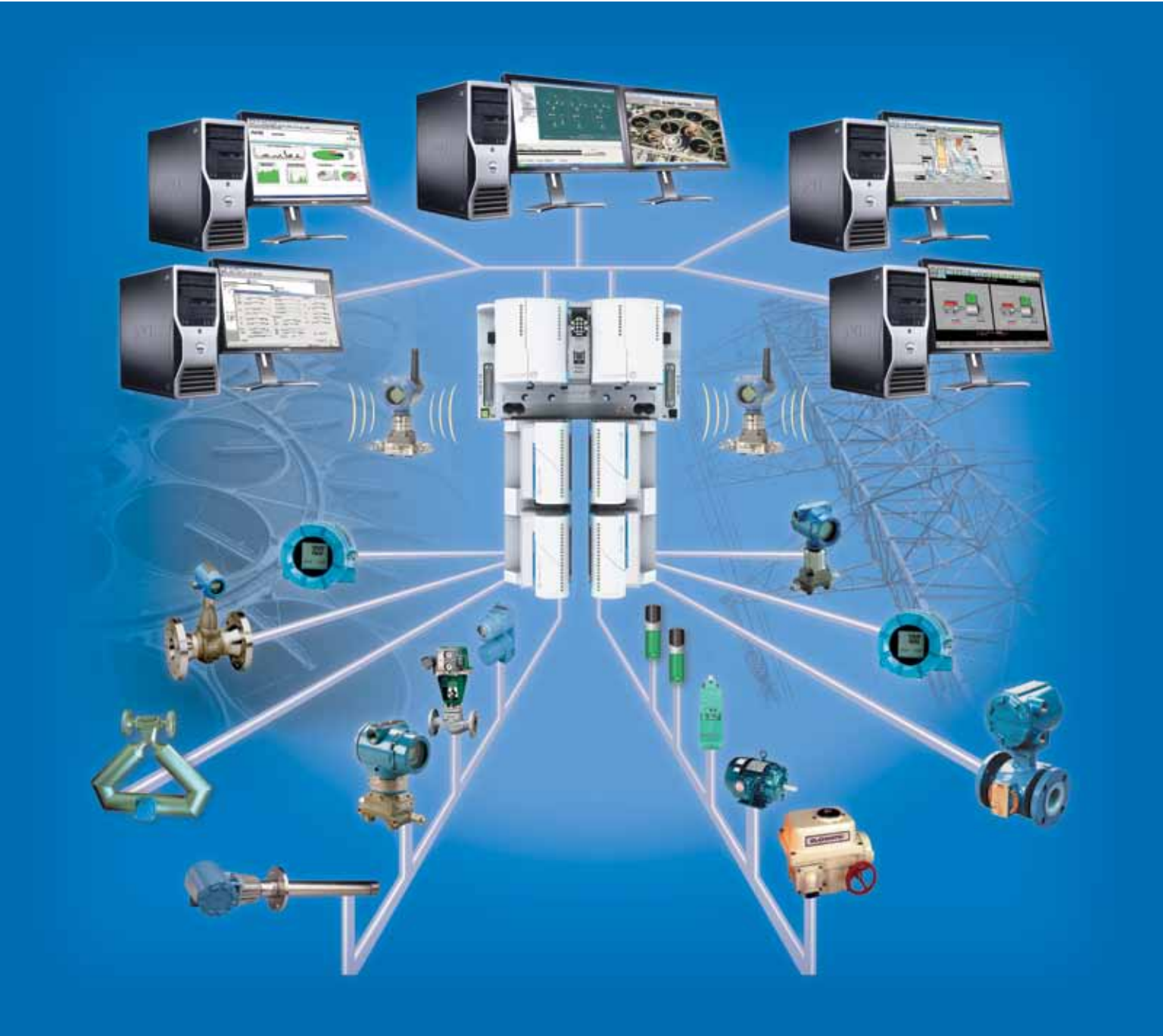


The Ovation™ Expert System

The world's most powerful technology for secure operations and best-in-class performance.



Ovation— The Expert System



A key component of Emerson's PlantWeb digital architecture, the Ovation™ expert control system gives users higher levels of plant availability, reliability, and environmental compliance. Optimized for the global power generation and water/wastewater treatment industries, Ovation embodies Emerson's five decades of unsurpassed expertise in the control and management of these complex operations.

