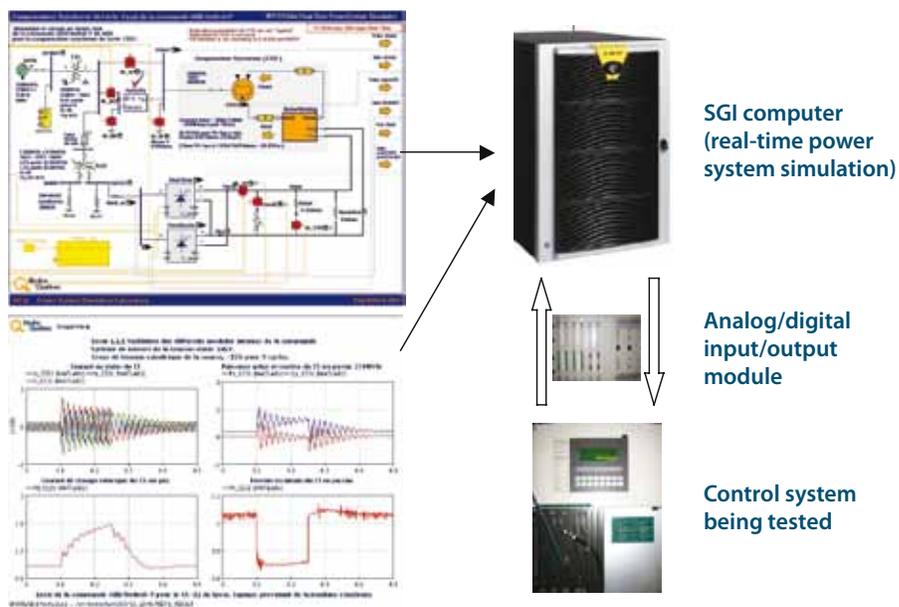




HYPERSIM

Real-Time Digital Power System Simulator

As power systems grow increasingly complex and sophisticated, simulation has become a major support tool for transmission system planning and management.



Combining digital versatility with real-time simulation accuracy

Based on expertise acquired over more than two decades, Hydro-Québec's research institute has developed HYPERSIM, a real-time digital simulation platform. It is a leading tool for transmission system studies, capable of representing a system of moderate size and interfacing it with control systems ranging from simple protective relays to complex AC-DC converter controllers.

HYPERSIM is a top-performance, fully digital simulator designed for in depth analysis of transient electromagnetic and electromechanical phenomena. It is used to analyze and validate power system control and protection circuits. HYPERSIM runs on SGI parallel supercomputers.

Harnessing parallel-computing power

HYPERSIM harnesses the power of an SGI parallel supercomputer and includes modules for interfacing with the control systems being tested. The full power of the simulator is leveraged using the three software systems below.

- > HYPERSIM: A power system diagram editor combined with imposing block libraries covering all components of the power system (electricity generation, transmission and distribution). A graphical interface also allows the user to create customized models using basic control blocks or models designed in the MATLAB/Simulink environment.
- > SCOPEVIEW: A simulation result acquisition and processing system. This powerful system allows user-friendly viewing and analysis of simulation results.
- > TESTVIEW: A test automation system. This tool helps program automatic test sequences and thus perform thousands of statistical tests with no user intervention.

Key applications

The HYPERSIM simulator helps improve power system performance and reliability. Used on a daily basis and constantly upgraded by Hydro-Québec, this proven technology is now available for numerous applications, such as the following:

- > Performing studies on complex, large-scale power systems
- > Closed-loop testing of control systems (HVDC, SVC, TCSC, AVR, PSS, etc.) and protection systems to validate their performance and facilitate their commissioning
- > Studying overall AC system operation (generation, transmission and distribution)
- > Developing, improving and assessing new control and protection concepts
- > Simulating wind farms connected to the transmission system
- > Replicating past events on the power system using the control and protection systems involved
- > Training staff on the maintenance of complex control systems

For information:

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March 2010

2010G080-16A