

Client: Various

Tipo impianto: wind farm



SUPERVISION AND CONTROL - WIND FARM

Figure 1: PC Substation Overview Screenshot

Plant specifications

Production envisages:

- One incoming High Voltage (HV) line (controlled by electric protectors)
- One or two transformers HV/MV (es.150kV/30kV) with controlled voltage variators
- One incoming Medium Voltage (MV) line with 3/5 MV outputs (MV cells with protection)
- Five to n electrical protections
- RTU
- 2/4 PC for control and monitoring



System architecture and configuration

RTU	VaTech o PLC Siemens
Network	Profibus/Ethernet/Fibra ottica:
	Ethernet:
Supervision	PasCC (WinCC) (SIEMENS)
DataBase	SQL Server

between protections and SicamPas between monitoring PC, Sicam Pas, RTU

Industrial PC

All alarms, electrical values and events of the substation are stored in the Sicam Pas which is an industrial PC

- Plant control and supervision
- Electrical protection control
- Exchane data with the rest of the world via protocol comms

Remote Control PC

From the Remote Control PC connected to a router it is possible to ::

- Control the state of the substation
- After login, access to organ control of the substation, visualize trends, alarms ad events as from a substation PC

RTU

Through the RTU's it is possible to :

- Exchange I/O data with the Sicam Pas
- Acquire and send to and from the external environment

Functional specifications

Control and Supervisor System has been developed for a series of substations located mainly in Sicily, each with different specifications.

The systems controls the functionality of maneuvering equipment through monitoring, keeps a report of all events and of any alarm there may be, puts in evidence, traces and stores standing electrical values and offers a diagnosis of all electrical apparatus and appliances of the substation.

The signals coming from the electric protections and external organs are sent/transmitted to a signal hub (Sicam Pas) with protocols IEC 60870-5-103, o IEC 61850.

Sicam Pas, in turn sends the configured signals to the monitoring systems or towards other external items.



From the Monitoring systems it is possible to activate/maneuver switches and/or line selectors, alarms can be acquired, it is possible to connect through remote DIGSI to the protections to parameterize them and to analyze every single protection.

Using two dedicate routers the system sends to Terna the production data (power, current, voltage etc) with IEC 60870-5-104 Slave protocol and it is always possible to export them with tools specific to WinCC.

Further it is possible to exchange signals with various RTU's with protocols IEC 60870-5-101, IEC60870-5-104 Master or Slave .

The PC's and protections are all synchronized through GPS or Irig-B signals coming from Master Clock.

The system can be controlled remotely with Web Navigator(tool di WinCC) or by means of Remote Desktop.



Figure 2: Architecture and connection scheme/layout