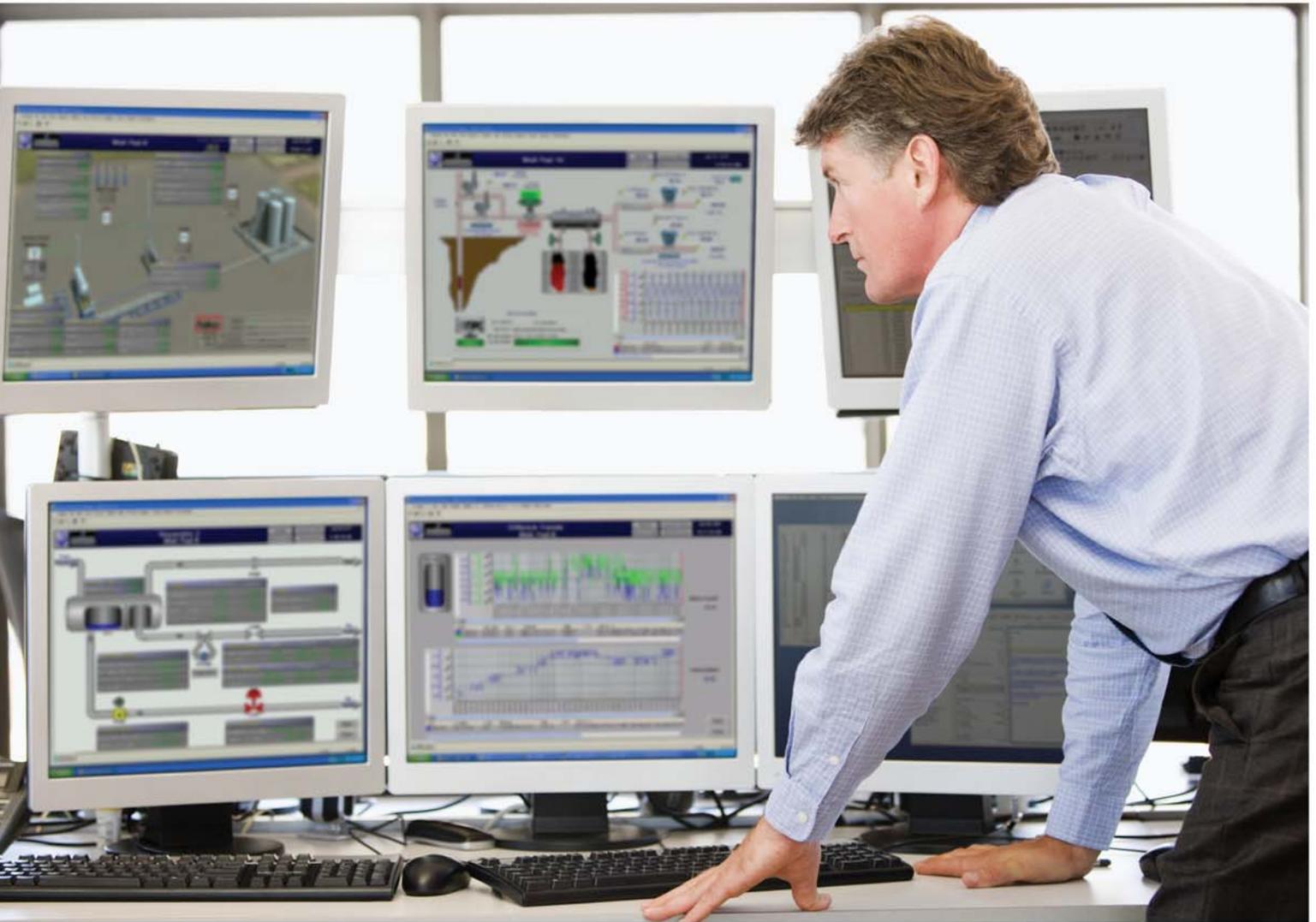


OpenEnterprise™ v3 SCADA System

Streamlining Oil & Gas Remote Operations



What if you could
***Increase Operational Efficiency
with Production Visibility***
across the Enterprise?

What if you could
Gain Competitive Business Agility
through Intelligent SCADA Automation?