Gaining a competitive advantage

The Ovation expert system was designed from the ground up to help you achieve operational excellence and create a sustainable competitive advantage.

Ovation's field-proven control design techniques developed over the last five decades provide tighter, more precise and predictable control while a host of advanced control and process optimization software allows you to further enhance operations by automatically balancing the process for the optimum results.

From basic control and monitoring to fleet or district-wide integration, Ovation offers seamless communication with fieldbus networks, intelligent field devices and integrated asset management solutions to deliver the power of predictive intelligence to operations and management personnel.

Keep pace with the latest technology

By incorporating commercial, off-the-shelf technology throughout the system, Ovation provides a powerful yet adaptable platform that gives you greater operational flexibility than other systems while also protecting your engineering investment by allowing you to continually modify and expand the system to meet new challenges.

This means your Ovation system can evolve incrementally as your process grows or as technology progresses. Ovation eliminates fears of rapid system obsolescence by allowing you to stay current with state-of-the-art developments in communications, processing and advanced applications.

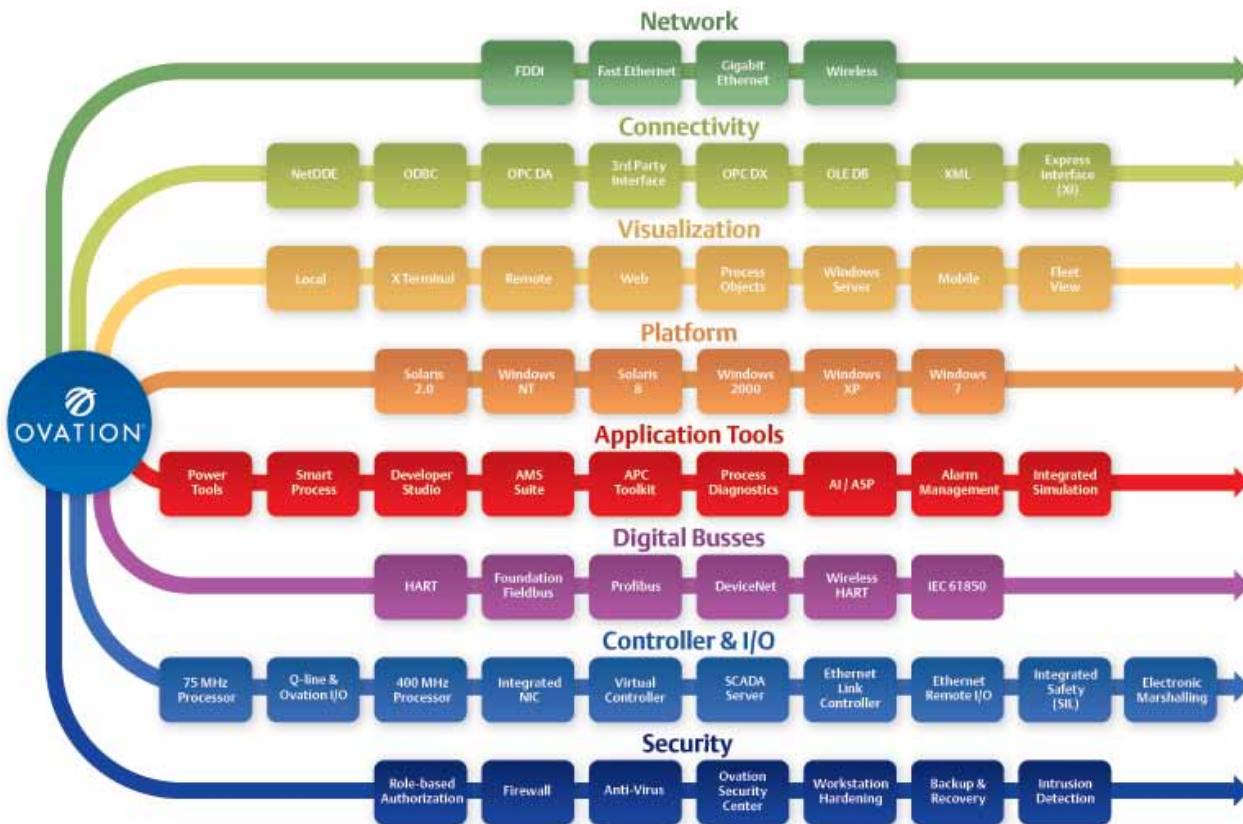


Ovation Evolution

Built using industry standard hardware platforms, operating systems and network architectures, only the Ovation expert control system stays new in the face of rapidly advancing computing technology.

