

## ARC WHITE PAPER

By ARC Advisory Group

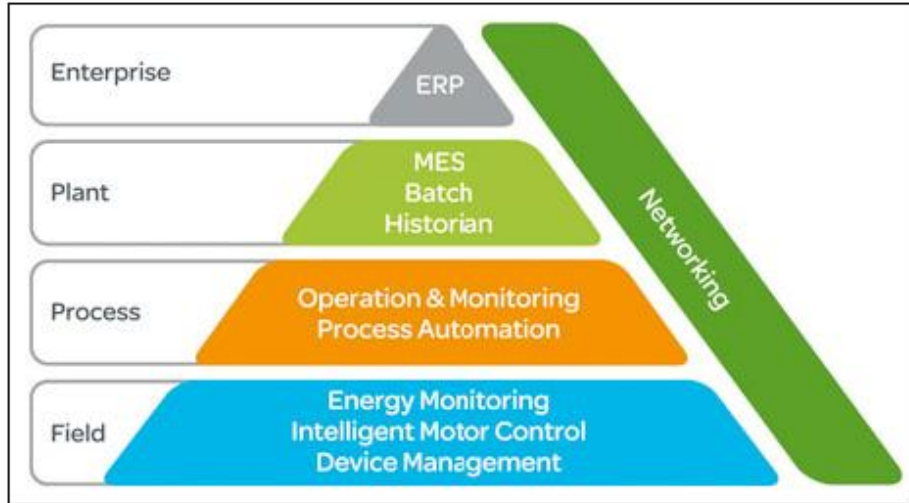
OCTOBER 2009

# Schneider Electric Deploys New PlantStruxure™ Platform

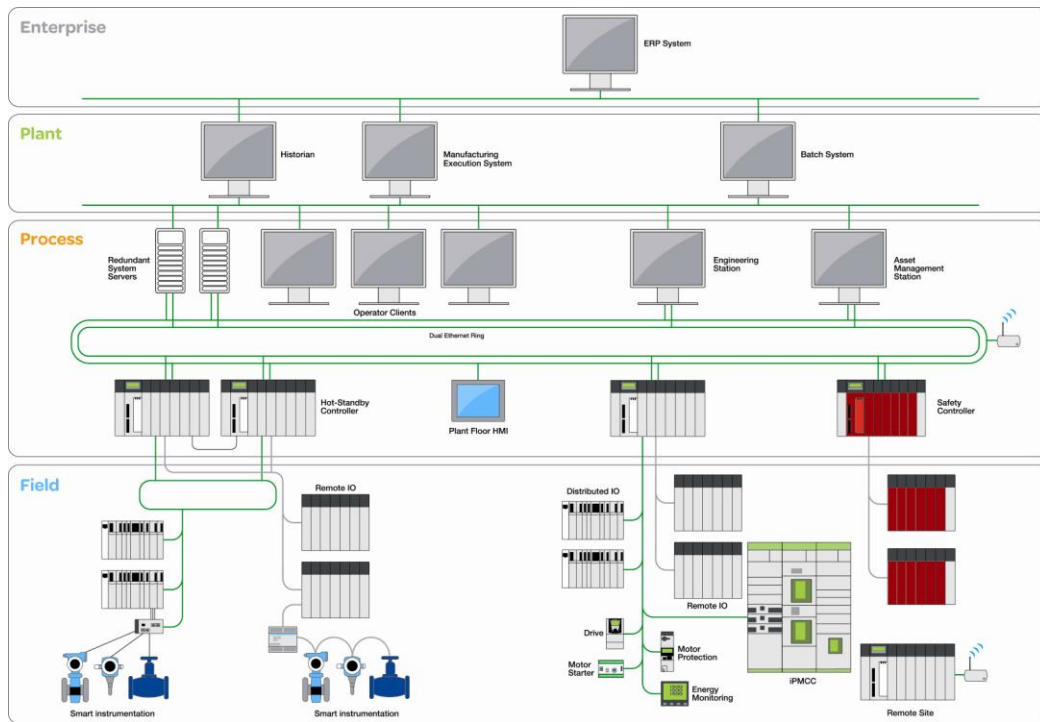
## Schneider Electric's PlantStruxure Delivers Complete Solutions for Process Control & Energy Management

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### Schneider Electric's PlantStruxure Includes Field, Process and Plant Solutions with connection to the Enterprise



### Schneider Electric's PlantStruxure Delivers Complete Solutions for Process Control and Energy Management

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## Executive Overview

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There have been many challenges for process suppliers to develop a truly open and collaborative framework for process automation and energy management, then linking that framework to the enterprise. This is primarily because process automation, energy management, and production management systems have originated from different islands of functional-

PlantStruxure™ leverages many of Schneider Electric's strengths to produce an environment that is cost effective and standards-based for plant wide control from process to energy management.

ty across the process enterprise. The need for open and secure access to data across the entire process enterprise has driven the creation of a single environment where these applications can coexist and share information with each other, but there is little agreement as to how this common environment should function or the technology that it should be

based on. In ARC's view, this environment must embrace standard technologies, work processes, and best practices wherever possible to ensure the widest range of choice for the process industry and to ensure a path toward open development, away from the proprietary standards and technologies that are the legacy of yesterday's energy management, production management, and process automation systems, and a primary source of additional lifecycle costs for the process industry.