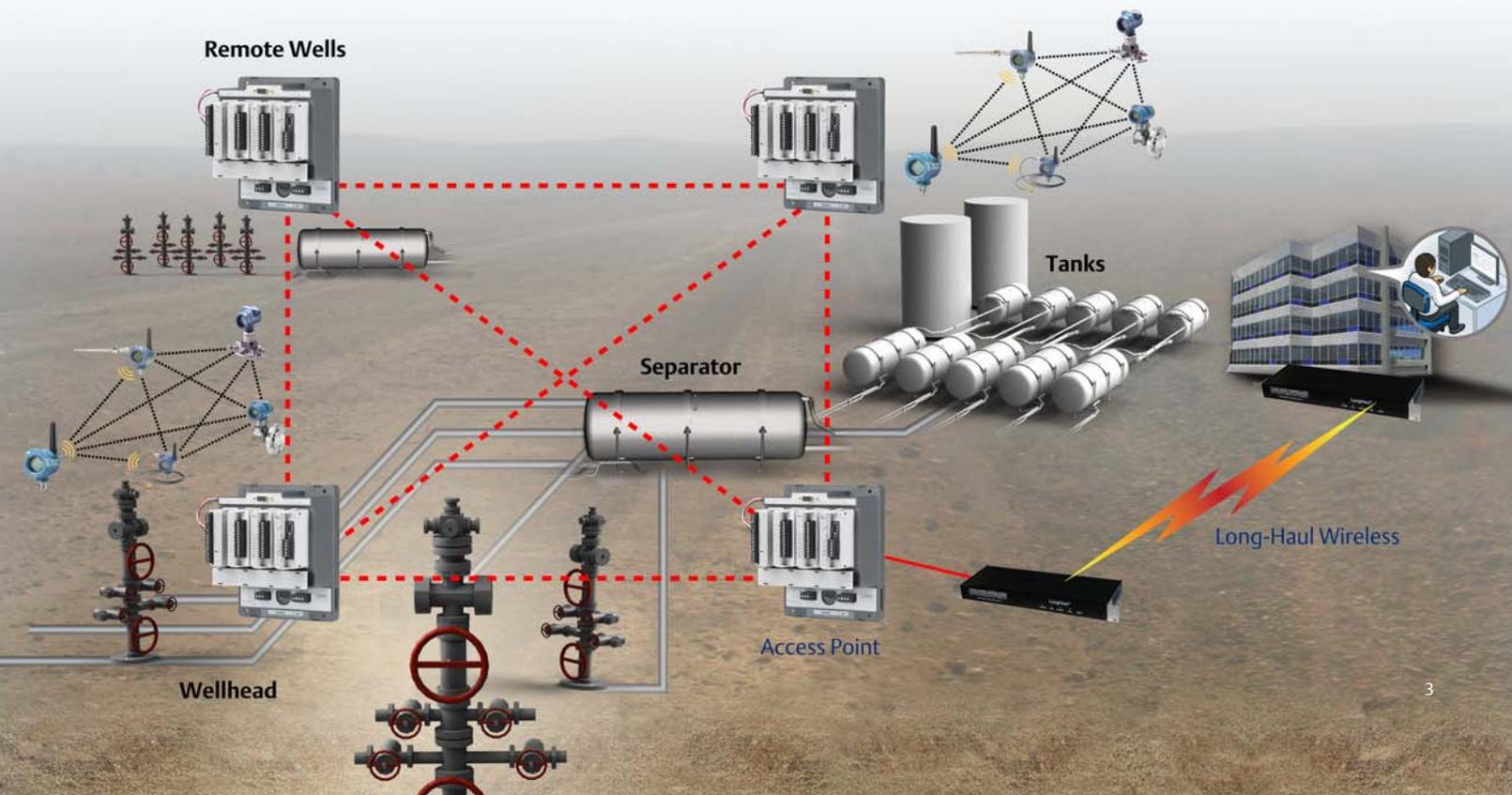
What if you could
***Achieve Faster Startups
and Reduce Project
Implementation Time?***



CONSIDER IT SOLVED.™

Emerson's OpenEnterprise v3 takes SCADA Automation to the next level by powering the world's first integrated wireless SCADA architecture. By integrating *WirelessHART™* instrumentation network to Wireless Distributed RTU™ Network and long-haul SCADA control network, OpenEnterprise offers significant lifecycle cost savings by making remote Oil & Gas operations easier, safer and more secure in upstream production, transmission and distribution applications.

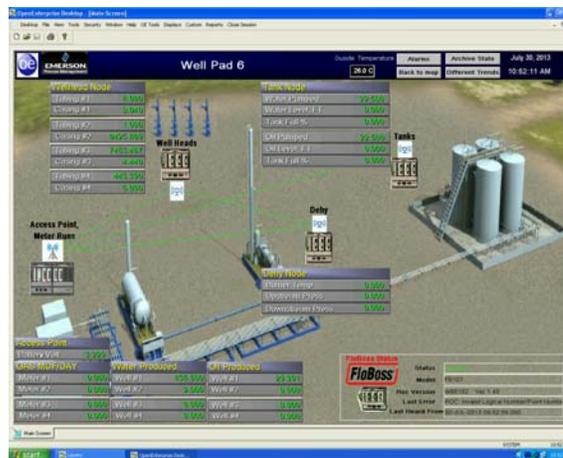
OpenEnterprise provides unrivaled flexibility and connectivity by linking remote operations with back office business decision making systems. It truly makes SCADA a key component of the business process.



