

# High-fidelity Simulation

## Your Requirements:

- Train control room operators for efficient response to normal and abnormal plant operation
- Evaluate trainee performance for operator qualification programs
- Verify control logic prior to implementation in the “live” control system
- Develop and validate best practice operating procedures
- Study plant responses to “what-if” scenarios through changes in energy production, fuel usage, material balances, stoichiometric ratios, or other physical parameters.

## The Best Solution:

Ovation™ High-fidelity Simulation incorporates robust first-principle models that duplicate your plant’s live operations to provide your staff with keen insight into your plant’s behavior during normal and abnormal operating conditions. Plant models are based on dynamic first-principle engineering and thermodynamic relationships that accurately reflect the operation and interaction of your facility’s equipment. Ovation’s High-fidelity Simulator models are created from a suite of graphic-based software tools especially designed for power plant thermo-hydraulic modeling. These tools use conservation equations in a complex matrix solver for mass, energy, and momentum balances to provide fast and stable responses for pressures and flows.

Operators can use Ovation High-fidelity Simulation to efficiently perform fast-paced operating activities with confidence. As a decision support tool, your operators can gain a higher level of process familiarity and develop best-practice procedures that ultimately contribute to reduced plant outages, downtime, and startups. Ovation Simulators are the perfect tool to capture the wealth of specific plant process understanding embodied



in your operations staff and easily transfer this knowledge to new employees, arming them with skills gained through years of on-the-job experience.

As an engineering analysis tool, Ovation High-fidelity Simulators can be used to tune system parameters, validate new or changed control strategies, optimize alarm management, and test various “what-if” ideas to determine a feasible reactive procedure.

Customers constructing new plants can use Ovation Simulation to fine-tune control schemes, train new operators, upgrade skills of existing operators, and verify that all operational aspects of the plant are ready for generation well in advance of commissioning.

## Benefits

- Trains operators for efficient responses to unit operations including recognizing and avoiding incidents that could result in lost production
- Tests and validates new or changed control strategies prior to live operation
- Fine-tunes and verifies control system design prior to plant startup to minimize commissioning time
- Assists in development of best-practice operating procedures for efficient unit operation
- Transfers operational knowledge from experienced staff to new employees
- Enhances operator confidence for quick response to dynamic operating conditions

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## Ovation Simulation Solutions

Function	Tie-back	High-fidelity
<b>Models</b>		
Built from Ovation control system algorithms developed specifically for the power generation industry	X	X*
Built using high-fidelity, thermodynamic, first-principle mathematical models		X
<b>Functionality</b>		
Control logic testing and verification	X	X
Operator training and qualification	X (limited)	X
Procedure development and validation	X (limited)	X
Engineering test bed for normal and abnormal operations		X
Engineering analysis for “what-if” scenarios		X
Full Instructor functionality with trainee evaluation tools		X

\* High-fidelity simulation projects implemented by Emerson will use Ovation control system algorithms. Models provided by a third-party will use that vendor’s modeling tools.

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