



## APPLICATION NOTES FOR SATEL RADIO MODEMS

### WIRELESS COMMUNICATION WITH RADIO MODEMS SHORTENS POWER DOWNTIME

**ABB Automation** delivered in 1999 to Tampere Power Utility a MicroSCADA system for surveillance and control of the distribution network. In the modernisation of the existing control system up-to-date technological solutions were applied in the system configuration, field equipment, communication as well as human-machine interface.

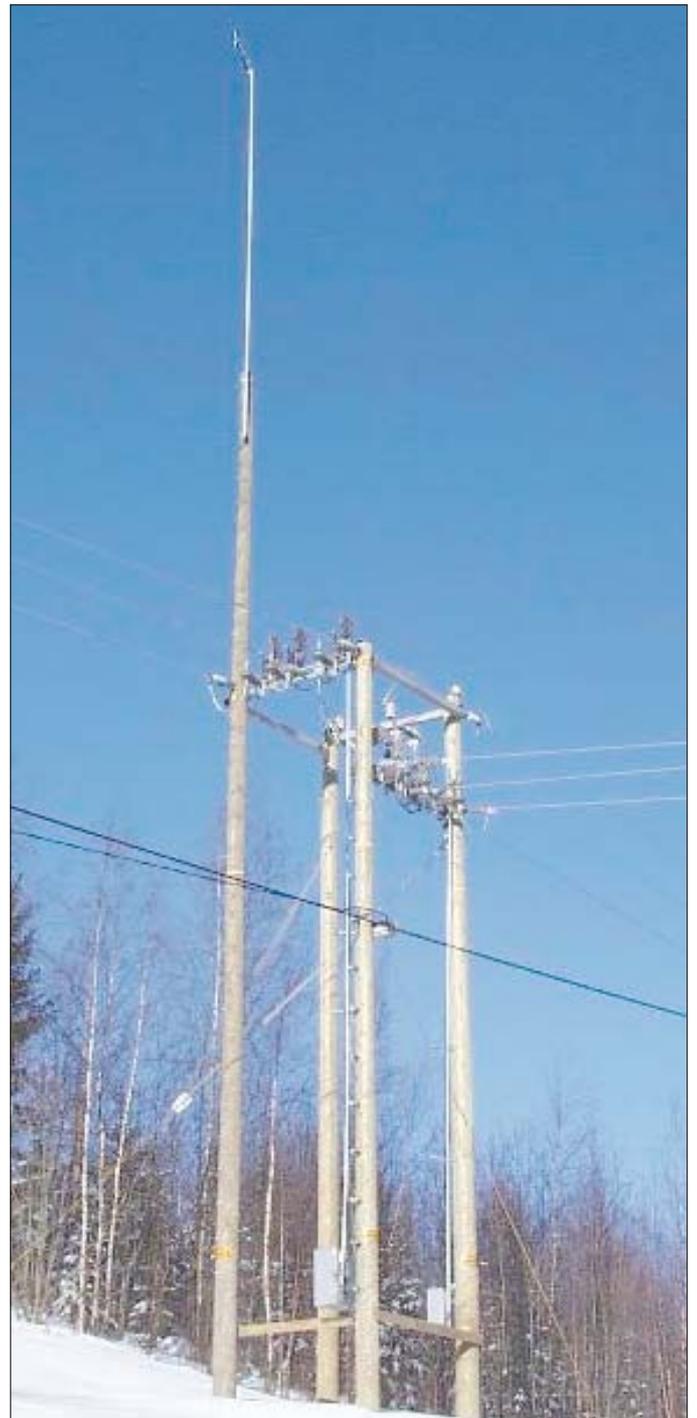
In the renovated control system, SATELLINE radio modems have a small but important role in providing a compact and reliable means of communication between the disconnecter terminal units and the network control centre.

The Tampere District power distribution network comprises 120 000 customers, 48 km of 110 kV line and 870 km of medium voltage network. The total amount of electric energy distributed p.a. is 1910 GWh, which is produced mostly by own 6 power plant units. Three of these are using earth gas, one peat and the others hydro-power. The distribution system includes 11 substations and 4 switching stations.

The MicroSCADA Network Control System is based on the Windows NT/2000 operating system. The highly redundant system features an open architecture allowing a wide range of communication protocols, interface to third-party software and databases, as well as connections to Internet and Intranet. The MicroSCADA system also supports the advanced features of modern protection relays installed as a part of the distribution network renovation. A dedicated, secured SCADA-LAN/WAN network is used for inside communication.