Ovation reduces maintenance costs and preserves your investment by incorporating industry-standard components

as opposed to the proprietary structures of the other systems. Over time, your Ovation hardware can evolve incrementally, incorporating new operating systems, hardware platforms and network topologies while preserving your vital engineering investment in control logic, graphics and operator training.



Ovation Expert Performance



The Ovation expert system is optimized to meet the unique needs of the power generation and water/wastewater treatment industries. More than five decades of Emerson experience covering thousands of power generation and water treatment projects allowed us to tailor the Ovation expert system exclusively for these demanding processes.

Ovation includes embedded applications such as fully coordinated boiler/turbine control, emissions monitoring, economic dispatch and fleet management for power projects. For water and wastewater applications, Ovation incorporates a SCADA interface for wide-area monitoring and control, seamless PLC integration, and comprehensive diagnostics programs.

Coupled with Emerson's PlantWeb digital architecture, the Ovation expert system provides the world's most powerful technology for secure operations and best in class performance.

Tighter, more reliable control

The Ovation expert control system is renowned for delivering precision control with outstanding performance. That precision begins with the **Ovation Controller**. Based on industry standards, the Ovation Controller is the most powerful process controller available. With an Intel-based processor at its heart, the Ovation Controller provides full-redundancy to assure the reliability and security necessary for even the most demanding application.

In addition to a comprehensive set of over 100 standard algorithms, Ovation also provides the ability to embed advanced control algorithms that leverage the ever expanding computing power of the Ovation Controller. This capability allows you to take control to a higher level by incorporating fuzzy logic, model predictive control and industry specific advanced applications to reduce process variability and optimize performance over the full range of plant operating conditions.

The Ovation expert system also provides seamless integration with intelligent field devices and widely adopted bus standards such as HART, Foundation Fieldbus, Profibus DP and DeviceNet.

Using the rich data provided by 'smart' devices, Ovation's native application of Emerson's **AMS Suite: Intelligent Device Manager** allows you to implement a predictive maintenance program that continually analyzes device health, identifying problems before they impact the process while avoiding costly and unnecessary maintenance on healthy devices.

Ovation PlantWeb Alerts

Ovation PlantWeb Alerts generate alarms notifying you of performance issues in field devices. **PlantWeb Alerts** include **Advisory Alerts** to assist in maintenance planning, **Maintenance Alerts** that indicate that immediate maintenance is required, and **Failure Alerts** that indicate a device has failed, allowing plant operators to react accordingly.

Clear, concise operations

Providing plant operators with a clear, concise, easy to navigate window to the process is vital to successful operations. The **Ovation Operator Workstation** accomplishes that mission with crisp, high-resolution process graphics, built-in trending data, advanced system diagnostics displays, user-friendly help screens and a sophisticated alarm management and analysis package that prioritizes alarms to quickly isolate and address problems.

Intuitive programming tools

The Ovation Engineer

Workstation provides an intuitive, easy to use graphical interface that allows your personnel to focus on the plant or control process at hand, rather than the base program. It combines all of the functions of the operator workstation with the tools needed to create, configure and maintain Ovation control logic, graphics, point records, and system-wide configurations, including security.

The Engineer Workstation's **Developer Studio** is a graphical menu-driven interface using standard drag and drop functionality to easily move or copy elements from one application to another. The object-oriented approach to system configuration provides a familiar operating environment, thus reducing the learning curve, simplifying development, and ultimately saving significant engineering effort.

Leveraging the power of information

Ovation offers a host of capabilities that fully integrate field devices, third-party systems, and corporate networks, providing accurate process information when and where it is needed.

The **Ovation Network** is an unaltered Fast Ethernet that serves as both a control and information highway providing easy connectivity to virtually any Ethernet enabled device. Ovation also offers a multi-network capability allowing you to integrate multiple Ovation control systems both within an individual plant site, or throughout a number of geographically disperse sites, streamlining the collection and correlation of information from various units.

The **Ovation Process Historian** collects and organizes the vast amount of process data from the system making it available

via the Ovation Network to operators, engineers, maintenance personnel and plant management. The Process Historian is fully redundant with archival to removable media and is designed for interface with business databases and spreadsheet applications allowing raw process data to be easily converted to valuable information.

