Current market issues pose some thought-provoking questions:

**Aging Workforce**

More than 50% of the utility workforce is over 45 years old.

With retirement right around the corner, how are you going to capture the wealth of existing process knowledge to share with the next generation?

**Federal Regulations**

The North American Electric Reliability Corporation (NERC) critical infrastructure protection standards (CIPs) require power plants to secure their production systems.

Are you prepared to adhere to these standards and validate that your control system is not vulnerable to security threats?

**Abnormal Situations**

Abnormal operating incidents can be triggered at any time by failures in equipment, people, processes, or some combination of the three.

Is your staff equipped with the right tools to deal with an event’s life-cycle from prevention to awareness, response, and post-analysis?
New Unit Operations

Whether in startup or ramping up megawatts to meet load demand — your personnel need to know exactly what to do and when to do it on your new unit.

Is your operations staff ready to quickly and safely start-up and control your new plant to meet the immediate need for more power?

Changing Conditions

Your existing units are frequently being upgraded, from adding new environmental equipment to operate within government guidelines or fine tuning processes for improved performance.

Do you have the technology to study and evaluate proposed plant changes and their affect on your people, processes, and assets before proceeding with a major capital project?

Investor Pressure

Today’s competitive business environment increases the pressure to obtain the biggest return on any investment. You are expected to accomplish more with fewer staff and reduced budgets.

Can you justify the cost of new technology with a quick return that will save you not only money but time?
Operator training and qualification programs

Training with simulators provides comprehensive operator instruction for new personnel, while meeting the need to provide periodic refresher training and qualification for more experienced operators.

Procedure development and validation

Simulation flexibility allows for development of the best plant operating practice procedures and the systematic transfer of plant and process knowledge from the most experienced and productive operators to the entire operations staff.

Emerson’s Ovation™ Simulators can help to transition personnel and technology during times of change. With Ovation Simulation, the complete understanding of complex operations and unique plant characteristics gained through years of on-the-job experience can be easily transferred from your current operations experts to the next generation.

Ovation™ Simulation
Meeting the challenges of the 21st century

Ovation Simulation can assist your facility with:

Ovation Simulation using virtual technology minimizes hardware costs while providing full functionality.
Control logic testing and verification

Through simulation, you can gain confidence in new control strategies before implementing them on the actual plant distributed control system. This practice results in fewer unexpected plant incidences, avoids plant trips, reduces maintenance expenses, and leads to safer operations and greater availability.

Engineering test bed for plant process improvements

As an engineering tool, simulators provide a realistic platform for evaluating plant equipment modifications before project execution. With the ability to easily explore various ‘what-if’ scenarios, plant engineers can better assess the affect of plant changes prior to making an investment, thus reducing risks and improving the results of implemented projects.

“Our plant operators say the Ovation Simulator is the best training tool ever provided to them. The decision by management to invest in this technology is viewed by the operators as a long-term investment in them. It provides a training program custom designed to maintain and improve their skills which ultimately provides better and more efficient plant operation.”

Terry Briggs
Shift Leader, Operations
Dairyland Power Cooperative
J.P. Madgett Station

Ovation Simulation provides high-level tools for configuring and tuning plant process models.
Flexible Solutions
For accurate decision making

Ovation Simulators can be tailored to meet the unique operational challenges of your facility. Utilizing tie-back logic, process algorithms, and comprehensive high-fidelity models, Ovation Simulation can provide a full range of training and engineering solutions that best fits your needs and budget.

Ovation Simulation using tie-back logic is a valuable tool for fundamental operator training, control system navigation, and process familiarization. Tie-back simulation is also used for checking new control strategies prior to loading the logic on the actual control system.

If a high degree of realism is desired, Ovation Simulators using high-fidelity models and process algorithms can be applied to simulate major plant systems, auxiliary systems, or the total generating unit.

This level of simulation provides not only the most realistic training experience available, but also serves as an accurate test bed for process or equipment "what-if" engineering studies.

Emerson takes the world of simulation a step beyond the traditional classroom environment and places it directly in your control room. Power generators will soon be able to integrate the best of both worlds, control and simulation, to further enhance their operations by improving reliability and availability while dealing with a workforce in transition.

Ovation Simulators can include session start/stop, save, and rewind functions to provide greater flexibility during the training experience. Additional options are also available, such as the ability to allow instructor initiated malfunctions for various plant events during training sessions. This capability prepares operators to decisively react to abnormal situations.

