



Remote troubleshooting in

Extreme conditions

"Grange quickly introduced Mobitex in its power operations for controlling connectors, circuit breakers and monitoring alarms"

In a sparsely populated region like Northern Sweden, where weather conditions are harsh and temperatures can remain below -25°C for days on end, power outages are not only a relatively common occurrence. For families living in remote areas, they can be life-threatening. Vattenfall and Gränings, the power companies serving Northern Sweden, therefore need to be able to identify where a line is down as quickly as possible. Luckily, they have Mobitex.

Power quickly restored

When an outage occurs, power companies use a procedure called sectioning to localize the break. By using disconnectors to selectively switch out sections of the network, the portion of the network where a line is down can be isolated. This allows a repair team to be dispatched to the correct location almost immediately and power to be restored more quickly.

Both Vattenfall and Gränings, along with more than 100 other power companies in Sweden and Finland, work with the Finnish company Netcontrol, which develops, markets and supplies monitoring and control systems for energy production and distribution. In Vattenfall's case, Netcontrol has supplied equipment for controlling line disconnectors, small remote control stations and its entire communications network. For Gränings, Netcontrol has provided equipment for all network monitoring. In both cases, Netcontrol provided the Mobitex equipment, as well as the gateway between the Mobitex system and the control and monitoring system.

No interruption of operations

"Mobitex is gaining ground in the energy sector," says Lars-Gunnar Lif, regional manager for Sweden at Netcontrol. "The key factor for us and our customers in choosing Mobitex is its simplicity. With Mobitex, we only have to go out with some test equipment to check the level for the radio networks connections and after that mount the radio unit and the antenna. Once it is installed, it simply works."

Vattenfall and Gränings, which is now part of Sydkraft and its parent company E.ON, have been working with Mobitex for many years. In Gränings's case, Per Sundqvist, who was formally operations manager for Gränings's network in central Norrland, began working with Mobitex in the mid-1990s, when it was introduced in the company's forest operations for the collection of data for felling plans. Based on this experience, Gränings quickly introduced Mobitex in its power operations for controlling disconnectors, circuit breakers and monitoring various alarms. In some cases, Mobitex is also used for collecting analog measurements from the network. "Mobitex is extremely reliable

and provides superb coverage," says Per Sundqvist. "In the beginning, we ran tests and performed various control measurements, but we stopped doing that long ago. There has not been a single interruption of operations in ten years. Occasionally there may be temporary disturbances, but they are not noticed, since the traffic always gets through." Tage Nilsson, who is an engineer with Vattenfall has had similar experience. His company has been using Mobitex to control the power networks in northern Sweden since 1998 and is adding new areas all the time. This area offers some of Sweden's harshest weather conditions. "The network is excellent and provides very reliable communications," says Tage. "Many times it is our own equipment that does not work. Conditions can be extreme, and battery back-up for circuit breakers that require considerable power to operate can be a problem. Mobitex, on the other hand, is a solid performer."

Under severe conditions

The equipment most commonly used for sectioning in Northern Sweden is Netcontrol's M 2001 pole-mounted disconnector, which is a complete package that includes a motorized actuator, a modem, communications equipment, a remote control unit, heaters and a power supply with a battery backup. Once mounted, the unit will rarely need servicing. In Netcontrol's own tests conducted at the Tampere Institute of Technology, the unit continued to function even when the disconnector was covered with a 10 mm coating of ice and operating at a temperature of -50°C .

"Several customers including Gränings evaluated GSM and other alternatives for operation under these conditions but in the end chose Mobitex," reveals Netcontrol's Lars-Gunnar Lif. "In addition to issues of network coverage and reliability, it was difficult to find GSM equipment (radio network solution) with a dependable battery back-up. In a situation where a line goes down and the power is out, the battery back-up simply has to work. Otherwise the whole system is useless."



Pole-mounted disconnector from Netcontrol

Netcontrol is now in the process of expanding Vattenfall's equipment and adding Mobitex installations in more locations. In this project, use of Mobitex in Netcontrol's monitoring and control systems will be expanded to include transformer stations and small power stations. More data will also be accommodated. Netcontrol considers communications to be central to its remote control and monitoring solutions and prides itself for its extensive expertise in communication protocols and systems.

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