Connectivity

The Ovation expert system also includes direct connectivity to PLCs and OEM control systems. Ovation also incorporates standard data exchange protocols such as OPC and features a Java-based Web Server application that allows real-time process graphics to be viewed on-line via corporate intranets.

Ovation Security Features

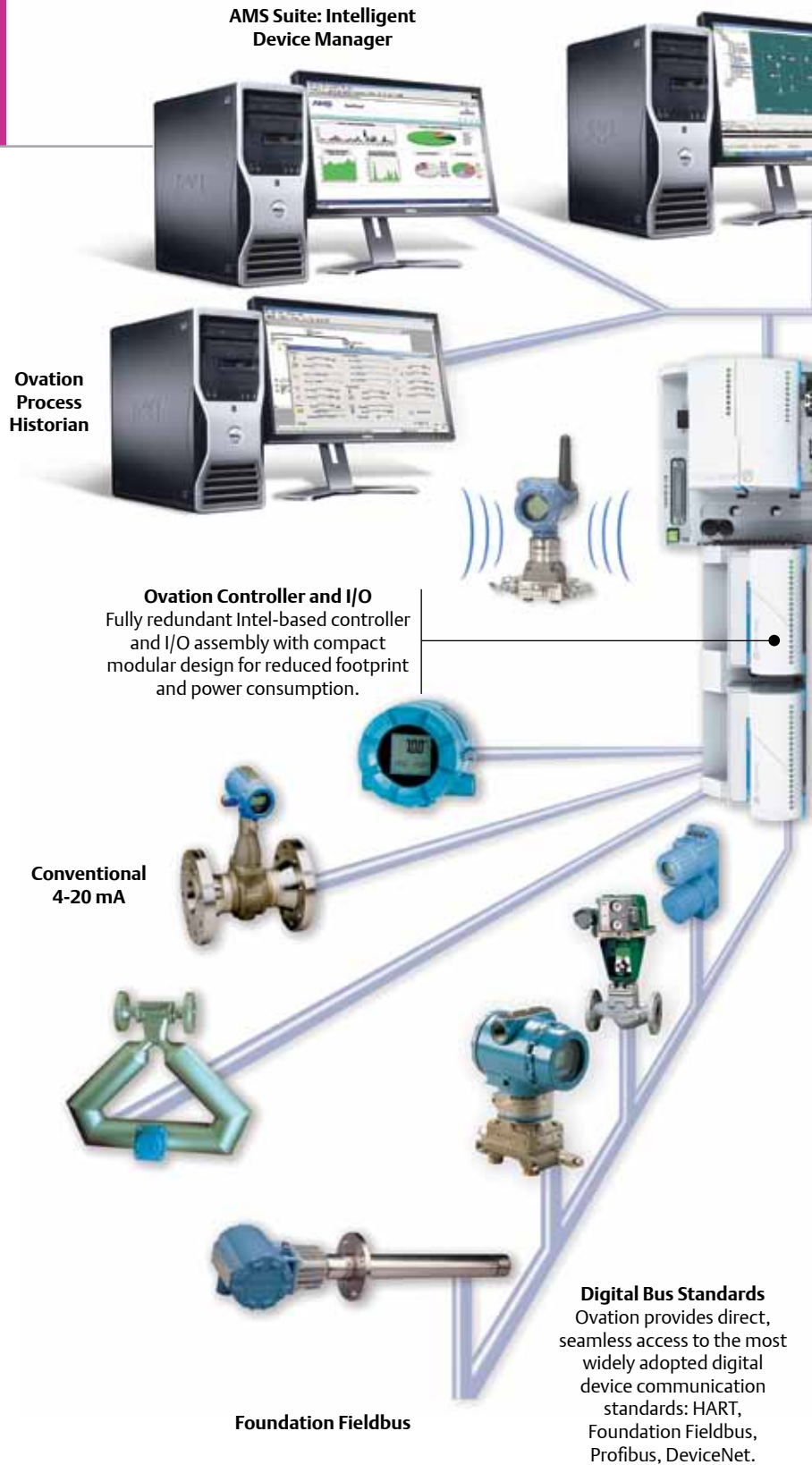
The Ovation system address security concerns such as machine authentication, password management, workstation hardening, and disabling prohibited activities. Antivirus software solutions complement Emerson's existing cyber-security measures allowing deployment of regularly updated virus definitions.



