Syncade™ Smart Operation Management
Smart Data. Smart Decisions.

SYNCADE™
Smart Operations Management Suite

EMERSON™
Process Management

Syncade™
Smart Data. Smart Decisions

Syncade suite is an innovative operations management solution that provides electronic manufacturing control to optimize across plant-wide work processes to increase productivity and maximize asset utilization.

Optimize resources across plant functions to improve performance

Process manufacturers continue to face many business challenges in a quickly changing world: global markets, increased competition, shorter product life-cycles, changing product demand and increased regulatory complexity. Companies need innovative ways to improve their production processes with fewer employees and tighter resources. But significant plant performance improvements cannot be realized with silos of departmentalized functions. Integrating information and activity across plant functions to optimize resources and workflow is critical.

Effectively integrate manufacturing information to improve product release times

How many times have you had to rework or quarantine off-spec product just because a critical piece of lab information or unit performance criteria was missing when a decision had to be made? Integrating data and documentation can provide a step change in productivity by getting the right information to the right person in an easy-to-understand format.

Collaborate work activity to minimize variability

Today, most manufacturers have shift- to-shift variability based on how well or how poorly departments work together and the differences in how individuals perform their tasks. Optimized and integrated workflow can reduce these variables with enforced operator guidance to ensure proper processing. Additionally, real-time verification of operator training ensures proper personnel qualifications. The result? Reduced waste, rework, and errors.

Effective use of production information increases productivity.

Make better business decisions with PlantWeb®

PlantWeb is the proven digital plant architecture that uses the power of predictive intelligence to detect operations, process and equipment problems even before they occur, so you can move from reactive to proactive and profitable management. Syncade smart operations management suite extends PlantWeb to integrate smart real-time, plant-floor data with your business processes; thereby giving you the power to make better decisions and operate more effectively.

Optimize operations management across your facility

Data and workflow management are increasingly becoming high value-add components in a manufacturing operation.

Today, by using the latest technology and adhering to industry standards, Syncade suite integrates across plant functions to enable optimized operations. Implemented in a modular, scalable manner, Syncade suite allows you to capitalize on four concepts critical to operations management:

- resource management
- operations optimization
- integrated information
- quality and compliance.

Syncade suite delivers value to your manufacturing operations:

Reduce
- Cost of goods manufactured
- Non-value activities
- Cost of quality
- Variability in operations

Optimize
- Assets and resources
- Inventory
- Synchronization with demand
- Equipment utilization
- Cycle time

Improve
- Right first time yield
- Data access and integration
- Product release time
- Regulatory compliance.

SYNCADE™
Smart Operations Management Suite

RESOURCE MANAGEMENT
- Equipment Tracking
- Materials Management
- Weighing
- Training & Development

OPERATIONS OPTIMIZATION
- Recipe Authoring
- Electronic Workflow
- Order Management
- Scheduler

INTEGRATED INFORMATION
- Operations Dashboard
- Message Broker
- Process Analyzer

QUALITY & COMPLIANCE
- Document Control & Archiving
- Federated Document Search
- Batch Record Printing
- Security & Audit

Syncade—Advanced Technologies for Easy Implementation

Syncade suite is built with today's technologies to deliver and manage information where and when it's required.