OpenEnterprise Improves Operational Efficiency

OpenEnterprise is Emerson's leading-edge SCADA system targeting the Oil & Gas production, distribution and transmission applications. OpenEnterprise incorporates 20 years experience across a global install base. This has shaped the product into a user-friendly platform built for remote mission-critical applications where data integrity and uptime are essential for operating over complex communication networks.

OpenEnterprise supports a diverse range of smart instrumentation devices and RTUs that are commonly found in the measurement and control of remote Oil & Gas operations. As these measurement and control technologies have evolved, the requirement to collect more real-time data, control events and distribute information world-wide has become a major challenge.



In addition to monitoring remote assets like flow meters, tanks, compressors and other field devices, OpenEnterprise supports Production-focused RTU applications like Production Manager, Tank Manager and others for 'local' process control.

OpenEnterprise key features are:

- A Highly-Scalable Client Server Architecture for Distributed SCADA Installations
- Seamless Integration with ControlWave® and ROC/FloBoss™ RTUs
- Integrated Historian with Backfill Capability
- Operator Notes for Collaboration and Logging Event-Specific Information
- Powerful Reporting and Trending Tools
- Alarm and Event Manager, with Text Messaging and Email Support
- Thin Client Support via Terminal Services
- Open Standards (OPC, ODBC, JDBC and SQL) Facilitates Easy Integration to Business Systems

Secure

- Role-Based Access
- Permission-Based Tokens
- User Authentication
- Complete System Audit Trail

Reliable

- Server & Communication Redundancy
- Highly Modular, Distributed Processes
- Runs as Windows Service
- Active SQL Queries Reducing Database Loading

Data Acquisition

- Intelligent Polling
- Report by Exception
- Staggered Collections
- Time-Sliced Collections

Reports & Trends

- Real-Time and Historical Trends
- Email as PDF or Excel Attachments
- Scheduled Reports Generation

Easy Configuration

- Simple Installation and Setup
- Remote Server Management
- Integrated Configuration Environment

What's New in OpenEnterprise v3?

OpenEnterprise reduces operational and maintenance lifecycle costs and improves operational efficiency across the Enterprise. OpenEnterprise v3 is based on a Human Centered Design (HCD) approach which focuses on ease of use, not only from the user interface perspective, but also through enhanced server functionality leveraging reusable objects and intelligent automation aimed at improving Operator productivity.

Built on a 64-bit database engine, OpenEnterprise v3 is a modular, highly scalable platform that addresses the needs of Oil & Gas markets from local metering and compressor station monitoring and control to Mega i-Field automation projects that comprise of thousands of meters and wells. OpenEnterprise is a highly scalable SCADA system that can operate as a single box HMI to enterprise-wide SCADA platform.

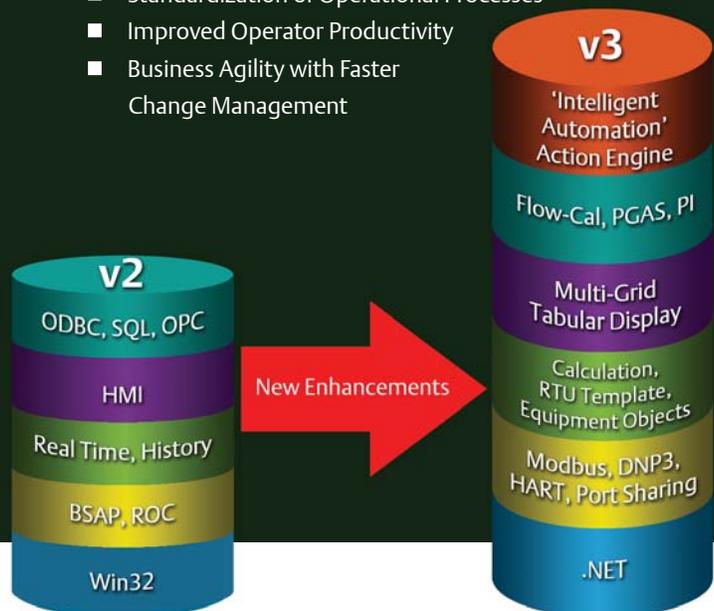
OpenEnterprise supports a wide range of industry standard database interfaces and communication protocols without any additional licensing costs. OpenEnterprise also supports Emerson's primary SCADA protocols (BSAP and ROC/ROCPlus), as well as access to third-party protocols including Modbus, OPC and DNP3. As such, OpenEnterprise is well-suited for both green field and brown field automation projects.

