



Henan Electric Power Company - SCADA/EMS



Sector of activity :

Energy Control Systems

Client :

Henan Electric Power Company

Year of completion :

2001

Financing :

Export Development Corporation

Mandate :

To design, supply, install, and commission a new Energy Management System (SCADA/EMS) for the Henan Electric Power Company, which operates the provincial power transmission network in Henan province of China. The scope of work included the delivery of all hardware, software, documentation and training for the new system, as well as all necessary testing, field installation and adaptation services.

Description :

The Henan Electric Power Company maintains and operates the transmission network in Henan province of China. Its transmission network is an integral part of the Central China Power Network, which covers Henan, Hubei, Hunan, and Jiangxi provinces. The Henan power transmission network includes seventy-two 220 kV transmission lines with a total length of 4,749 km. It is connected to the CCPN via one 500KV and two 220KV transmission lines, receiving power from the south in summer when the Yangtze River is at its highest level and sending power to the south in winter when the Yangtze River is at its lowest level. Henan Province is located in eastern central China and has a total area of 167,000 square kilometres and a population of over 92 million, making it China's second most populous province.

The SCADA/EMS is installed in Zhengzhou, capital city of the Henan province. The system includes Supervisory Control and Data Acquisition (SCADA) applications, Network Analysis and Security (NAS) applications, Short-Term Load Forecast, Interchange Transaction Scheduling, and Unit Scheduling.

The SCADA/EMS is based on a distributed client/server architecture designed to internationally recognized standards. Commercial off-the-shelf equipment is used throughout the system, and includes HP Alpha servers, HP Alpha workstations, communication equipment, and peripheral equipment connected to a local area network. The system is fully redundant to ensure high availability, and provides automatic fail-over features.

The SCADA software is based on the GEN-3 product developed by SNC-Lavalin Energy Control Systems. The database is maintained in an Oracle RDBMS stored on RAID-1 storage arrays. The system includes redundant serial channels supporting the DNP3 protocol and SC1801 protocol for communicating with remote terminal units. The user interface supports Chinese character entry and display capabilities.

The EMS applications are fully integrated with Nexant PCA Powersuite, and include the Network Topology Processor, Bus Load Scheduler, State Estimator, Dispatcher Power Flow, Transmission Constrained Generation Dispatch, Reactive Reserve Monitor, Contingency Analysis, Optimal Power Flow, and Volt/Var Control, and Penalty Factor Calculation. A built-in Application Sequence Controller coordinates the execution of these applications.

The SCADA/EMS provides valuable tools to assist the operators in operating the power system to high performance standards, in particular, network security. Since installing this system, the province has improved power system performance, energy conservation, and load management.

Customer training consisted of formal classroom training and on-the-job training (OJT) for operating and maintaining the SCADA/EMS.

Services provided :

A turnkey contract including project management, hardware, software, system integration, acceptance testing, documentation, customer training, and all necessary field installation and adaptation services.



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