Syncade suite takes advantage of the latest technology:
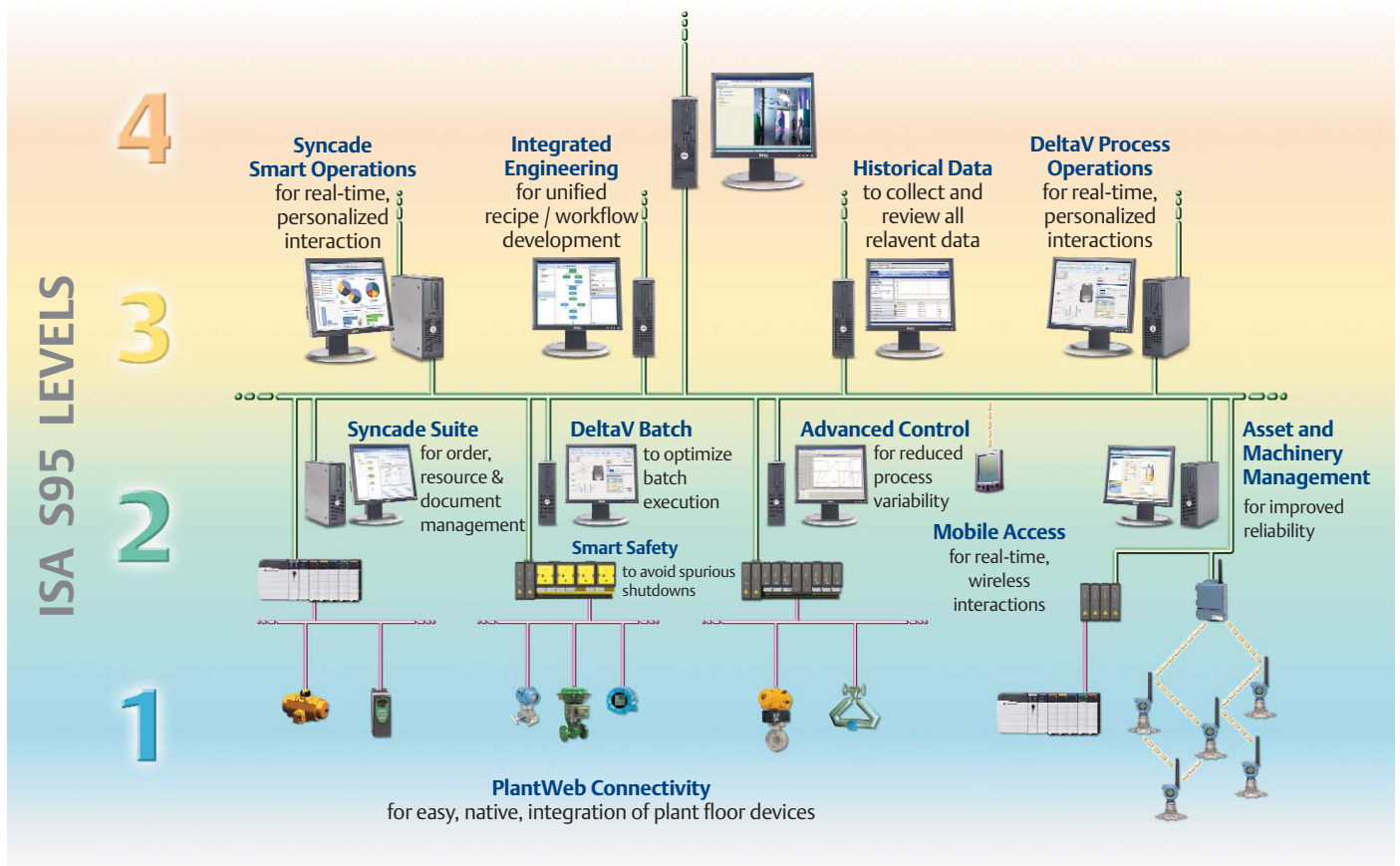
- Microsoft .NET framework provides a comprehensive Service-Oriented Architecture
- Web services communication and presentation supports information "push" and access across firewalls.

- OPC provides a standard for high speed communications among real-time systems (Data Access, Historical Data Access, Alarms & Events, etc)
- XML, eXtensible Markup Language standard, allows for easy data integration structure
- Secure Socket Layer provides data encryption for security
- 802.11a, b, & g wireless enables mobile communications.

Syncade suite enables you to use these leading technology advancements to your advantage by seamlessly integrating data and applications to improve your plant's performance.