New Features

- Non-Programmatic, Rules-Based Action Engine
- Object-Oriented Database with Asset Models
- RTU Device Templates for Easy Device Replication
- Flow-Cal .cfx support for Gas and Liquids
- High Performance Calculation server
- Integrated Multi-Grid Configuration Environment
- Plant Area Hierarchy with Alarm Statistics
- VMWare Virtualization Support
- API 21.1-Compliant Data Storage
- Modbus, DNP3 Drivers
- Out-of-Box Support for Distributed Wireless SCADA Architecture (*WirelessHART* and Distributed RTU Network)
- Support for RTU Applications (Production Manager, Tank Manager etc.)
- 64-Bit Microsoft Operating System Compatible

Key Benefits

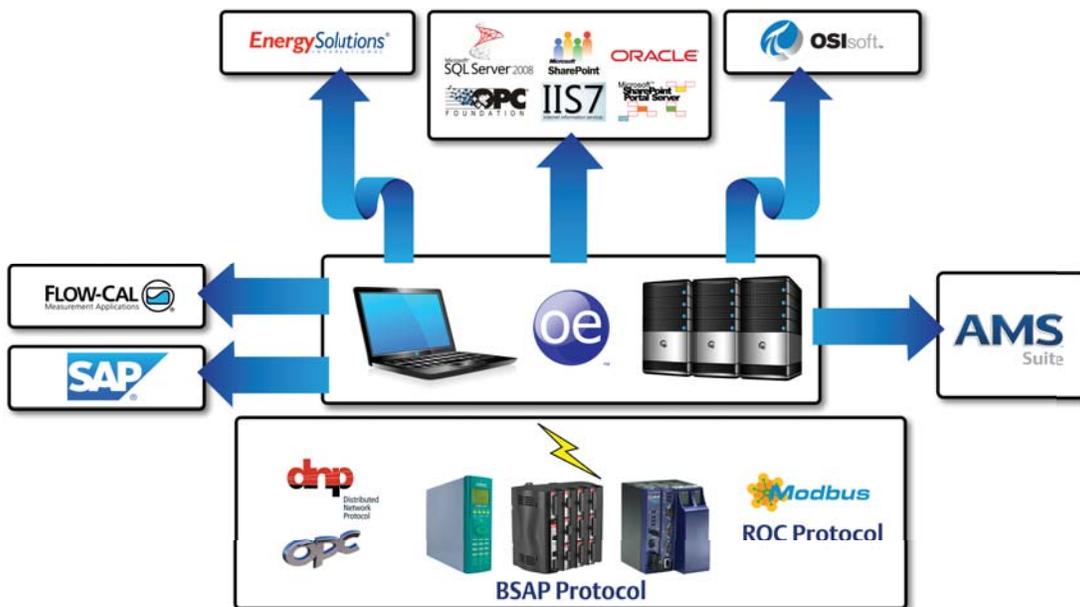
- Lower Lifecycle Costs
- Better Decision-Making across the Enterprise
- Standardization of Operational Processes
- Improved Operator Productivity
- Business Agility with Faster Change Management



OpenEnterprise Enables Better Decision Making across the Enterprise

SCADA systems are of little use unless they can be integrated to Business Management Systems. Automation should not be an island. The data collected from the field is critical, and OpenEnterprise provides numerous mechanisms and interfaces to enable the flow of this data to 3rd party databases, historians, accounting packages and asset management systems.

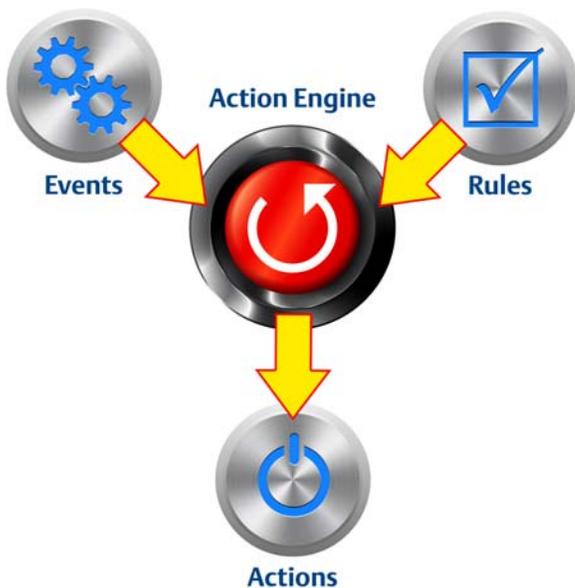
OpenEnterprise provides users with a complete solution — from the wellhead to the control room to the web. OpenEnterprise is a single source of information for Operational, Engineering and Corporate Business users. OpenEnterprise provides a unified approach towards improving business efficiency by enabling the transformation of SCADA data into unlocked information that can span across an organization. This truly makes OpenEnterprise a vital part of the business process.