The process industry is under increasing pressure to respond to competition, meet regulatory requirements, maximize energy management, address sustainability initiatives, and drive innovation. For any process supplier, the need for an open environment must be supplemented by a fit for functionality approach that addresses specific process industry expertise. It is a significant competitive advantage for a process supplier to offer an open and collaborative production environment that embraces standards and can address the full scope of applications. Just as important, however, is the ability to provide an open framework for production management or MES applications that allow truly transparent access to data from multiple applications in a contextual manner that provides the right information to the right people whenever it is needed, regardless of where it resides in the system. Schneider Electric has combined its expertise in real time control applications and energy management with its production management and HMI capabilities to produce such as system, known as PlantStruxure, which leverages many of Schneider Electric's strengths to produce an environment that is cost effective and standards-based for plant wide control from process to energy management.

## The Process Industry Challenges Today

Barriers to information still exist between energy management and process automation systems interacting with operations management and enterprise systems. The process industry should consider the impact that these barriers to information have on productivity, business opportunities, lifecycle costs, and the realization of a strategy for operational excellence in today's process plants.

Process suppliers need to move to a single environment where the energy management and automation systems seamlessly interact with operations management applications.



**Collaborative Manufacturing Management**

Whether one wants to characterize it as driven by the "Flat World", globalization, or increased connectivity through the Internet and related technologies, the increased speed and agility of today's process industry has created the most competitive environment in history. Information, ideas, and currency are being exchanged at the speed of light. The networks that facilitate these exchanges are evolving to become more and more complex and difficult to manage.

Amid all of this, the process industry needs to enhance its speed and agility to respond to customer demands, regulatory pressures, competitors, energy costs, sustainability initiatives, and shareholders. At the same time, product variety has increased dramatically, placing greater demands on process automation.

It would be a rash overstatement to say that the old, traditional world of process automation and operations management has been an enabling force for driving agility and speed. For example, in the process industries, material flows through pipes, vessels, and tanks. Products are created and managed at the molecular level. Systems, software, and devices that control these real time processes, and the energy it takes to run these processes, have long been regarded as separate, sacrosanct domains from the non-real-time world of operations management functions that dictate planning activities, production schedules, and other realms of operations management (also known by the designation of "MES"). Even the realm of plant design and engineering, which can provide valuable data to production systems, was regarded as a separate domain.

If one counted the number of hours spent, the amount of custom code generated, and the amount of money spent by the process industry trying to tie

The process industry is faced with issues such as sustainability, preserving capital assets and extending their life, increasing asset utilization, maximizing operational effectiveness, reducing fixed costs, minimizing variable costs, and empowering their workers to make it all happen.

these worlds together, the figure would be staggering, well into the billions of dollars. The process industry can no longer afford to deal with this, as the economic concerns of the enterprise have foreshadowed the concerns of technology. The process industry is faced with issues such as sustainability, preserving capital assets and extending their life, increasing asset utilization, maximizing operational

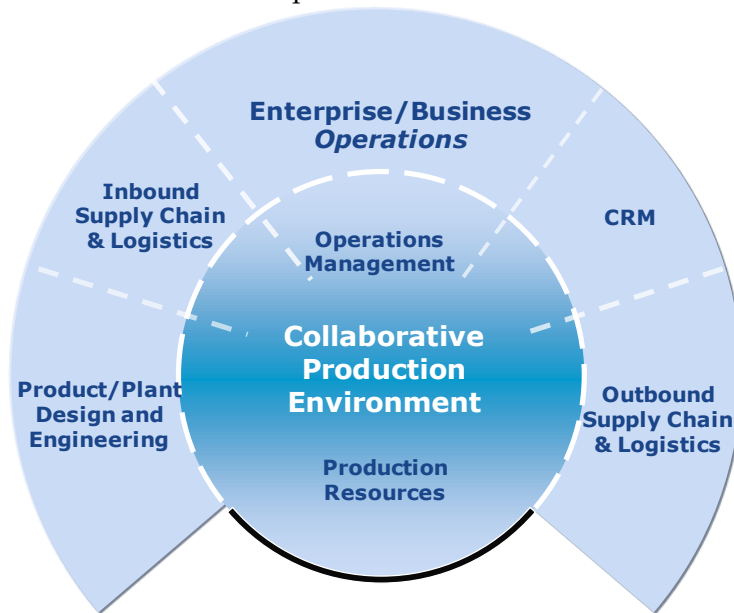
effectiveness, reducing fixed costs, minimizing variable costs, and empowering their workers to make it all happen.

In the past decade, however, we have witnessed a wholesale collapse to these barriers to information. The first major step toward this in the world of energy management and automation systems was probably the adoption of Ethernet-based control networks and commercial off the shelf hardware, components, and operating systems. The adoption of standards also played a role in the openness of systems, from OPC UA, ISA95, ISA88, to IEC 61131-3 and others, standards have greatly improved the way systems communicate and provide users with flexibility, choice, and predictability.

