



Substation Automation

The automation and control system allows full management of the Subsation with the latest control technologies.

The key word is complete integration among local compartment automation and the mimic panel of the Substation and the remote central control room (OCC). Integration means not only simplification of the wiring but an exchange of complete and rich informations for a more efficient substation management and effective planning of maintenance.

The integration starts from the local compartment where PLC / RTU are installed for local acquisition and control, connected to a Substation local network that allows data transmission to the station control system. Also IED devices are interconnected to the system.

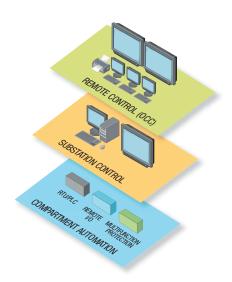


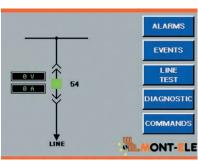
Communication

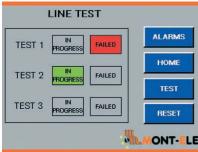
Ethernet networks provide a high-speed data exchange and optical fiber cabling allows immunity to electromagnetic interferences present in the substation.

The most common electrical protocols are used:

- IEC 61850
- · IEC 60870-5-101/103/104
- · DNP3
- · Modbus TCP/Ethernet/IP/ Profinet/S7/and more





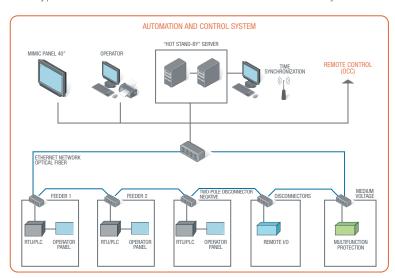


System

Integration provides a hierarchy of control:

- Local Compartment data are collected directly on the switchboard
- Substation the informations are concentrated in the Subsation supervision system that controls the plant
- Remote control using protocol communication signals, alarms and commands are exchanged

Typical architecture of a Substation Automation control system:



Local compartment automation

Inside the switchboards are installed the acquisition and control equipment PLC / RTU that are programmed with software according to IEC 61131-3.

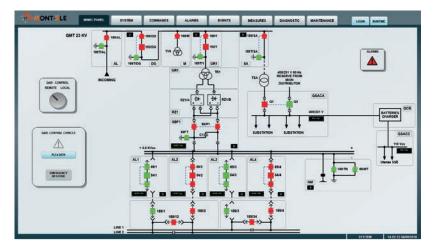
The following functions are realized:

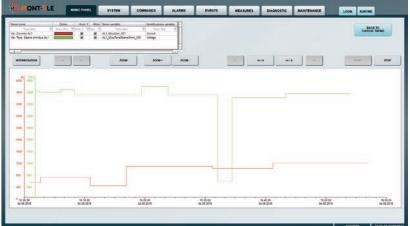
- Interlocks
- · Line test
- · Function of thermal imaging of resistance line test
- Alarms
- Local and remote commands
- · Communication management
- · Integrations with IED
- · Compartment diagnostic

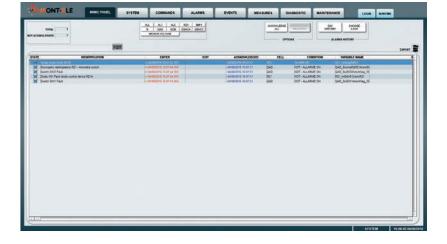
It's available the installation of a touch-panel for:

- · Command of controlled equipments
- · Support to command operations
- · Local alarms registration
- Local events registration
- · Setting of logic parameters
- · Diagnostic data visualization

SUPERVISION AND DIAGNOSTIC







The diagnostic and supervision system consists of a SCADA application installed on server machines dedicated to the data acquisition, registration and interface with the operator.

The typical architecture provides Hot-Stand by servers that are the front-end to the field and the client computer for the operator interface.

The deep level of detailed information obtained from each local compartment, allows to identify with high accuracy a possible failure in order to keep under control the whole substation.

The main functions carried out are:

- · Substation mimic panel and sections of detail
- · Substation interlocks and logics
- · Alarms visualization and registration
- · Historical record of events
- · Trends and measures
- · Control command page
- · Substation equipment diagnostic
- Automation and control system diagnostic
- · Plant maintenance
- Web access
- · Direct interaction with remote control

REMOTE CONTROL

Through networking technologies and SCADA software is created a remote control center (OCC) that collects data from each Substation using standard protocols, in order to realize a remote control system aimed at controlling not only plants but also diagnostics and maintenance activities.

The rich informations obtained from any Substation allow a deep diagnostic and reporting, in case of failure, of the problem identified in order to better organize the maintenance activities.

The use of mobile technologies such as cell phone, PDA or laptop, allows maintenance operators to stay connected to the remote control system even during operations, in order to have under control the entire system.





The information in this document contains general description of the technical options which do not always have to be present in individual cases.

Therefore, the required performance characteristics must be defined in individual cases during conclusion of the contract.

In view of the constant evolution in standards and design, and due to the continuous development, the characteristics of the elements contained in this catalogue are subject to changes without prior notification.

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