Many legacy systems require manual transcription of data from the User Interface into business systems. OpenEnterprise avoids this error prone and time-consuming task by providing completely 'open' access to all real-time, historical and configuration data via a wide range of industry standard interfaces like ODBC, OPC and SQL.

OpenEnterprise supports integration with Flow-Cal, SQLServer, Oracle, PI and SAP among others. Standard interfaces can be used to connect corporate business applications to OpenEnterprise, often in a matter of minutes. There is no need to purchase proprietary middleware, connectors or APIs.

Enabling Intelligent SCADA Automation



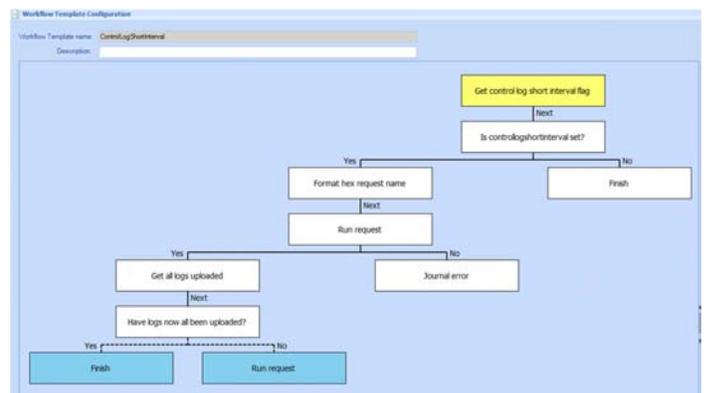
SCADA Operators today are challenged to make critical operational and process decisions due to the sheer number of active events, alarms and data being collected. The bottom line is that most alarms are ignored or delayed in response. Only after the fact are these huge databases possibly sifted for clues as to what went wrong as part of post-incident analysis.

The OpenEnterprise Action Engine triggers powerful asynchronous control sequences in response to pre-configured events or conditions. If the condition is detected and the rule is evaluated as logically true, then 'actions' in the control sequence are executed. 'Actions' can include the following:

- Automatic Process Setpoint Adjustment
- Sequenced Communications across Single or Multiple RTU Sites
- Downloading Recipes or Gas Quality Composition
- Operator Advisory and Alerting

Authoring 'action routines' makes it easy for non-technical operators to design and implement abnormal event handling. 'Action routines' can be easily pre-configured without having any knowledge of software programming or scripting language.

Action Engine enables a SCADA system to operate autonomously at increasingly higher levels, based on fewer inputs from operational personnel. Action Engine improves Operator productivity by automating routine, rules-based tasks.

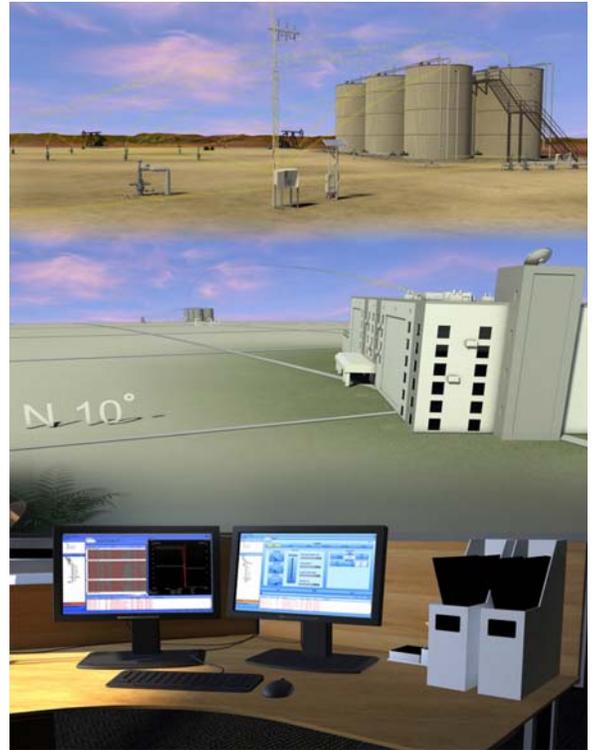


Distributed OpenEnterprise System Enables Scalability, Flexibility and Reliability