ARC has developed many models to illustrate the collapse of barriers to information and the openness of systems and applications. ARC's Collaborative Manufacturing Management (CMM) model provides a roadmap to operational excellence on a high level throughout the process enterprise, but its focus is not specifically on process automation or operations management. Other ARC models, such as the Collaborative Process Automation Systems (CPAS), Programmable Automation Controllers (PAC), and others focus on some specific aspects of these requirements, but do not articulate the collapse that we have witnessed between operations management and process automation along with the broadening scope of plant-wide automation and how this has affected the traditional, hierarchical model of automation that many of us are familiar with.

## Process Automation & Energy Management Barriers Breaking Down

While CMM is a good way to articulate the various relationships between primary domains of functionality in the process enterprise, it does not delve deeply enough into the relationships between energy management, process automation, operations management, and engineering and design in the process industries. A different kind of view and a more explicit model was



**ARC CPS Model Showing Collapsing of Boundaries between Production and Enterprise Systems**

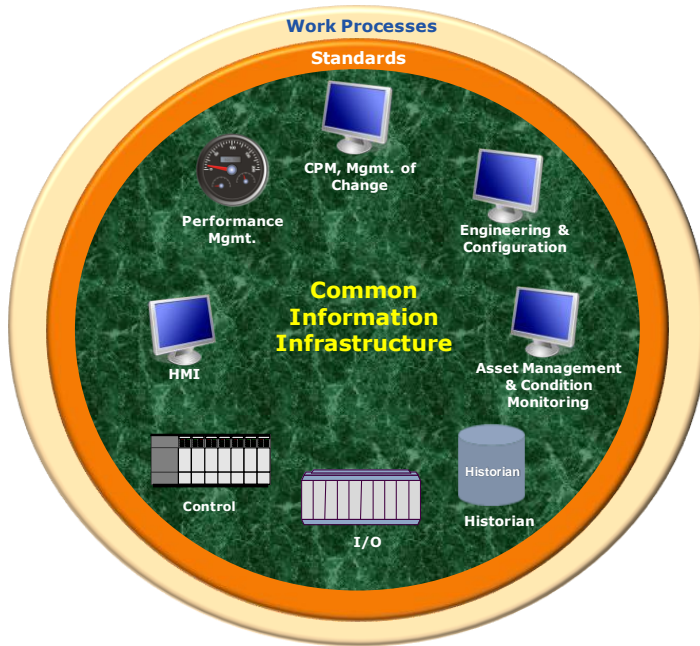
required to show the growing integration of the real time world of control applications with the transactional world of operations management, engineering, and design. For this purpose, ARC has developed a model for Collaborative Production Systems (CPS), which clearly illustrates the increasingly collaborative relationships between these domains and how they interact with the rest of the process enterprise in a non-hierarchical manner. It is not intended to suggest that the process industry needs a single monolithic system for their production ecosystem. More importantly,

CPS starts as a high-level abstraction to illustrate common concepts among different process industries, and then becomes more granular and refined to suit the needs of specific industries, from oil & gas to food & beverage. In the process industries, the relationship between operations management and automation remains at the forefront.

The breakdown of barriers between energy management, process automation and operations management has been evolving for some time. Process suppliers must move to a single environment where production management applications such as plant asset management, performance management, and scheduling can plug seamlessly into the same communications infrastructure and environment as the basic energy management and control system functions, including HMI, system engineering and configuration, and control. For the process industries, full realization of the

CPS model would include a single system infrastructure that encompasses all types of control, from continuous, batch, and logic. This full spectrum of control functionality would exist in the same common infrastructure alongside the operations management applications, all sharing a common adoption of standards and work processes.

### Decomposition of CPS Model and Linking to CPAS Principles



### CPS for Process Provides a Common Information Infrastructure and Open Access to Data across Applications

The CPS model also makes a good starting point for decomposition into the specific requirements for the process industries. One can easily overlay the principles embodied in the ARC Collaborative Process Automation System (CPAS) model into the CPS space, where principles such as a single control hardware infrastructure, single HMI, single historian platform, and open environment for production management applications all coexist and access to data is facilitated by a common information infrastructure.

The CPS model emphasizes the elimination of barriers to contextualized, role-based information. The value of information in a real-time enterprise is

directly proportional to the number of people using it to collaborate and the period in which the information is made available. The CPS model also highlights the need for enhanced collaboration, whether the collaboration is between Corporate IT and automation groups or other disciplines such as engineering and operations.

There are aging process automation systems out there that are nearing their end of life. The people who knew how to run and operate those systems are retiring. There is a need to update systems that can be managed and maintained by the new workforce and to take businesses successfully forward for the next 10 to 15 years. It is no longer very effective to update or maintain a single controller at a time. Businesses are looking to tie their energy management and control systems into their business information systems, but to do so intelligently. The CPS model can help them define their path to success.