#### Remote control with radio modems

A total of 15 SATELLINE radio modems located at the disconnecter terminal stations are used for duplex communication with the Control Centre. As the disconnecter stations are scattered over a relatively wide area,

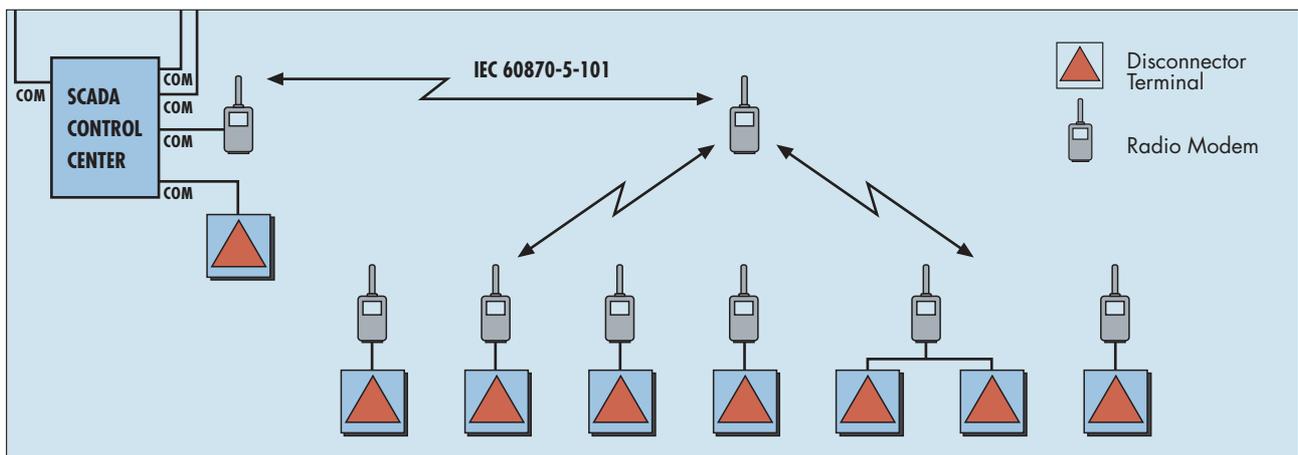
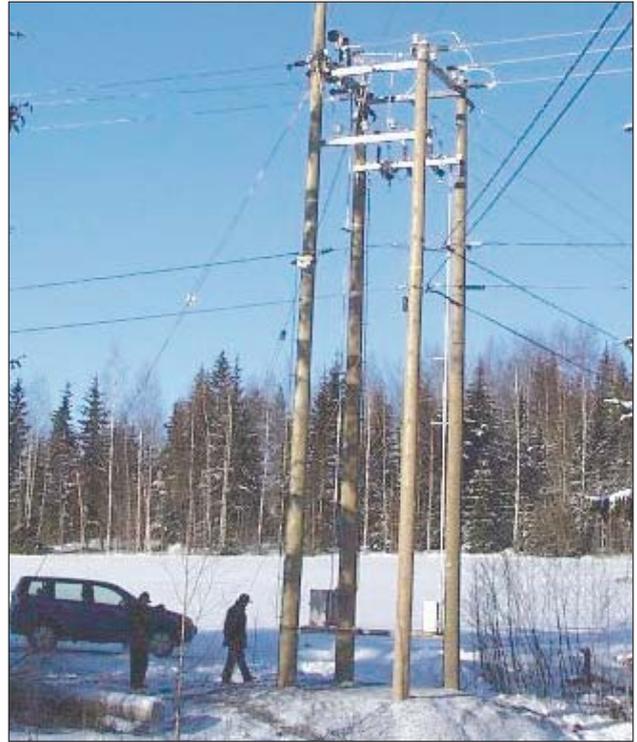


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beyond the radio range, a repeater radio modem is used as a link to deliver the messages. The radio modems are used in a polling mode. The Master unit at the Control Centre sends Disconnecter ON/OFF commands to the terminal units. It also keeps polling each radio modem sequentially. The radio modem polled transmits the disconnecter status information and the latest measurement data related to the power line current and voltage.

The disconnecter units are a network management tool used for locating a fault or restricting the number of customers affected in case of a power distribution failure.

When the power fails, swift action is essential in minimising the downtime. Remote control of the disconnecter units is a necessity. In case of isolated disconnecter stations with no fixed line connections, wireless communication through radio modems is a practical and economical solution.



**Manufacturer:**

Satel Oy, Meriniitynkatu 17, P.O.Box 142, FIN-24101 Salo  
Tel. +358 02 777 7800, fax +358 02 777 7810, E-mail info@satel.fi  
[www.satel.fi](http://www.satel.fi)