Modularity and scalability allow realistic implementation

Syncade suite lets you implement functionality as needed—providing the flexibility to start with one application module and add capability based on available resources and/or business conditions. Additionally, Syncade suite allows easy expansion of the number of users, so you can roll out the solution to multiple plant areas, process trains, or sites as desired.
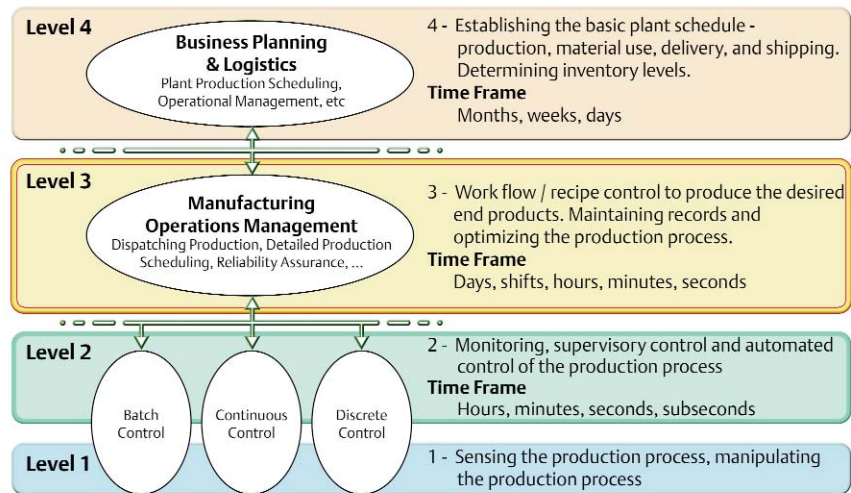

ISA S95 LEVELS

4

3

2

1

Syncade Smart Operations for real-time, personalized interaction

Integrated Engineering for unified recipe / workflow development

Historical Data to collect and review all relavent data

DeltaV Process Operations for real-time, personalized interactions

Syncade Suite for order, resource & document management

DeltaV Batch to optimize batch execution

Smart Safety to avoid spurious shutdowns

Advanced Control for reduced process variability

Mobile Access for real-time, wireless interactions

Asset and Machinery Management for improved reliability

PlantWeb Connectivity for easy, native, integration of plant floor devices

Comprehensive integration across the plant floor.

Standards enable practical integration

Two industry standards, ISA95 Enterprise-Control System Integration and ISA88 Batch Control, play a critical role in enabling the practical integration of plant operations. ISA has defined a functional hierarchy model within a manufacturing operation that helps companies optimize functions, processes, and data.

ISA95 Standard, Enterprise-Control System Integration, is the industry standard for information exchange between enterprise and manufacturing control activities and their supporting IT systems. It defines data models, work activity, and operations management information exchange. These functions coordinate the people, equipment, materials, and energy within a manufacturing facility. The activities defined in Levels 3, 2, or 1 are critical to plant safety, reliability, efficiency, product quality, and maintaining regulatory compliance. ISA95 Level 3 functions coordinate the resources (people, equipment, and materials) needed through all process steps to produce the end product.

ISA88 Standard, Batch Control, provides guidelines for the design and specifications of batch control systems, including terminology, batch control language data structure, and batch control architecture that defines both physical and functional models.

Level 4 — Business Planning & Logistics — Plant Production Scheduling, Operational Management, etc

4 - Establishing the basic plant schedule - production, material use, delivery, and shipping. Determining inventory levels.
Time Frame Months, weeks, days

Level 3 — Manufacturing Operations Management — Dispatching Production, Detailed Production Scheduling, Reliability Assurance, ...

3 - Work flow / recipe control to produce the desired end products. Maintaining records and optimizing the production process.
Time Frame Days, shifts, hours, minutes, seconds

Level 2 — Batch Control, Continuous Control, Discrete Control

2 - Monitoring, supervisory control and automated control of the production process
Time Frame Hours, minutes, seconds, subseconds

Level 1 — 1 - Sensing the production process, manipulating the production process

ISA95: Enterprise-Control System Integration 1: Models and Terminology; ANSI/ISA95.00.01– 2000

The physical model is the hierarchical structure that relates control equipment and data communications needed for the physical areas; including enterprise, site, area, unit, equipment module and control module. The functional model shows the relationships between the five types of control: recipe management, scheduling, sequential control, regulatory control, and safety interlock systems. The procedural model of ISA88 defines the control that enables the equipment to perform a process function: procedure, unit operation, operation, unit phase, equipment phase. The ISA88 standard provides a framework for addressing the modularity and flexibility that enables a manufacturer to quickly produce a new product.