## Schneider Electric's Process Solutions

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Although there are many suppliers who can deliver portions of solutions that fulfill the process industries requirements for Collaborative Production Systems (CPS), only a small number can deliver these solutions globally and from a single source. Schneider Electric is one of those global and single source suppliers that have been delivering solutions to the manufacturing and process industries for over 40 years. Schneider Electric's milestones include its Modicon legacy, which brought the world's first PLC to market, the 084, in 1968, as well as the Modbus industrial network protocol to market in 1979. In 1996, Schneider Electric introduced its first Programmable Automation Controller (PAC) based on their Modicon family, a multi-disciplined platform for logic, process, and motion control with embedded web server capabilities and onboard data logging. Schneider Electric also acquired Citect in 2006, adding and integrating the portfolio of one of the world's leading providers of industrial automation software into its complete automation and control solutions offering. The integration also encompassed Citect's field operations (sales, professional services and training) team to further strengthen Schneider Electric's supervision control and data acquisition (SCADA), human-machine interface (HMI) and manufacturing execution system (MES) solutions, capabilities, and services. All this, coupled with the fact that Schneider Electric is a world leader in providing power and energy management devices and software, creates a compelling offering for the process industry.

Today, Schneider Electric is fulfilling the ARC requirements of CPS with the introduction of its PlantStruxure process automation system, including a suite of production management software solutions under the SoCollaborative umbrella.

### "One Company" Driving Solutions

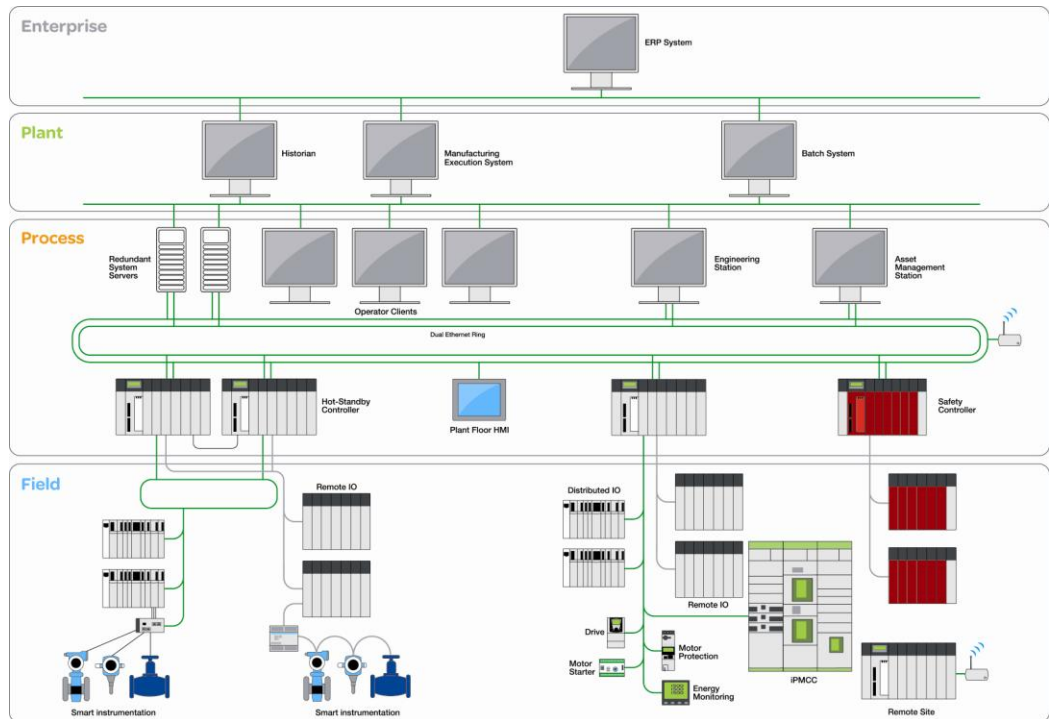
Part of Schneider Electric's evolution in order to introduce its PlantStruxure and SoCollaborative software solutions to the marketplace is the strategic transformation of the company. This transformation is based on the recent "ONE Company" announcement, which is a series of new company strategic initiatives that focus on becoming ONE solution provider while simplifying its processes to act as ONE global company. Schneider



Electric will accelerate its drive to address end user needs for customized solutions with strong energy management benefits, thereby capturing a bigger part of the value chain and leveraging its integrated portfolio of businesses by promoting a common architecture and adapting its organization to align with end user segmentation. For the process industry, this results in Schneider Electric providing common, collaborative solutions that address both automation and energy management needs, then tailoring those solutions to be industry, application, and end user specific to optimize the return-on-investment (ROI) and return-on-assets (ROA) for each individual customer.

**Re-organized to make Process Control a Key Focus**

The ONE company initiative helps to explain how Schneider Electric has been and continues to re-organize internally to make the process industries a larger focus, evolving from simply a product supplier to a “product and solutions supplier”, offering a full portfolio of solutions that have been assembled both organically as well as through acquisitions. This is what led to the development of PlantStruxure, the name of Schneider Electric’s process automation system. PlantStruxure’s architecture is built using Schneider Electric’s range of PLCs and PACs, distributed I/Os, safety PLCs, HMIs, gateways, AC drives, motor control, and protective relays and power meters.