Fast, powerful, flexible

The Ovation Expert System

The Ovation expert system is a product of our five decades of experience in process control for the power generation and water/wastewater treatment industries. Ovation utilizes commercially available, off-the-shelf technology to provide a powerful and secure architecture while allowing your system to easily progress with rapidly advancing computer technologies. It provides a seamless interface with the most widely adopted bus-standards allowing you to incorporate smart device technologies into your process. And Ovation's embedded advanced algorithms and proven industry-specific control routines assure that you can optimize your operations to maximize efficiency, productivity and profitability.



Designed for your unique

Operators Workstation
Off-the-shelf desktop PC workstations with a standard Windows operating system

Ovation SCADA Master

Fast Ethernet
An unaltered Fast Ethernet control & information network

Ovation Engineer Workstation/ Developer Studio

Embedded Applications

Ovation incorporates a host of applications to speed system engineering and maintenance, provide advanced diagnostics, facilitate communications, and optimize process operations.

- Easy-to-use Control Builder
- Highly flexible Graphics Builder
- Embedded Security Builder
- AMS Suite: Intelligent Device Manager for predictive maintenance
- OPC connectivity to business systems
- Industry specific advanced control algorithms to allow on-line process optimization

HART

Profibus/DeviceNet

Widely adopted commercial technologies are the fundamental building blocks of the Ovation system. By incorporating these technologies Ovation provides an easy to use, easy to maintain system architecture that allows you to modify, expand and evolve the system as your needs change or as other, more advanced technologies are introduced.

needs and applications

Ovation Powers PlantWeb



As a key component in Emerson's PlantWeb™ digital architecture, Ovation offers a growing and unequalled array of fully integrated products and capabilities to help you gain and maintain a competitive advantage for many years to come.

PlantWeb is an automation solution that delivers asset management, process control and management execution through intelligent field devices, industry standard platforms, and integrated modular software. It provides seamless connection to widely adopted digital 'smart' device communication protocols including HART, Foundation fieldbus, Profibus DP and DeviceNet.

New project benefits

An Ovation PlantWeb architecture can reduce project installation costs up to 30% through significant savings in wiring and conduit requirements, reduced engineering expense during system configuration and commissioning, and earlier, more trouble-free plant start-up. In fact, a recent independent study showed that on a new 600 MW coal-fired power plant, the implementation of a PlantWeb architecture can result in savings as much as \$20 million.

Operational and maintenance benefits

These standard platforms in a PlantWeb architecture have been field proven in hundreds of applications to improve plant efficiency by as much as 2% by boosting plant availability, capacity and response while reducing operations and maintenance costs through the life of the plant.

Leveraging digital intelligence The Ovation PlantWeb digital plant architecture begins with a strong foundation of intelligent field devices from industry leaders such as Fisher and Rosemount. With their digital capabilities — including onboard

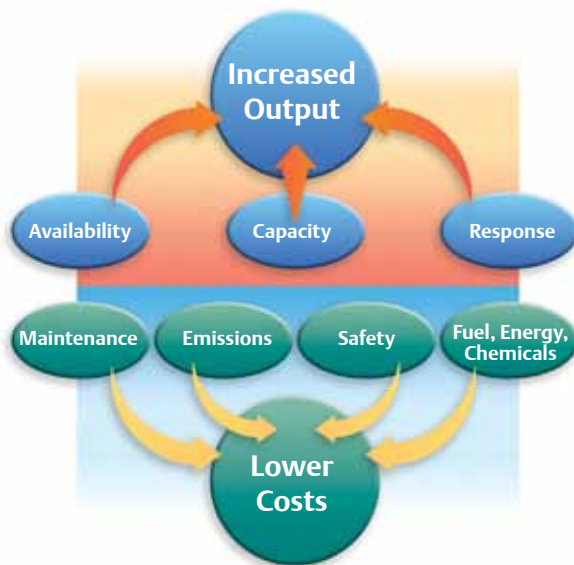
microprocessors, embedded software, and open-standard communications — these field devices can...

- Deliver precise measurement and control to reduce process variability.
- Handle multiple variables to reduce the number of devices required.
- Perform diagnostics to monitor device health, predict problems, and avoid downtime.