By implementing a flexible design, you can readily keep your simulator current with plant control operations. As changes or additions are made over time in plant DCS control logic or equipment, the Ovation Simulator can be easily modified to keep pace with those adjustments.
Typical Ovation Simulator applications include:

- Control logic development, testing, and verification
- Control system navigation and familiarization training
- Startup and shutdown training
- Steady-state operation training including load handling
- Malfunctions and abnormal situation training including runbacks
- Operating procedure development
- Operator certification and testing programs
- Plant engineering development test bed

Ovation Simulators can be used to replicate a variety of plant systems such as:

- Conventional Boiler Applications:
  - Superheaters, reheaters, economizers, drains, and attemperators
  - Burner management
  - Sootblower
  - Precipitator
  - Flue gas desulphurization
  - Selective catalytic reduction
  - Coal and ash handling
  - Feedwater systems
  - Cooling water systems
  - Auxiliary Systems such as compressed air, auxiliary boilers, and chemical feeds
- Heat Recovery Steam Generators
- Steam Turbines
- Gas Turbines
- Electrical Systems such as generator, excitation, switchyard, and DC electrical
- Renewable Plant Applications

“Use of the Ovation Simulator helped to ensure that Con Edison’s investment in ERRP’s new plant technology would be optimized by well trained operators and accurate controls. One major benefit was safe and efficient plant startup that reduced the plant’s commissioning time from 4 months to 1 month.”

Hsiu-Chen Wang
Senior Engineer
Consolidated Edison of New York
East River Repowering Project
Project Management

Successful project execution requires an experienced team of industry experts, project managers, and lead engineers who know how to apply technologies designed specifically for the power generation industry. Emerson has been at the forefront of simulation since its introduction more than 30 years ago. Our Ovation Simulation specialists have engineered simulation solutions for numerous types of plants configured with equipment from a host of leading OEMs. Emerson’s team consists of highly skilled support personnel who are dedicated to designing and implementing innovative simulation solutions. The methodology applied to every Ovation Simulator project relies on accuracy and attention to detail using well-defined and validated processes.

Step 1 – Plant Walk Down
Working closely with your personnel, Emerson confirms the scope of supply and project schedule. Ovation Simulation specialists perform a plant walk down while interviewing your staff about typical plant processes and operations.

Step 2 – Model Design
A design document is created that details the modeling requirements for your simulation. The design is reviewed by the Emerson team and your experts to ensure modeling accuracy.

Step 3 – Implementation
Simulation models and control logic are loaded into assembled hardware. The models and logic are integrated and tested to validate proper operation.

Step 4 – Testing
Formal factory acceptance testing is performed. Your selected personnel and the Emerson simulation team exercise models using a variety of plant conditions.
Service

Behind every Ovation Simulator project stands an array of service and support personnel to assure your solution delivers the utmost in performance and reliability. Emerson stays with you long after your project has been completed through our long-term maintenance and support programs.

Keeping pace with plant equipment and control system changes is critical for accurate plant simulation. Maintaining an Ovation Simulator is a straightforward process since it uses the actual logic and graphics from your control system; translation of this software is not required. As your plant upgrades to the latest control technology or expands to include new plant processes, so can your Ovation Simulator. When required, our team of experts will upgrade your simulator to the same technology used in your plant DCS. The models within your simulator will also be upgraded to reflect any plant equipment or process changes.

We offer an array of support modules through our comprehensive SureService™ customer support programs. These programs help you to maintain healthy operations and enable you to leverage today’s digital technologies for predictive and preventative maintenance and operations.

The Ovation Simulation Advantage

Reduce

• Plant startup times through enhanced operational readiness and tested control strategies
• Forced outages by providing tools for effective operator guidance
• Project risk by decreasing human error
• Operations and maintenance costs through improved operator effectiveness

Improve

• Potential revenue by doing more with less
• Safety by preparing plant operators for correct reaction to equipment malfunctions and uncharacteristic plant situations
• Operator training for quick response to normal and abnormal plant operation
Unparalleled Industry Expertise
For over a century, Emerson has energized the power industry with new and revolutionary ideas. We understand the complexity of power generation operations, your unique application requirements, and your stringent performance criteria better than anyone else in the business. This knowledge is embedded in every simulation solution.

World-class Technology
Using the world’s most advanced technology, Emerson has been helping customers to train operators on the control of critical power generation processes for decades. Ovation Simulators provide a comprehensive solution to help meet operational readiness objectives for either new-build or existing-unit challenges.

Collaborative Environment
The Emerson simulation team is not complete without the expertise and skill provided by your staff. We encourage your training, projects, and generation station personnel to be involved throughout our simulator development process to ensure your complete satisfaction.

Long-term Support
Emerson has a long history of providing our customers with the highest level of support. Our commitment to long-term support for your Ovation Simulator will help you achieve business objectives, reduce or contain operating and service costs, and keep your system running at peak performance today and well into the future.

Strength and Stability
When executing critical projects, you need to know that the partners you select are strong and stable, and will continue to be a solid corporate presence far into the future. Emerson has a long history of designing, implementing, and supporting simulation technologies. We have an unparalleled portfolio of growth and success, even in years characterized by a lean business cycle. Our clear technology leadership and fiscally stable operations make Emerson the logical choice to design, engineer, and support your simulation projects.
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