**Schneider Electric’s PlantStruxure Delivers Complete Solutions for Process Control and Energy Management**

A key component of the PlantStruxure offering is Schneider Electric's SoCollaborative integrated software suite, which includes system engineering tools as well as HMI/SCADA and historian functionality, complemented by Ampla, its MES offering. These portions of the PlantStruxure architecture were the last pieces of the puzzle that were missing, but were clearly addressed by the 2006 acquisitions and integration of Citect. This enables PlantStruxure to provide the process industry with a complete process automation system's offering without compromise.

PlantStruxure also includes networks and communications, which are built on Ethernet. The Ethernet capabilities in PlantStruxure offer all the industrial features of Ethernet and facilitates transparent communication between the field, process, plant and enterprise. Network technologies and web services guarantee the efficient sharing and distribution of information between sensors, instrumentation, devices, controllers, operator workstations and other third party systems. PlantStruxure provides the process end user with open fieldbus and device network connectivity.

### **Collaboration is Key through the Entire Software Offering**

By re-organizing to make the process industries a key focus, Schneider Electric has been working to provide a software suite that brings consistent value through all process control disciplines including engineering, operating and monitoring, maintenance, data storage and reporting and optimizing. The SoCollaborative integrated software suite is the family



name associated to any software that is part of Schneider Electric's PlantStruxure. SoCollaborative provides assurance to customers that its solu-

tions are integrated and support collaboration, helping to drive energy management at all levels of a process end user's organization. SoCollaborative software provides the ability to measure and analyze data, delivering advanced trending and processes visualization as part of its standard operating and monitoring modes. SoCollaborative software also provides proactive maintenance capabilities that prolong asset life through the collection and storage of all process, quality, and energy data from across plant sites, generating detailed reports to help in the decision making process by leveraging historian and process optimization functionalities. The software is also open to work with third party software and systems, and helps people collaborate with each other and maximize the efficiency of their energy.

## PlantStruxure Addresses Today's Process Industry Challenges

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Schneider Electric's PlantStruxure addresses traditional process industry challenges that are found today at plants globally. Three examples of how Schneider Electric addresses these challenges include reducing engineering time, providing high availability architectures, and solving process safety challenges.

### PlantStruxure Helps to Reduce Engineering Time

Schneider Electric is able to develop solutions that are focused on shortening project delivery time with software that matches engineering workflow, and enabling the process end user to manage their systems from a single

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location with all of the necessary tools at their disposal. This is achieved through SoCollaborative Engineering, which is an all-in-one software package specifically for engineering and maintaining process automation systems. A combination of single data entry, feature-rich object libraries, collaboration with

process design software, and the ability to standardize and reuse engineering best practices, helps users turn P&ID, functional specifications, and wiring diagrams into a fully functional process control system.

### PlantStruxure Provides High Availability Architectures

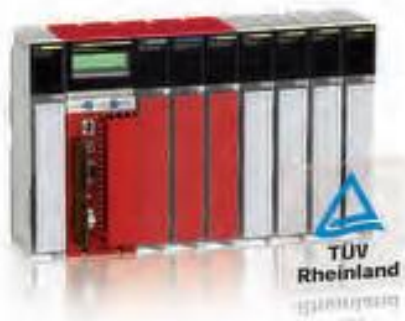
High availability is required by all customers whose process cannot afford an unexpected downtime because their product material costs and/or process start-up costs are high, they have aggressive production targets, their product quality is affected by downtime, and unscheduled downtime could potentially cause harm to people and/or equipment. Unexpected downtime can result in lost production and revenue, wasted energy, increased use of raw materials and consumables, higher maintenance costs, and have a possible negative impact to the safety of personnel and equipment. Schneider Electric's PlantStruxure offers tested and proven high availability systems at every process level, focused on providing continuous operations, accelerating the process end user's return on investment (ROI), and increasing plant maintainability and efficiency.

High availability redundancy solutions include operating and monitoring of networks, I/O devices, servers, LANs, and controllers. PlantStruxure

redundant system servers ensure automatic failover from the primary to the standby in the case of a component failure, and the system continues to operate as normal without any interruption to operations. When the primary server is brought back online, the trend, alarm, and event data is backfilled from the standby server to ensure no loss of data. PlantStruxure control networks support the highest level dual-ring Ethernet network topologies for maximum availability and redundancy. These high availability network architectures increase the robustness and fault tolerance of the system. When PlantStruxure is configured to use hot-standby controllers, the system contains redundant CPUs, power supplies, and network modules. If there is a failure of a component in the primary controller, then the system will automatically switch over to the standby controller.

### Safety is Core to PlantStruxure

Schneider Electric's PlantStruxure also offers solutions for functional safety applications in industries such as oil & gas, chemical, petrochemical, power, and mining. In accordance with functional safety standards and regulations,



**Schneider Electric's PlantStruxure Experience Includes Deploying Safety Instrumented Systems (SIS)**

PlantStruxure safety systems reduce the risk level for core critical processes as well as safety distributed applications, deploying solutions such as the 1oo2 Modicon Quantum hot stand-by fault tolerant controller solutions, and the XPS MF solutions for small emergency shutdown (ESD) systems and burner management systems (BMS). These safety solutions are IEC61508 safety certified by TUV Rheinland Group, applicable up to SIL3. Typical PlantStruxure safety systems are found in applications such as pipelines, tank farms, oil-rigs, oil platforms, turbine monitoring, well-head control, and subsea.

