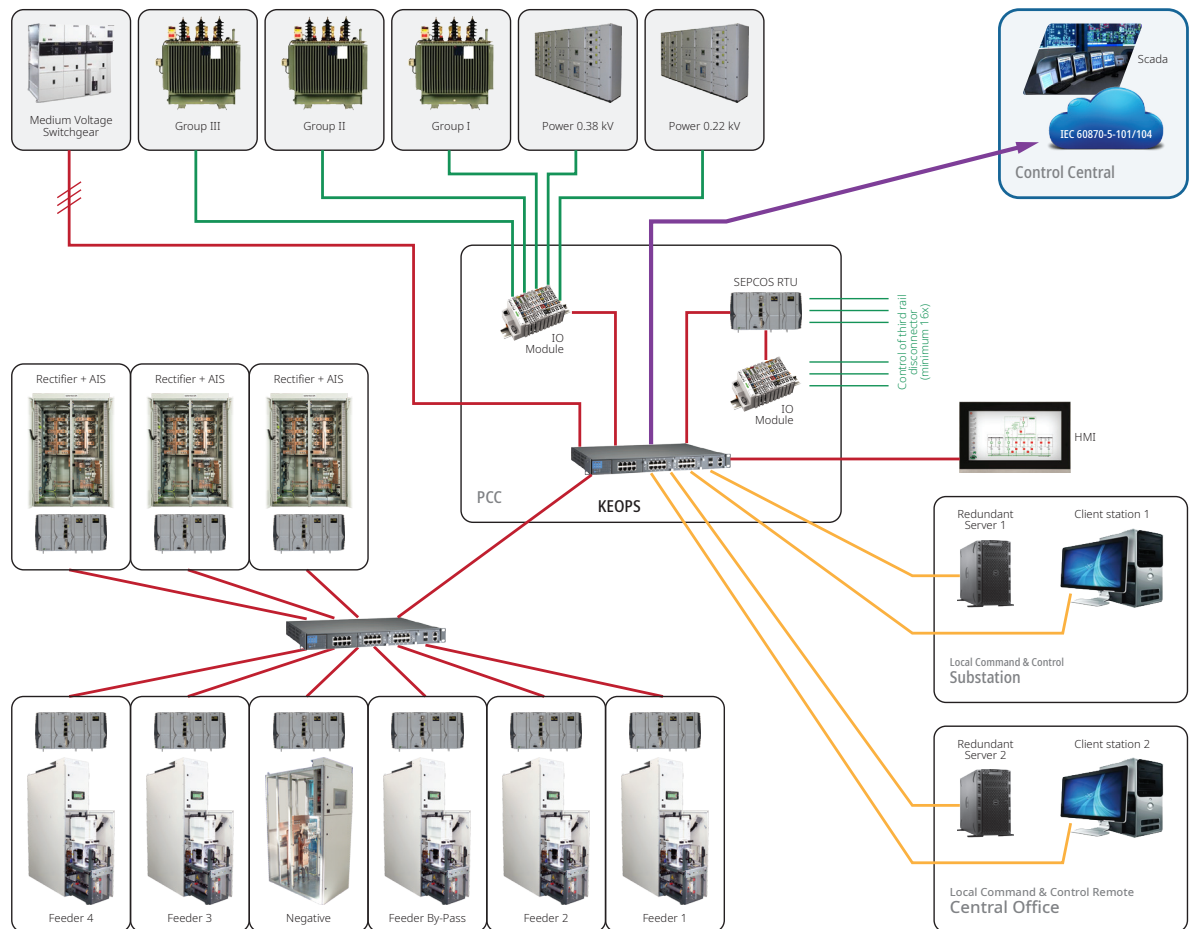


## IEC 61850 - MMS/GOOSE





## Redundancy local SCADA using Modbus TCP/IP



# RELATED PRODUCT

**SEPCOS**  
CONTROL & PROTECTION RELAYS

Refer to **Brochure SEPCOS** · SG825866BEN





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