CASE STUDY
POINTING THE WAY TO THE FUTURE OF MANUFACTURING

SEVENTH FRAMEWORK PROGRAMME

Operator Training Simulator

ABB www.abb.com

ABB is a multinational corporation headquartered in Zurich, Switzerland, operating in robotics and mainly in the power and automation technology areas.

A key to the successful operation of a highly complex high voltage transmission network is a control center staff having both knowledge and experience in its operation. The Operator Training Simulator (OTS) is the modern tool to achieve that goal. Training of operators has become an increasingly important requirement in the implementation and continued operation of Control Centers.

The advent of the Smart Grid will make the need for OTS even more important in the near future.

Simulation and Forecasting Technology role
Operator training simulator

Sector
Engineering and Electronics

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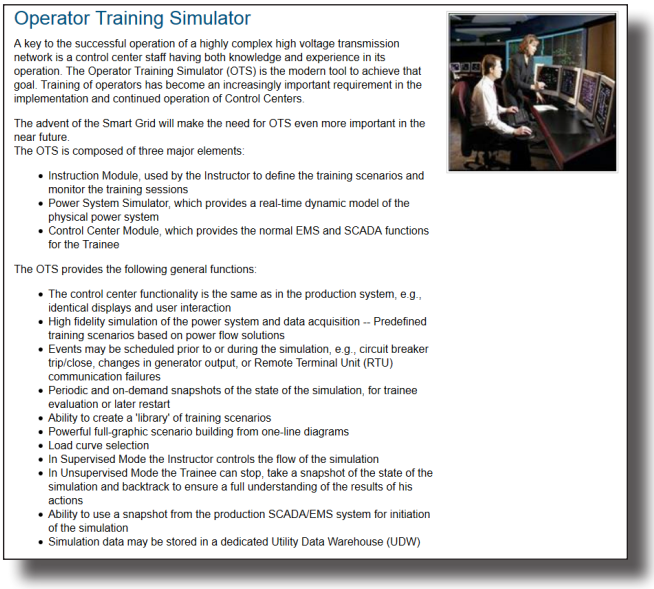

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The OTS is composed of three major elements:

- Instruction Module, used by the Instructor to define the training scenarios and monitor the training sessions
- Power System Simulator, which provides a real-time dynamic model of the physical power system
- Control Center Module, which provides the normal EMS and SCADA functions for the Trainee

The OTS provides the following general functions:

- The control center functionality is the same as in the production system, e.g., identical displays and user interaction
- High fidelity simulation of the power system and data acquisition -- Predefined training scenarios based on power flow solutions
- Events may be scheduled prior to or during the simulation, e.g., circuit breaker trip/close, changes in generator output, or Remote Terminal Unit (RTU) communication failures
- Periodic and on-demand snapshots of the state of the simulation, for trainee evaluation or later restart
- Ability to create a 'library' of training scenarios
- Powerful full-graphic scenario building from one-line diagrams
- Load curve selection
- In Supervised Mode the Instructor controls the flow of the simulation
- In Unsupervised Mode the Trainee can stop, take a snapshot of the state of the simulation and backtrack to ensure a full understanding of the results of his actions
- Ability to use a snapshot from the production SCADA/EMS system for initiation of the simulation
- Simulation data may be stored in a dedicated Utility Data Warehouse (UDW)

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