Syncade suite adheres to the ISA95 and ISA88 standards and provides benefits which directly

reduce time and cost during the documentation, implementation, testing, and verification phases of a project—delivering added value.

■ Object-oriented, class based, scalable designs allows the software to be reused
■ Modular design allows for easier re-configuration and redeployment of functionality
■ Standard terminology facilitates clear communications between automation, IT, quality control, manufacturing and management
■ Consistent structure and terminology enables optimized plant-wide workflow with easy adoption
■ Data models and information exchange standards enable easy coordination of resources across plant functions and easy integration with other software applications
■ Information exchange provides a plant-wide data repository with easy access.

Real-Time Resource Management Reduces Variability

Effectively managing resources lets you to do more with less

By optimizing material conversion and eliminating the use of unsuitable material you can reduce waste and rework. Improving operator material management by guiding manual weighing and movement as well as enabling access to related support documents can increase performance. Tracking and verifying proper equipment use and status can avoid off-spec production and re-work. Making sure your personnel have the skills, training and qualifications they need to effectively perform their jobs can improve the morale of your greatest asset while improving their productivity.

Optimize material usage by managing the full lifecycle of material workflow. Accurate material management within a production facility has a significant impact on profitability and quality. Syncade suite helps you effectively manage materials in real-time to reduce costs and increase quality by assuring the correct materials are used during the correct process step.

Reduce operator errors by guiding the operator through defined weighing and material management sequences for material management operations.

Syncade suite does this by enabling easy access to all reference documents such as Standard Operating Procedures (SOPs), scale requirements, and Material Safety Data Sheets (MSDS).

Eliminate paper equipment logbooks by providing an electronic version integrated in real-time to smart devices and is easily accessed via any Windows device, including handhelds and PDAs. Enforcing equipment management status and integrating reference documents, such as SOP's, Syncade suite helps improve operator efficiency and ensures complete and accurate equipment data is automatic.

Ensure personnel qualifications by verifying personnel training and authority in real-time during process operation. Syncade suite enables easy notification of training requirements, as well as scheduling and verification of training sessions.
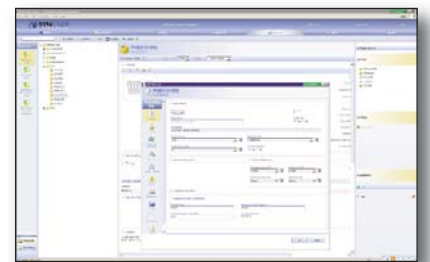

Material Management

supports the full lifecycle of material workflow and provides a powerful solution to help you manage the purchasing, receiving, warehousing, and shipping of materials. Materials Management may also be used to compliment an ERP inventory system by providing work-in-progress material management, tracking raw and intermediate materials throughout production and supplying inventory for final products.