The integration of safety applications into the overall automation system is simplified as PlantStruxure enables the process control system and safety instrumented systems (SIS) to exist within the one architecture. These integrated and collaborative scalable safety solutions are based on standard networks and open software systems. The commonality of the hardware architecture, communication networks and software environment allows the process end user to reduce maintenance and training costs. By providing full redundancy, safety systems offer the process end user the ability to repair any fault without interrupting the process, thereby increasing productivity and profitability. Full redundancy allows the process end user to

meet two objectives, bringing their processes to a safe state when an unsafe situation is detected, and never interrupting their process at any other time. Overall, safety systems help to preserve the environment, production tools, assets and people.

## PlantStruxure Addresses Tomorrow's Process Industry Challenges

Schneider Electric's PlantStruxure is designed to address future process industry challenges that will be faced by plants globally. Examples of how Schneider Electric will address these challenges of tomorrow include collaboration and energy management.

### PlantStruxure Delivers on Collaboration

One of the key challenges that PlantStruxure addresses includes the process industry's increasing requirements for collaboration. PlantStruxure enables products and systems to collaborate, utilizing open standards and third

PlantStruxure enables products and systems to collaborate, utilizing open standards and third party technology to bring added value to a process end user's organization.

party technology to bring added value to a process end user's organization. PlantStruxure follows the collaboration philosophy of ARC's CMM Model, where disciplines such as process automation and operations management have seamless connectivity to ERP via the SoCollaborative software suite's functional

ity. Collaboration is also achieved through the use of open networking technologies, even leveraging protocols outside of the ODVA and Modbus organizations such as Profibus for plantwide networking or HART for instrumentation.

Tools that enable persons to collaborate with each other are primary drivers for increased efficiency. Persons within an organization need to be provided access to whatever information is required to optimize decision making based on their job roles or functions. Plant managers need to see only the required information from their perspective, and the same for the operators or the engineering team. PlantStruxure provides these collaboration tools that enable efficiency through the SoCollaborative software suite.

Benefits resulting from the collaboration that PlantStruxure and the SoCollaborative software suite enable include increasing engineering

productivity. PlantStruxure enables the implementation of standardization and features reusable and extensible object libraries. This helps to reduce engineering times to accelerate project schedules. PlantStruxure makes it easier to manage local and remote engineering teams, as one can administer the entire system from a single location. Off-line simulation is also an integral part of PlantStruxure to reduce testing and commissioning times. Another benefit resulting from the collaboration is bringing transparency into the process environment. Integrating all PlantStruxure services into a single structured system backbone provides a 'transparent' infrastructure, which enables authorized users access to information from any location. Transparency reduces the capital costs of design and installation, all while optimizing the operation costs.

### **PlantStruxure Delivers on Energy Management**

Another key challenge that PlantStruxure addresses includes the process industry's increasing requirements for energy management. According to Schneider Electric, active energy management is more than products or solutions; it is a procedure that must be followed in order to sustain energy savings. This procedure includes auditing and measuring the process to establish a baseline and identify areas for improvement around energy consumption. The next step in the procedure is to fix the basics by installing the devices that are needed to record and measure energy usage, optimize power factor, and increase power reliability. The third step is to optimize through automation by sustaining the energy efficiency gained through devices such as AC drives, intelligent power and motor control centers (iPMCCs), controllers, and automated processes. The final step is to monitor, maintain, and improve by continuously viewing the processes and

making improvements through the uses of software tools such as PlantStruxure's SoCollaborative suite, including HMI/SCADA, historian and MES functionality.



**Schneider Electric's iPMCC  
Intelligent Power and  
Motor Control Center**

Power and control have traditionally been separate worlds. Today however, the process end user can only optimize their efficiency and reduce operating costs by implementing strategies that combine both. PlantStruxure is designed to combine process and energy information into one system, providing a single interface for all process and energy control and management. PlantStruxure solutions that combine process control and energy management include smart power and energy meters that enable the collection of data from multiple energy sources

such as water, air, gas, electricity and steam, and make this data available in the system. Combining this data with other process related information provides the user with a clear picture on per unit energy consumption and helps to pinpoint areas for improvement within their process. PlantStruxure is also deployed to reduce peak demand surcharges, implement dynamic load-shedding strategies within the control system, reduce power factor penalties, leverage existing infrastructure capacity and avoid unnecessary capital outlay, and support proactive maintenance to prolong asset life.

Electric motors remain a critical target for energy management, as up to 60 percent of a total plants energy consumption is from motors. Variable speed drives are used to optimize the energy management of the electric motors in plants for fan, pump and conveyor applications. Longer motor life and reduced maintenance costs are also benefits of plants deploying variable speed drives. PlantStruxure also delivers energy savings via transparent connectivity to iPMCC (Intelligent Power and Motor Control Center) solutions integrated through the use of the PlantStruxure network architectures, motor protection devices and variable speed drives. iPMCC brings intelligence to motor control, increasing system availability based on networks with fewer potential failure points, and fewer shutdowns due to remote access and advanced problem identification.

