MicroSCADA

The Utility of Kainuun Sähkö Oyj Ordered New MicroSCADA System

In October 1998, the power utility of Kainuun Sähkö Oyj, Finland, ordered a new MicroSCADA system for the control and supervision of the power distribution system. The delivery comprises a redundant MicroSCADA system including communication equipment and software for the new control centre, one workstation with three screens and one workstation with two screens, and an ELCOM server. Existing RTUs will be connected to the new system.

Facts about the power utility Kainuun Sähkö Oyj

Total power distribution GWh	750	
Max. demand of power distribution	160	MW
Number of customers	52 000	
Stations	24	
Switching stations in the distrib. network	4	
Remote-controlled disconnector stations	74	
Power stations:		
- Pyhännänkoski		
Shares in power companies:		
- Kainuun Voima Oy		
- Kuhmon Lämpö Oy		
- Lapin Sähkövoima Oy/ Kemijoki Oy, Tunturituuli Oy		
- Lumituuli Oy		
Secondary substations	4 900	
110 kV transmission network	223	km
10 - 45 kV distribution network	7 000	km
Low voltage network	5 000	km
Personnel	164	

Reasons for selecting the MicroSCADA system

MicroSCADA was selected because:

- the system is open and can be easily connected to other systems and substations delivered by other suppliers
- the system can be connected to existing substations over the IEC870 protocol
- the system can be operated via a WWW browser
- back-up connections available through the dial-up telephone network
- the system supports new protection relay technology
- the system can be connected to the existing energy management system
- the system has complete redundancy
- the system is a modern software product
- maintenance is easy
- the system can be operated remotely from home
- the system can be connected to the existing IT system environment
- the system can be easily updated in the future

Main reasons for the modernization:

Remote control systems existing in the power utility: Telegyr 709/SCADA (Kainuun Valo Oy) acquired in 1982 and LSB LS2030 Landis&Gyr (Kajaanin Energialaitos) acquired in 1990.

Reasons for the procurement

- the oldest remote control system outdated
- combination of two separate systems
- advantages of new protection relay technology
- availability of spare parts
- to secure year 2000 compliance and the future operation of the remote control system
- compatibility with other systems

Size of the system

TG065 RTUs	6	
TG102 RTUs	16	
TG809 RTUs	1	
SPACOM relays	150	
LSA RTUs	1	
Disconnector stations	74	
Process pictures	110	
Report databases	approx. 110	MB

ABB Automation

Project responsibility

ABB	Kainuun Sähkö Oyj	
5 %	95 %	Picture editing
5 %	95 %	Database filling and testing
10 %	90 %	Installations
95 %	5 %	Commissioning of the system
10 %	90 %	Commissioning of the RTUs
10 %	90 %	Report specifications
95 %	5 %	System specifications

Special characteristics of the project

- Fast project execution: 12 months from order to commissioning.
- Five different IEC 870-5-101/Landis&Gyr and SPA protocol converters.

Communication

- Fixed 4-wire connection to the stations
- LAN 100/10 Mb/s
- Radio link
- Radio telephone
- Telephone connections

Communication with the stations using the IEC 870-5-101 protocol, which is converted to TG and SPA protocols in the stations.

Communication with the disconnector stations using the TG protocol, which is converted to the IEC 870-5-101 protocol on the NCC level.

100 Mb/s LAN is used on the control centre level.

Equipment

Servers	2 x 450 P2	1,
HSB		
Server/workstation	1 x 450 P2	1
Communication servers	1 x 400 P2	4
ELCOM server	1 x 450 P3	1
Workstation/SQL server	1 x 450 P2	1
Display	18” Tft display	5
Other equipment	See figure	

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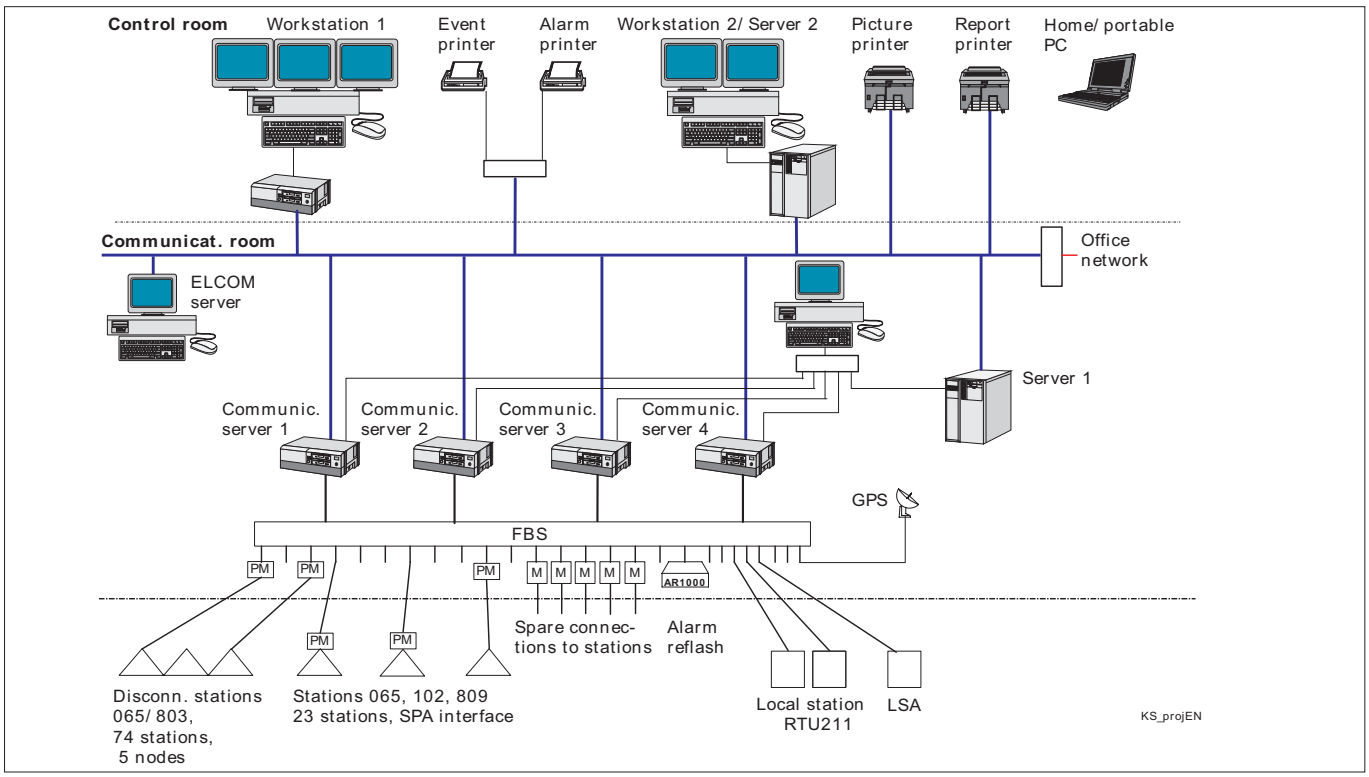

Fig. Network control system of Kainuun Sähkö Oyj.

Data subject to change without notice

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