Verify resource status and management so you can do more with less.
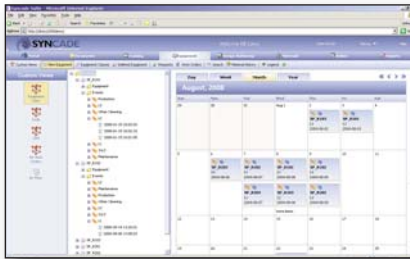
Equipment Tracking is a configurable equipment management system suitable to be used with any type of equipment. It assures that equipment is in a required state before use and eliminates the need for paper logbooks. It not only tracks equipment properties and states, but also manages definable equipment events, such as usage, cleaning, and maintenance. Equipment Tracking also provides paperless calibration record management and electronic equipment logbooks with real-time updating using wireless hand-held devices.
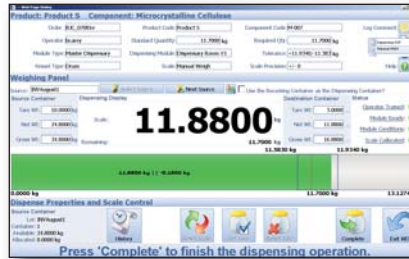
Weighing module provides the ability to manage weighing activities during manufacturing operations. It guides operators as large material containers are pulled from inventory and used to weigh out smaller amounts required for specific production needs. Features include full weigh-scale integration, bar code scanning and printing, material health and safety display, integration with enterprise ERP systems, embedded SOP document viewing and a dispensing dashboard for ongoing weighing operations display at a glance.
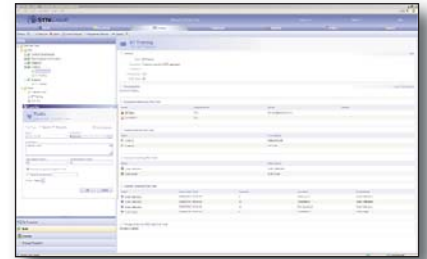
Training & Development provides a powerful and flexible solution for managing all aspects of employee training. It has a unique task-based design and intuitive interface that make organizing, scheduling, delivering, and tracking training easy. From training requirements definition to course and class scheduling, Training & Development has capabilities to manage a broad spectrum of training activities.

Integrated Operations Improves Efficiency

Managing workflow across plant functions to assure right first time production.

Even highly automated facilities depend on manual work activities performed by plant personnel to complete production. Electronic Workflow Management assures all specified manufacturing steps are performed according to correct procedure and documentation is complete.

Syncade workflow capability enforces sequencing with the use of electronic work instructions that guide the operator and provide access to reference documents (such as SOPs and MSDS). The Syncade suite also provides the capability to coordinate and control operations workflow, including both manual and automated procedures, to assure the final product has been made in accordance with the specified processing requirements and all documentation is complete and accurate.

Ensure consistent workflow by implementing a single order or workflow that spans both step-by-step manual activities as well as automated processes. Syncade suite provide comprehensive approach to workflow to help you optimize resources across plant functions for reduced operator errors and process variability.

The single order / workflow feature in Syncade suite enables comprehensive documentation records to be generated in real-time—flagging omissions or inaccurate data during processing, as well as enabling review by exception.

Synchronize disparate functions to improve operations performance by integrating real-time operations management systems with enterprise business systems. For example, if order management and production scheduling are closely linked to resource allocation and operations, capacity utilization can be maximized and inventory can be minimized. Another example is to integrate QC lab activities with plant floor operations to verify quality, support operational decision-making, and to enable release by exception.

Avoid missing or inaccurate data during manufacturing operations to reduce rework or scrapped product and improve product release time. By recording and verifying data from your production activities as events occur, Syncade suite helps you detect and correct missing or inaccurate data to ensure a comprehensive production record. By integrating information from various sources, such as lab results, Syncade suite can provide critical information in real-time for improved decisions and actions.

Reduce the engineering effort required to integrate systems by using standards-based modular software. Syncade suite, based on ISA88 standards, provides the framework to address order and workflow modularity and flexibility for easy design. This comprehensive scope and bi-directional capability directly reduce the time and cost of implementing, documenting and testing solutions.
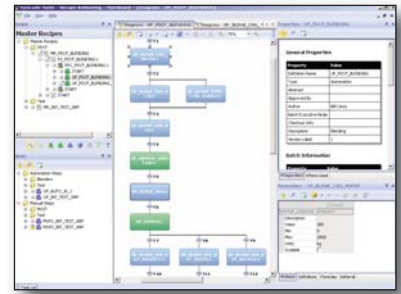

Recipe Authoring gives you a quick and easy way to create integrated orders and recipes consisting of automation and manual workflow functions. These recipes and orders are created using standardized libraries, modular building block construction and drag and drop design tools. Recipe Authoring makes it easy for non-technical people to design and implement manufacturing activity.

