

OpenOTS

Operator Training Simulator

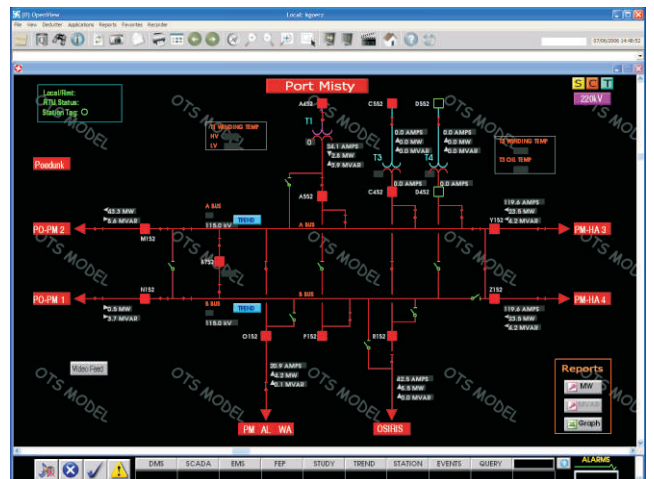
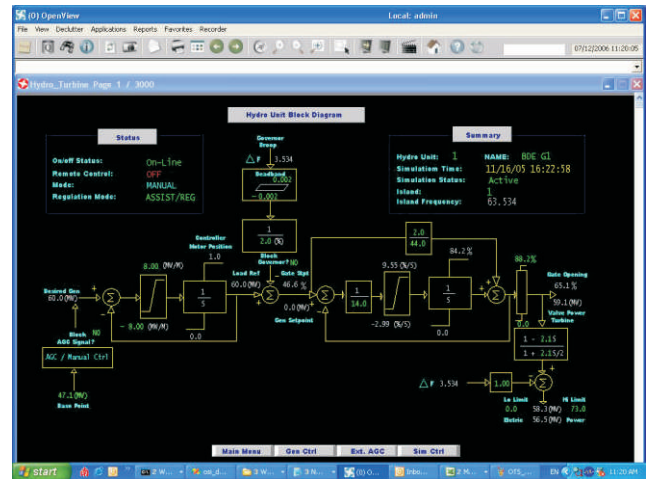
With system security pushed to its limits, the term “contingency” has taken on new meaning. What used to be considered worst-case but low-risk operational contingencies are now uncomfortably worst-case and high-risk. And the number of “worst-case” contingencies seem to grow daily as more demand is placed on the system. You must prepare system operators for very real and detrimental possibilities.

The Operator Training Simulator, **OpenOTS™**, system helps you regain control by giving operators first-hand experience with events ranging from system blackouts to component losses to normal and secure operations.

OpenOTS provides simulated real-time system responses to events that let the operators “practice” and “script” their actions without risking the operational integrity of the actual power system.

OpenOTS provides three primary components to insure a realistic experience for system operators:

- **Power System Simulator:** Within the **OpenOTS** environment, the simulator becomes the power system (from a trainee viewpoint). Equipped with sophisticated dynamic modeling, the Power System Simulator accurately reflects real-time response to system events and operator action. Modeling includes a power flow for the transmission system supported by dynamic models for generation response, frequency response, relay action, load variation, and external control areas.



The Power System Simulator also includes a realistic simulation of the major components of electric hydro plant (turbine, penstock, surge chamber, etc.). Simulation of generator startup and shutdown sequences is also provided.

- **Instructor Interface:** In order to maintain complete control over the simulated real-time power system, the Instructor Interface gives the instructor the ability to interact with any entity within the system. For example, by using this interface, the instructor may produce pre-defined or on-the-fly uncommanded events within the simulated system.

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These events may be applied to any telemetered or non-telemetered quantity defined within the Power System Simulator's model. Also, the Instructor Interface facilitates the setup, start, stop, and pause of any training scenario.

- **Control Center Model:** The operations trainee must experience an identical environment to that provided within the on-line operational system. The **OpenOTS** Control Center Model provides this experience within the simulated system environment. But, this model is more than just a simulation. The software, user interface and capabilities are identical to that used within the on-line system. For example, the SCADA, AGC, Alarm Processing, and Interchange Transaction Scheduling experienced by the trainee is the same functionality as what will ultimately be experienced when working within the on-line system.

Realism is key. Power System component modeling is based on sophisticated techniques developed during the well-published Electric Power Research Institute (EPRI) OTS Research. The best concepts from this research have been implemented within a controlled environment that is easy to maintain and support. To ease the maintenance typically associated with OTS systems, the following maintenance-friendly concepts are supported:

- The network model used by **OpenOTS** is the same as that used by the network analysis functions (**OpenNet™**) within the **monarch™** system. Therefore, maintenance of one naturally maintains the other.
- The trainee interfaces with the exact SCADA one-lines, databases and applications that are implemented for the on-line system. Instructor interface displays are automatically built by the system.

In today's rapidly changing utility environment, and the taxed infrastructure that these changes have created, OTS has become an important part of any control center. Whether as part of a new SCADA system or as an upgrade to an existing system, **OpenOTS** can provide you with a training system tailored to your specific needs.