## Schneider Electric Capabilities & Expertise

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The process end user demands support throughout the lifecycle of their plants, including design, operation and modernization, and require expert services available globally. To accommodate that demand and support PlantStruxure installations, Schneider Electric has established a global network of project execution centers and training and service centers,

Schneider Electric has over 40 years experience of deploying global and local project teams to manage process automation, energy management and electrical distribution projects at process plants of all sizes and applications worldwide.

combined with partner network of solution partners that comprise major EPCs, OEMs and System Integrators. In addition, to provide support for process plants worldwide, Schneider Electric has teams of engineers located globally to provide PlantStruxure services such as project management and project engineering. Schneider Electric has over 40 years

experience of deploying global and local project teams to manage process automation, energy management and electrical distribution projects at process plants of all sizes and applications worldwide.

Schneider Electric deploys process automation specialists whom provide consultation services and audits to understand, evaluate and propose PlantStruxure solutions and strategies to optimize process efficiency and achieve energy savings. For pre-project phase, consultants devise methods to integrate process automation with the enterprise and offer solutions on the most appropriate process control architectures, intelligent motor control

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centers, energy management networks and electrical distribution solutions according to the plant's requirements and budget objectives. Schneider Electric also offers a range of customized service contracts to meet the particular process end user's requirements including telephone support for priority access to Schneider Electric's expert sup-

port centers, web access to leverage the latest software versions, stock of approved replacement parts on either the plant site or in a local Schneider Electric warehouse, and assurance of on-site assistance within a guaranteed period of time. Schneider Electric's engineers help's the process end user to anticipate technical risks and perform essential modernizations by taking account of equipment obsolescence, in order to avoid costly production shutdowns.

A growing number of process plants have started to look at their control systems with the intention of assessing the risk and developing system migration plans. Migration needs and situations are unique to every processing plant, and system migration solutions will be custom by definition. Schneider Electric personnel are experienced in initiating this process with a discussion on the goals of the processing plant, followed by an audit of the site. Schneider Electric's "Automation and Control Planning Guide" provides tools for this auditing process. Information on the lifecycle stage of various products operating on the plant floor needs is then procured and alternative scenarios and potential migration paths for PlantStruxure solutions are formulated and evaluated.

### **Automation Partner Networks**

Systems integrators are historical partners of Schneider Electric and play a key role in the deployment of automation systems for the process industry.

Schneider Electric's solutions partner program provides support and training for systems integrators and control panel builders. Schneider Electric also has alliance partnerships with more than 700 systems integrators in 30 countries that provide qualified local resources for the integration of complete process automation solutions, leveraging advanced engineering tools designed especially for these alliance partnerships. To this regard, the Control System Integrators Association (CSIA) recently honored Schneider Electric with its 2009 CSIA Partner Company of the Year Award.

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CSIA is the largest organization in the world for control system integrators, and is designed to help members improve how they approach business activities, manage projects and deliver solutions.

Also, along the themes of offering a high level of collaboration, openness and standardization, Schneider Electric has a long established Collaborative Automation Partners Program (CAPP). The aim of the CAPP is to leverage best-in-class offerings from over 45 partners so a user's preferred solutions can collaborate together with Schneider Electric platforms such as PlantStruxure and benefit from interactive information sharing. Collaborative Automation Partners include companies such as MDT Software, providers of solutions for automation change management and version control, which is software used to protect, save, restore, and track changes in devices and documents. Another partnership example is with KROHNE for the Oil & Gas market, which provides pipeline instrumentation including custody transfer, flow measurement, and pipeline leakage detection systems that enable the monitoring and managing of pipeline operations.

### **Schneider Electric's Support of Open Standards**

In order to achieve a high level of collaboration, openness and standardization, Schneider Electric is committed to heavy involvement and contributions to leading standards organizations. For example, Schneider Electric is a principal member of ODVA, an international association which supports network technologies based on the common industrial protocol (CIP), which includes amongst other protocols, EtherNet/IP. ODVA manages the development of these open technologies and assists the process industry and users of CIP Networks through activities in standards development, certification, vendor education and industry awareness.

Schneider Electric has worked closely with ODVA to enhance the CIP protocol to include Modbus TCP. This will provide a major benefit to all existing users of both Modbus TCP and all ODVA CIP-based networks. Modbus protocol is a messaging structure developed by Modicon (purchased by Schneider Electric in 1994) and introduced to the market in 1979. Modbus is used in multiple master-slave applications to monitor and program devices, to communicate between intelligent devices and sensors and instruments, and to monitor field devices using PCs and HMIs. Modbus is widely deployed with over 7 million nodes installed, representing the products of over 60 members of the Modbus Organization (founded by Schneider Electric), and is the backbone of Modicon/Schneider