Connect work activity across functional silos seamlessly.
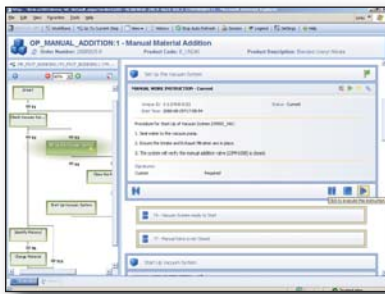
Electronic Workflow

provides completely paperless manufacturing operations. Electronic work instructions eliminate typical manual and paper-based execution and the associated management errors. When Electronic Workflow is integrated with other Syncade modules, it also performs real-time permissive checks, such as verifying material and equipment or confirming operator training which reduces common non-compliance deviations and improves release management.
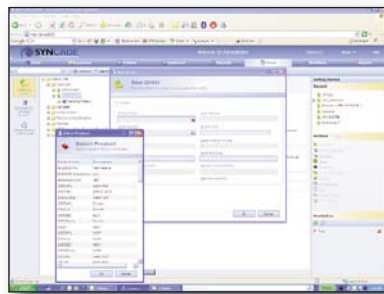
Order Management

provides scalability and oversight for all production orders, based on real-time needs. This solution integrates enterprise resource planning (ERP) production orders with plant floor systems and provides order management for facilities that do not have an ERP system in place.
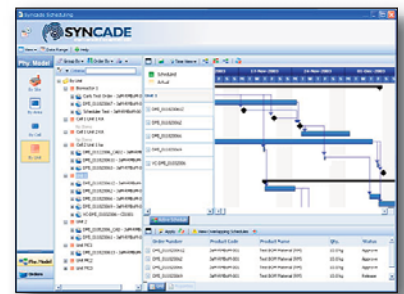
Scheduler is a powerful tool to

transform the high level production plan into specific order and equipment schedules. Scheduler then tracks or allows adjustments to specific equipment and materials as changing plant floor conditions require them.

9

Comprehensive, Verified Information Supports Better Decisions

Standards-based systems validate information and enable easy and maintainable solutions.

Plant-wide information integration optimizes resources and enables interdependent activities to be effectively synchronized. By validating this data and putting it in relative context for consumption by users and other applications, Syncade suite creates the information for collaboration and improved decision making. Using solutions that adhere to industry standards helps ensure maintainable functional integration. Syncade suite is easy to use, integrate and maintain because it's built on industry standard OPC and .NET based web services.

Provide the right information in the right format to the right person by customizing information to their needs. With so much data available, it can be difficult to analyze the data and determine what is important. But with Syncade's Operations Dashboard, user-customized web parts supported by web service access provide critical information,

such as incorrect material charging or equipment malfunction, is flagged in real-time and brought to the attention of appropriate personnel. Wireless access for expanding the capability of these solutions to mobile workers ensures all plant floor people have the best information at their fingertips.

Achieve higher performance by accessing all the available data in your operations. With Syncade suite's Process Analyzer, analysis tools and access to comprehensive operational data helps you gain a clear perspective of how to do more with your existing facility without large capital expenditures.


Integrate smart, real-time information to your business systems.

Operations Dashboard

provides a window into your manufacturing operations. With snap-in functionality and easily understood metrics, it gives operators and managers the tools they need to effectively compete in today's changing world. Operations Dashboard provides a completely configurable workspace that allows managers and other personnel to subscribe to key modules and data sources they need to perform their jobs. Customized, user-specific displays focus activity and minimize distractions. These enable the right information to be viewed by the right person without extraneous and potentially confusing data to be seen.
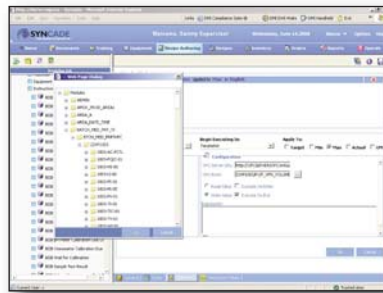
Message Broker provides