Connecting your plant

PlantWeb uses open communication standards to link field intelligence, systems and applications in a plant wide network that delivers information when and where it's needed. Open, industry-proven communication standards let you select the best components to meet your needs, integrate them with other plant and business systems and add more products or capabilities in the future.

Besides supporting popular protocols from Fast Ethernet to DeviceNet, Profibus DP, and Modbus protocols, PlantWeb is the only architecture to provide a single, integrated environment that delivers the full capabilities of HART, Foundation fieldbus and OPC.



Increased output. Lower costs. With PlantWeb, you can have both.



Ovation— Precision Control

Ovation's field-proven control applications design techniques developed over five decades of experience in the power generation and water/wastewater treatment industries provide tighter, more precise and predictable control.

From fully coordinated boiler-turbine control to wide area SCADA controls, Ovation controls are successfully employed in thousands of applications. Ovation also features fully automatic startup/shutdown sequencing, intelligent alarm management and automated loop tuning to align the process with current plant conditions.

Advanced Controls

A wide variety of advanced Ovation control software incorporating fuzzy logic, model predictive control, and other tools are available to meet the specific control challenges of power generation and water/wastewater treatment facilities.

Advanced control solutions are available for Environmental Compliance to support NO_x,



SO₂ and CO₂ reduction and process efficiency including pump sequencing, combustion optimization, energy management and chemical usage optimization.

Other available Ovation advanced control packages include Sootblower, SCR and FGD optimization, Steam Temperature optimization, and Fleet Emissions optimization.

Scenario™ Simulation

Emerson offers Scenario Simulation solutions using virtual technology with full simulation capability in a reduced hardware configuration. Scenario simulation using virtual technology faithfully replicates

the Ovation system by using a few desktop workstations reducing hardware costs and footprint, allowing easy portability for use throughout the facility, and greatly simplifying ongoing simulator maintenance and upgrades to track ongoing control system modifications.

Scenario simulation is a valuable and flexible tool to improve plant operations. Typical applications include DCS validation prior to its installation, operator training programs, engineering upgrades, and control changes to improve plant performance.

Fully integrated products

Ovation Services



Comprehensive support for the life of the system

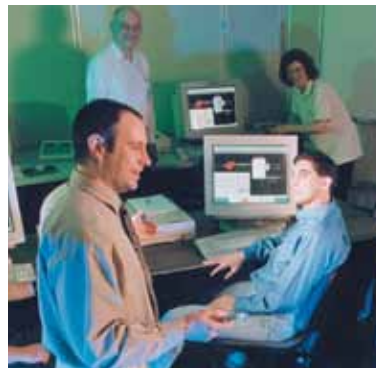
Behind every Ovation system stands an array of service and support capabilities to ensure your system provides the utmost in performance and reliability.

That support begins with our customer training programs. Conducted by experienced engineers at your facility or ours, our training programs provide your operators, engineers, and technicians with the knowledge and skills they need to effectively

operate and maintain your systems. Our training programs are tailored for your needs and can include custom-designed plant simulators that employ the same software and graphics used on the actual system.

We also understand the pressures to minimize plant staffs while maximizing plant performance. With that understanding, we have structured our service and support programs to provide the flexibility and responsiveness necessary to meet your needs.

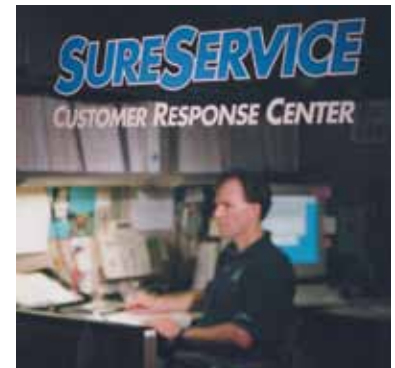
Our SureService™ program allows you to customize a service and support program to meet your specific needs. SureService includes 24-hour telephone support, remote systems diagnostics, scheduled on-site visits, emergency service calls, and coverage for



critical components. Packages can also include training programs as “refresher” courses for experienced personnel or introductory courses for new personnel. We also offer periodic audits and assessments of system configuration based on process requirements to identify opportunities for improvement.

As an additional service, our secure, Internet-based program provides off-site archiving of system software, online tutoring programs, remote system diagnostics, and custom application enhancements to increase the efficiency of your control software.

And our unique SureService Evergreen program is designed to provide scheduled, periodic hardware and software upgrades to keep your Ovation system current with rapidly advancing technology.





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