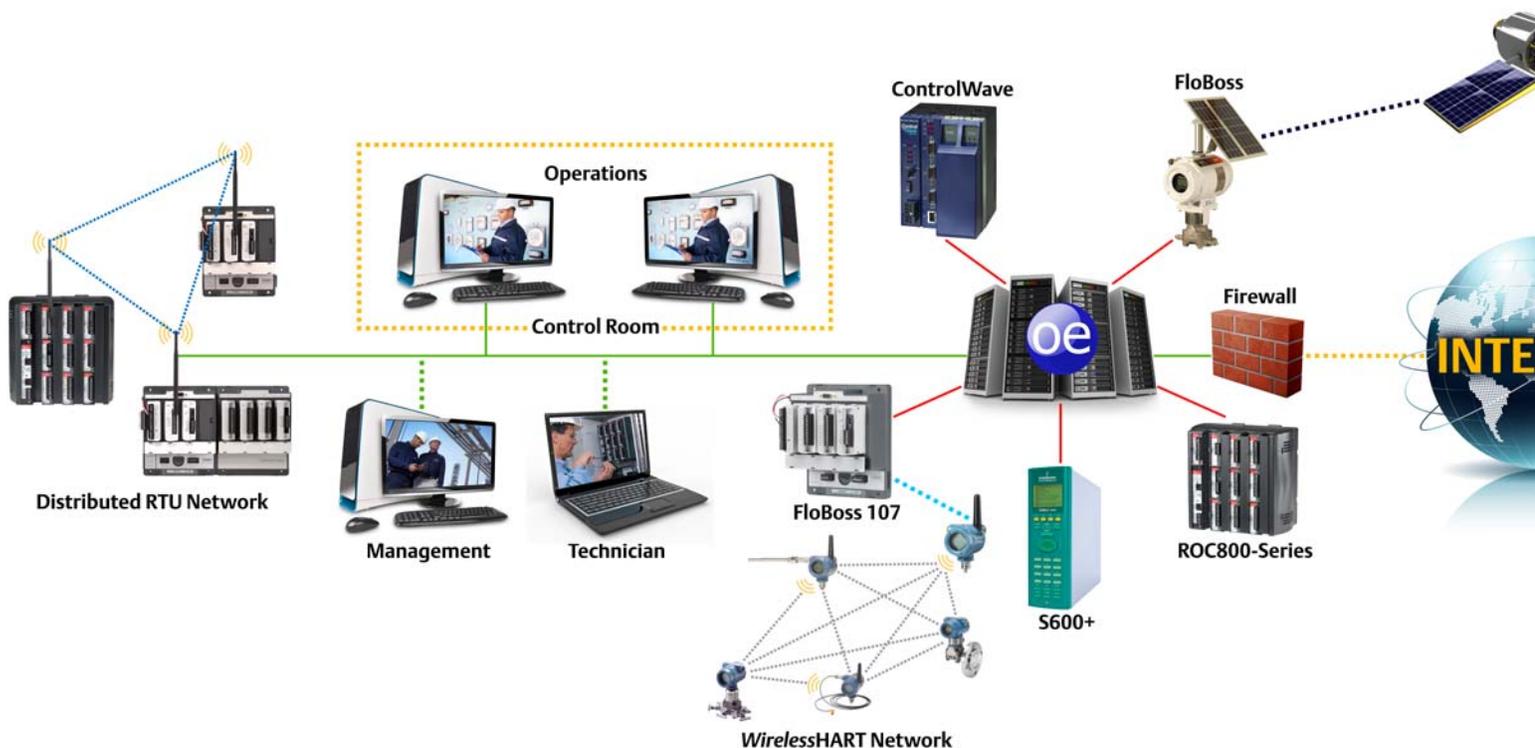
In the current Energy market segment, many companies are scattered across many state and international boundaries. Oil & Gas SCADA automation solutions require high availability and reliability to address mission critical applications as well handling custody transfer “billing-centric” information.

OpenEnterprise is highly flexible and supports distributing processes across multiple-core CPUs, database servers and communication servers in either standalone simplex configuration or a highly complex, multi-node, multi-site configuration. OpenEnterprise is a client/server architecture that can support any number of distributed servers (databases), distributed polling engine (Communication Managers) and remote clients (workstations or terminal clients).