standard, configurable interfaces to specific complementary solutions such as an ERP or laboratory information management system (LIMS). Standardized transactions and queries make real-time information exchange easy, so the right data gets from one application to the next without errors or delays. Using industry standard Service-Oriented Architecture streamlines parameter connections between the applications.
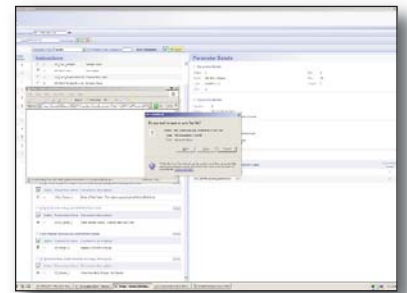
Process Analyzer lets you

mine data from multiple work activities and summarize it into consolidated information views for business performance analysis. Easily maintain work context while exposing opportunities for improvement.

Managing Paper to Reduce Errors

Managing documents saves time and money

Documentation is a necessity of effective operations and includes many types of documents. These documents support a wide array of audiences, such as operations, maintenance, and quality. They also support various information types, such as production records, SOPs, order forms, and lab reports. The development and change management of documentation has been inefficient and time consuming.

Ensure the current practices are being used across operations and across sites for optimal performance. Syncade suite's Document Control and Archiving makes documents that are approved and effective immediately available to operations personnel to ensure best practices are being used. Using electronic document management, Syncade suite enforces the consistent use of the most recent approved version.

Make document collaboration, routing, and approval intuitive by addressing the complete development lifecycle. This effort includes online document storage, single- and multi-document change control, review and approval automatic routing, document check-in and check-out, version management, archived records management, and printing—all supported by Syncade suite. Additionally, Syncade suite provides the flexible change management you need, with highly configurable change request workflows. This includes a conditional review option, serial and parallel review and approval, role and user-specific assignment feature, and delegation management of review and approval assignments.

Mimic paper-based records for easy adoption within existing facilities. By electronically replicating paper-based records, your personnel can easily adapt to the use of electronic technology. It provides the first step to your paperless manufacturing vision. And, it maintains a consistent look and feel when regulatory personnel review both paper-based and electronic documents.

Ensure proper access and authorization for all operations processes by creating user privileges and defining user groups once for use throughout your plant operations. Enforce proper document workflow based on user privileges and configured protection and access.
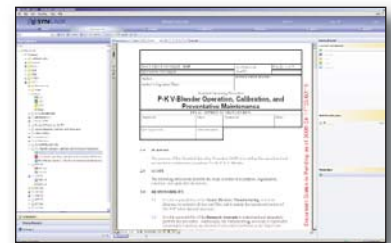

Document Control and Archiving is an electronic document management system designed specifically to meet regulatory requirements, including the U.S. Food & Drug Administration (FDA) and environmental agency regulations. Users can maintain full control of their documents, including version management and electronic routing, review, and approval.

Improve compliance with confidence.

Federated Document Search
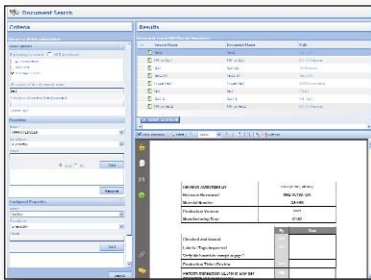
Federated Document Search allows for document searches across multiple repositories and servers. This capability enables comprehensive collaboration by personnel, regardless of location. Additionally, approved and effective documents can be easily shared across locations to ensure best practices are being followed.

