Protection and Substation Automation

Reference Project.

Protection and Substation Automation Systems
Applications and Solutions for Customers' Success

Statnett, Norway, Opts for
Indactic 650 Disturbance and Fault Recording Systems

Background

During the wintertime, when the sun has major difficulties to leave the horizon, the landscapes in Norway give you a fantastic contrast between the frozen and snowy fields and the multicolored wooden houses. Norway is also well known for the midnight sun, the northern lights that blaze across the sky on winter nights and the fish that gleam in the fjords, rivers and lakes.

In this country, where Trolls are a legend, the government has decided that "bad energy suppliers" have to be penalized. This urged network owners to improve the "management of faults and disturbances" in their electrical network and to install DFR's in their substations in order to prove their responsiveness in case of faults.

Statnett's reaction

Statnett, a Norwegian network owner, has decided to reduce 50% of time & costs required to locate faults and to restore the network. Due to long distances or rough weather conditions, a lot of substations are inaccessible within a short time. Another requirement was that the most important information about faults must be received in the network control center in Oslo **within 3 minutes by fax.**
The accessibility of event files for everyone and everywhere at any time had very high priority.

Statnett's decision

Statnett experts have evaluated more then 10 different disturbance and fault recording systems, and **INDACTIC 650** emerged as one of two winners with flying colors.

ABB Automation

Advantages as per Statnett findings

- Very high reliability according to the data sheet and presentation results.
- Full engineering & off-line commissioning by ABB who was 2 times faster than competitors: Commissioning of S/S Porsgrunn and S/S Halden took place within two days!
- Fully modular design, not susceptible to single-point failures. Each acquisition unit is truly stand-alone.
- Easily expandable and with the same level of performance and increased memory capacity.
- Accuracy of fault location better than +/- 2%
- Multi-tasking 32 bit application software **E_WINEVE** with selective **Expert** functions providing an automatic and fast fault summary (text file) which is transmitted in a very short time to 4 fax machines.
- Compatibility with competitors' SW. E_WinEve sends automatically a COM-
- $TRADE copy of all files to a central server on internet with the adress: http://ftp1.statnett.no/

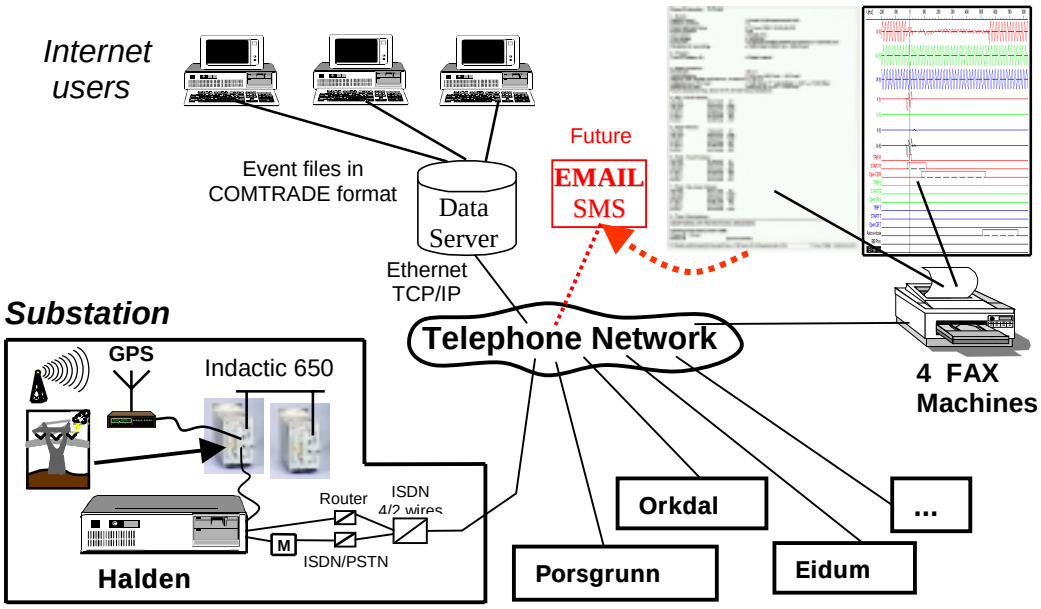
Scope of supply

This includes 25 **INDACTIC 650** disturbance recorders for five 132 to 380 kV substations complete with five local evaluation stations (industrial PC).

Experience gained

Statnett has provided technical and communication support. The good cooperation with Statnett and Mr. Schaug-Pettersen lead the fastest Indactic commissioning we ever made to a success story.

A dramatic storm can rapidly create outages of several circuits within a very short time. With the conventional system of transmitting all fault records by telephone lines respectively Ethernet (TCP/IP) connection, the communication would be jammed.
The **Expert** feature of the **INDACTIC 650** system performs a fast local evaluation and a text file only if a trip occurs and if the fault is on the line - taking only a few seconds of transmission time. This ïncludes the fact that the conditions of the circuit and the curves of the corresponding acquisition station are transmitted to the central station fax (+ 3 other faxes).
This enables Statnett engineers to quickly focus on circuits were the supply is interrupted and bring a repair team to the spot rapidly.



Conclusion

A highly reliable fault reporting and disturbance recording system is essential for monitoring the electrical transmission network and power plants.
Fault recording systems like **INDACTIC 650** enable the system operator to determine substation/generation plant failures, to diagnose faults of switchgear, control equipment, protective relays as well as to analyze complex system behaviors.
In the case of Statnett, the planning and the project design was carried out by ABB Power Automation experts in close collaboration with the customer and the aim of achieving a high performance and cost-effective solution, thus matching the new rules of the Norwegian government.

Our experts are ready to help you

For more information please refer to the responsible sales engineer for your country or to substation.automation@ch.abb.com