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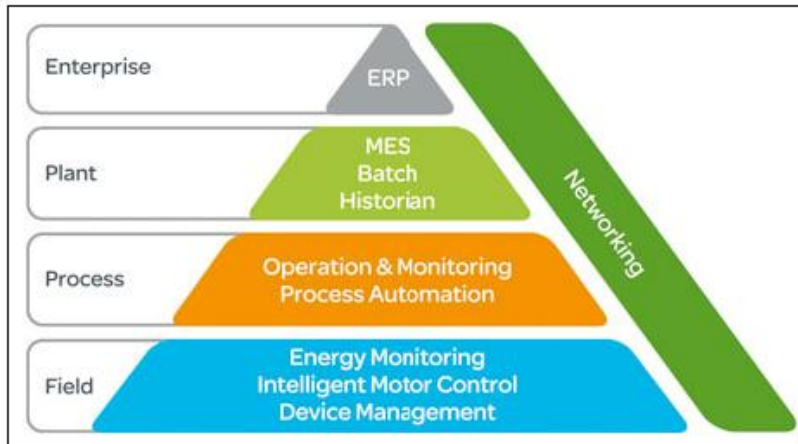
Electric's past and present installed base. Today, CIP integrates support of Modbus server devices into the CIP architectures with Modbus translation services for originator devices on CIP and allows devices supporting Modbus TCP and EtherNet/IP to reside on the same TCP/IP network, or even in the same device.

Schneider Electric is also involved in the FDT Group, which standardizes the communication and configuration interface between field devices and host systems. FDT (Field Device Tool) provides a common environment for accessing the devices' features, so devices can be configured, operated, and maintained through a standardized user interface regardless of supplier, type or communication protocol. FDT Technology closes the fieldbus gap by providing a standard way for device vendors to create user interfaces for advanced device management. FDT allows device manufacturers to install a single DTM (Device Type Manager) driver for a device for use with multiple Windows software products such as Asset Management, PLC programming, and device configuration and parameterization. FDT provides a workspace environment for the DTM's to be configured and a method for communication to connect from the PC to the respective field device.

## Summary and Conclusions

Schneider Electric has met the challenge of developing an open and collaborative framework, PlantStruxure, for process automation and energy management linked to the enterprise. Its background in process automation and energy management, along with additional new production management offerings via the Citect acquisition, has helped to bridge the functionality gap across the process enterprise. PlantStruxure, along with SoCollaborative software solutions, has created a common single environment where these applications can coexist and share information with each other. This environment embraces standard technologies, work processes, and best practices, ensuring a wide range of choices for the process user.

Schneider Electric's challenges going forward are to ensure its customers



### Schneider Electric's PlantStruxure Includes Field, Process and Plant Solutions with connection to the Enterprise

Schneider Electric also has a tremendous opportunity to demonstrate to its customers that they have the in-house expertise that can directly support process applications, and that they have truly evolved from a product only company with a strong distribution network to a product and solutions provider who can provide direct support to the process end user as well. Schneider Electric must clearly deliver the message to the process industry that its expertise in real time control applications and energy management, along with its production management and HMI capabilities, creates an offering that is truly collaborative.

that they can provide a full array of process solutions without manufacturing a full line of process instrumentation. This can be offset by establishing strong relationships with instrumentation companies, similar to the relationship between Schneider Electric and KROHNE for pipeline instrumentation to perform custody transfer, flow measurement, and pipeline leakage detection systems, or possibly via an acquisition.

**Analyst:** Craig Resnick

**Editor:** Paul Miller

**Acronym Reference:** For a complete list of industry acronyms, refer to our web page at [www.arcweb.com/research/IndustryTerms/](http://www.arcweb.com/research/IndustryTerms/)

<b>BMS</b> Burner Management Systems	<b>ISA</b> Instrumentation, Systems, and Automation
<b>CAPP</b> Collaborative Automation Partners Program	<b>IEC</b> International Electro-technical Commission
<b>CIP</b> Common Industrial Protocol	<b>LAN</b> Local Area Network
<b>CMM</b> Collaborative Manufacturing Mgt	<b>ODVA</b> Open Device Vendors Association
<b>CPAS</b> Collaborative Process Automation Systems	<b>OEM</b> Original Equipment Manufacturer
<b>CSIA</b> Control Systems Integrators Association	<b>OPC</b> Object link embedded for Process Control
<b>CPM</b> Collaborative Production Mgt	<b>MES</b> Manufacturing Execution System
<b>CPU</b> Central Processing Unit	<b>PAC</b> Programmable Automation Cont
<b>CPS</b> Collaborative Production Systems	<b>P&amp;ID</b> Proportional, Integral, Derivative
<b>CRM</b> Customer Relationship Mgt.	<b>PLC</b> Programmable Logic Controller
<b>DTM</b> Device Type Manager	<b>ROA</b> Return on Assets
<b>EPC</b> Engineer, Procure, Construct	<b>ROI</b> Return on Investment
<b>ESD</b> Emergency Shutdown Systems	<b>SCADA</b> Supervisory Control and Data Acquisition
<b>ERP</b> Enterprise Resource Planning	<b>SIL</b> Safety Integrity Level
<b>FDT</b> Field Device Tool	<b>SIS</b> Safety Instrumented Systems
<b>HMI</b> Human Machine Interface	<b>TCP/IP</b> Transmission Control Protocol/Internet Protocol
<b>I/O</b> Inputs/Outputs	

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