Batch Record Printing
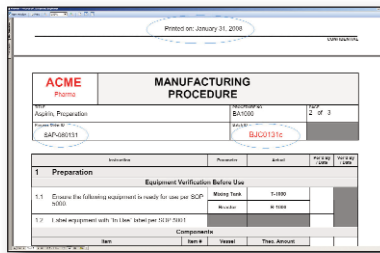
Batch Record Printing provides a controlled solution for producing consistent documentation for paper-driven processes. Issuing consistent records that meet regulatory requirements is much easier with the pre-stamped lot number feature. This application also maintains an electronic audit trail of document information, including a listing of all documents printed, lot numbers, requester, and date and time printed.
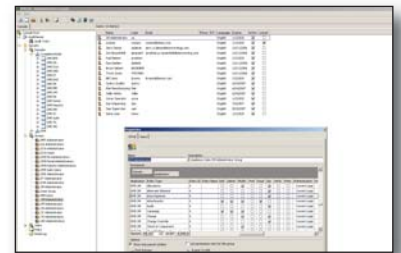
Security and Audit

Security and Audit is a powerful solution designed to manage application security, maintain a comprehensive audit trail of events for all of the Syncade applications and provide FDA 21CFR Part 11 control for electronic records and signatures.

Rely on Emerson Expertise to Deliver

Today's most successful projects call for partnering with proven experts who can consistently deliver the best available technology to ensure efficient operations.

From concept through planning, implementation, production and ongoing operations, highly experienced Emerson professionals work closely with you to ensure compliance and ease of operation by providing:

- business justification
- execution
- multi-vendor management
- procurement & delivery
- ongoing support.

Emerson 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.

Process expertise

Emerson is a leader in automation and has developed centers of excellence and expertise within key, process manufacturing industries. Our experience in successfully automating FDA regulated facilities is unmatched. Expertise in the chemical, food & beverage, life sciences, oil & gas, petro-chemical, refining industries combined with clear leadership in today's digital technologies makes Emerson the logical choice for your project needs.

Expert project management

Emerson project managers have significant experience in understanding customer needs, developing feasible project plans, mobilizing the necessary resources— from around the globe if necessary— and delivering the project to the set objectives. During the different phases of the project, the communications with all project sponsors and stakeholders are critical to the success of the project.

Key technical lead engineers

Emerson technical lead engineers bring years of industry and automation experience and the ability to lead project teams to efficiently deliver projects. Lead engineers draw on proven engineering methodologies from functional requirements through startup, documentation, and training.

Emerson—Consider It Solved.

Proven methodologies

Schedule and cost constraints are common challenges for most projects. But they can lead to a breakdown of processes and procedures, which in turn can adversely impact project and installed system performance.

Emerson's project execution methodology addresses these issues by optimizing requirements definition and system design, eliminating multiple changes and inconsistent interpretation of regulatory or other industry specific requirements. This simplifies testing requirements, and optimizes the deployment of project resources.

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.

With experience gained through hundreds of thousands of project service hours, our project methodology helps you aggressively manage your projects.

Lifecycle services

Emerson is with you long after your process has started up. In today's world, predictive maintenance ensures continued smooth operations. Our Asset Optimization services take advantage of today's digital technologies to help you squeeze more performance from your critical assets than previously possible. And our global SureService support organization is ready 24 hours a day, 7 days a week to support you through the life of the facility.

Emerson—a partner you can trust

Emerson Process Management leads the automation industry worldwide in providing technology and solutions to improve process manufacturers' performance.

Strength and Stability

For over 100 years, Emerson has been providing innovative process automation solutions with a commitment to total quality, plant safety, and dedication to meeting customer expectations. Emerson Process Management is a leading supplier of process automation solutions worldwide. We offer the financial strength and stability required not only for large, complex projects, but also for continued long-term support and management of these assets.

Innovative Leader

With rigorous planning and sound management, Emerson continues to invest considerable capital and resources into research and development to bring you new technologies that deliver greater value and efficiency.

Customers who have requested this brochure have also requested the following brochures:

- Project Engineering
- Emerson Automation Contracting
- Best in Batch—DeltaV Digital Automation System
- Operational Excellence (OpX) Guide

Emerson Process Management
12301 Research Blvd.
Research Park Plaza, Building III
Austin, Texas 78759 USA
T +1 512.835.2190
F +1 512.832.3443
www.EmersonProcess.com/Syncade

SYNCADE™
Smart Operations Management Suite

EMERSON™
Process Management