The distributed system scales from one single node for small applications to networked clusters of nodes for large applications. Clients are connected to the system over thick or thin clients anywhere where IP connections are available. To users, however, it appears to be a single integrated system.



From the Wellhead to the Enterprise



Core Server Technology

OpenEnterprise servers and communication engines can support distributed, redundant configurations across a network infrastructure to achieve off-site disaster recovery configuration. Multiple levels of redundancy can be addressed to meet the needs of the mission-critical applications such as 24/7 control rooms.

OpenEnterprise is built on a Memory Resident database platform with Active SQL queries which enables ultra fast performance and reliability. The Active SQL query mechanism notifies client applications immediately after a relevant data change has taken place without the need for the clients to poll the data. When a data change occurs, the server automatically transmits a message to clients. This greatly improves overall system reliability and performance.

Key Database Features

- Memory Resident, Relational Database
- Standards-Based: SQL and ODBC
- Dynamic Schema Modification, Allowing Columns to be Added and Deleted
- Active SQL Query Technology — No Need to Poll

OpenEnterprise uses a hot-standby mechanism to maximize system availability. The standby server is continually synchronized about changes to the master server. This enables the standby to take over immediately when it receives notification of a failure to the master. Very little application code is required to take advantage of these high-availability features.



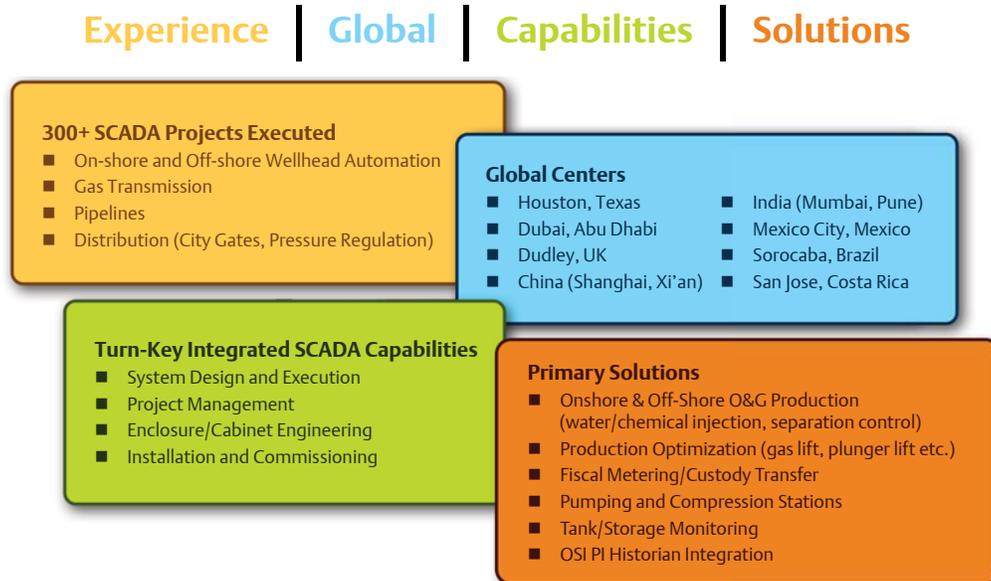
Simplify your SCADA from Configuration, Operations and Maintenance

OpenEnterprise was built with ease of use in mind from the onset. OpenEnterprise makes system configuration and maintenance a breeze. Any project, large or small, can benefit from the HCD approach to configuration and operator environment. HCD translates to reduced Engineering time and money saved across the system’s lifecycle. Lifecycle savings can be categorized into four categories, as illustrated in the following table:



Savings Related	OpenEnterprise Functionality
Initial Development Savings	<p>Functionality represents the savings resulting from the time saved when users develop applications:</p> <ul style="list-style-type: none"> ■ System Administration related to communication tuning and user administration that can be managed locally or remotely ■ Pre-built SCADA database installation that is fully defined and documented ■ Adding ControlWave or ROC devices that are online – automatically-generated tag via ‘single-action’ ■ Device Replication using RTU templates ■ Comprehensive communications network tuning and diagnostic tools ■ User Interface Replication using display aliasing
Application Changes Savings	<p>Development savings are gained through re-use (by virtue of defining object templates once, and then generating “copies” from those templates multiple times) and the ability to propagate changes (from base templates to all components linked from the templates).</p> <ul style="list-style-type: none"> ■ Asset Model — Object-oriented information model allows operators to define all aspects of the physical equipment/assets including logic and scripts, how the data will be acquired, how the alarms are defined etc. ■ Action Engine — The ability to easily change applications, control programs and workflow to respond to any business issue or to take advantage of new opportunities. There is no need for software programming or scripting. ■ Online on-the-fly Modifications — Configuration can be carried out online, without affecting operations. With OpenEnterprise, there’s no need to schedule down time and no need to reboot. Database schema and Device Template changes permit online changes while maintaining continuous operations.
Lifecycle Maintenance Savings	<p>Maintenance and upgrades can be costly due to the remote assets, and delays which can lead to production downtime. Well-designed SCADA systems must have robust diagnostic and configuration features that allow users to make changes from the host and eliminate the need to send technicians out frequently to troubleshoot problems and make repairs at remote sites.</p> <ul style="list-style-type: none"> ■ Aggregated alarm statistics with respect to Plant Areas, thus guiding the operator to the alarmed device ■ Support for virtualization technology that streamlines upgrades, and backup overall system maintenance by reducing IT administration ■ Multi-server remote system configuration significantly reduces maintenance costs through the ability to remotely monitor, change and deploy software to all nodes on the network
Multi-Server, Multi-Sites Development Savings	<p>Savings results from re-using templates and applications created for this project on other projects. These unique engineering features save time and effort when creating a new installation.</p> <ul style="list-style-type: none"> ■ Security Replication ‘Linked’ to User credentials across multiple servers ■ Single Centralized User Interface configuration environment for standalone or distributed server ■ Import and export of all server configurations, templates, objects, calculations etc.

Rely on Emerson's Expertise to Deliver on Global SCADA Projects



Emerson is the global automation leader capable of delivering end-to-end Oil & Gas SCADA projects from engineering design, execution and lifecycle support & services.

Emerson's systems capabilities and experience are especially valuable when time is at a premium. A single point of accountability for the entire instrumentation and automation solution makes a crucial difference.

Emerson's project execution methodology starts with achieving clarity on project expectations and establishing a sound project plan that outlines the project schedule, eliminating risk of rework changes due to inconsistent interpretation of customer or regulatory requirements. This ensures successful project completion on time and on budget.

From the early design phase through the engineering, documentation and installation phases, this methodology provides structure, clear focus on business objectives and definition of project team member roles. The methodology provides a modular and structured approach to the design and configuration of the integrated solution — making the overall design easier to implement, test and support, with minimal risk.

Find us around the corner or around the world

For a complete list of locations please visit us at www.EmersonProcess.com/Remote



Global Headquarters
Emerson Process Management
Remote Automation Solutions
6005 Rogerdale Road
Houston, TX, USA 77072
T +1 281 879 2699
F +1 281 988 4445

www.EmersonProcess.com/Remote



Europe
Emerson Process Management
Remote Automation Solutions
Unit 8, Waterfront Business Park
Dudley Road, Brierley Hill
Dudley, UK DY5 1LX
T +44 1384 487200
F +44 1384 487258



North America and Latin America
Emerson Process Management
Remote Automation Solutions
6005 Rogerdale Road
Houston, TX, USA 77072
T +1 281 879 2699
F +1 281 988 4445



Middle East and Africa
Emerson Process Management
Remote Automation Solutions
Emerson FZE
PO Box 17033
Jebel Ali Free Zone - South 2
Dubai, UAE
T +971 4 8118100
F +1 281 988 4445



Asia Pacific
Emerson Process Management
Remote Automation Solutions
1 Pandan Crescent
Singapore 128461
T +65 6777 8211
F +65 6777 0947

© 2008-2014 Remote Automation Solutions, a business unit of Emerson Process Management. All rights reserved.

Emerson Process Management Ltd, Remote Automation Solutions (UK), is a wholly owned subsidiary of Emerson Electric Co. doing business as Remote Automation Solutions, a business unit of Emerson Process Management. FloBoss, ROCLINK, ControlWave, Helicoid, and OpenEnterprise are trademarks of Remote Automation Solutions. AMS, PlantWeb, and the PlantWeb logo are marks owned by one of the companies in the Emerson Process Management business unit of Emerson Electric Co. Emerson Process Management, Emerson and the Emerson logo are trademarks and service marks of the Emerson Electric Co. All other marks are property of their respective owners.

The contents of this publication are presented for informational purposes only. While every effort has been made to ensure informational accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. Remote Automation Solutions reserves the right to modify or improve the designs or specifications of such products at any time without notice. All sales are governed by Remote Automation Solutions' terms and conditions which are available upon request. Remote Automation Solutions does not assume responsibility for the selection, use or maintenance of any product. Responsibility for proper selection, use and maintenance of any Remote Automation Solutions product remains solely with the purchaser and end-user.

