Summary

Wonderware InBatch software effectively manages flexible batch operations found in process industries. InBatch software offers recipe modeling, sophisticated batch execution automation, material genealogy, stringent security, batch history and web-based reports.

Business Value

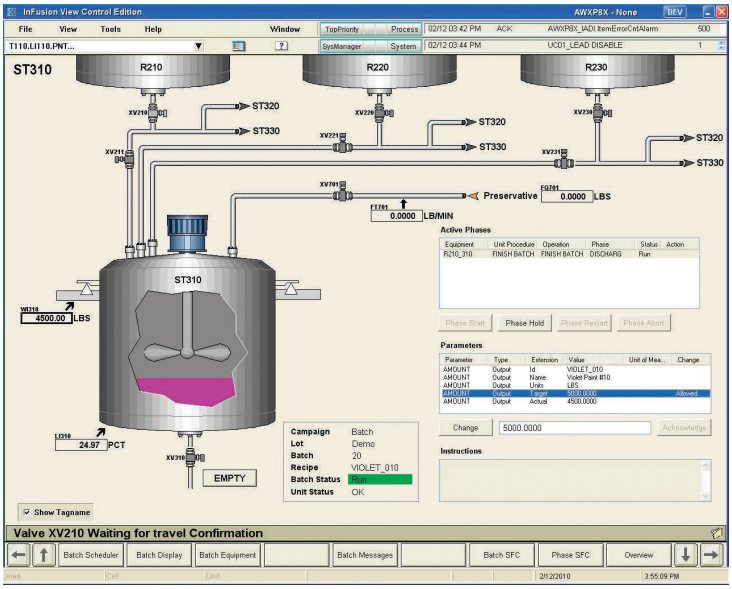
Increase your Return on Assets (ROA) through sophisticated batch control logic which is designed to maximize process equipment utilization.

Maximize profitability with the provided agility to rapid deploy and run revised and new product recipes.

Wonderware InBatch 2012 R2

FLEXIBLE BATCH MANAGEMENT

Wonderware® InBatch® is control system independent software that can be used for the most complex batching processes that require a high level of flexibility. Consistent with the ISA-88 standard on batch control, InBatch software offers batch management capabilities, including recipe management, batch execution management, equipment history, material genealogy, stringent security, web-based reporting and the ability to facilitate the design and implementation of systems that are compliant with FDA 21 CFR Part 11 regulations.

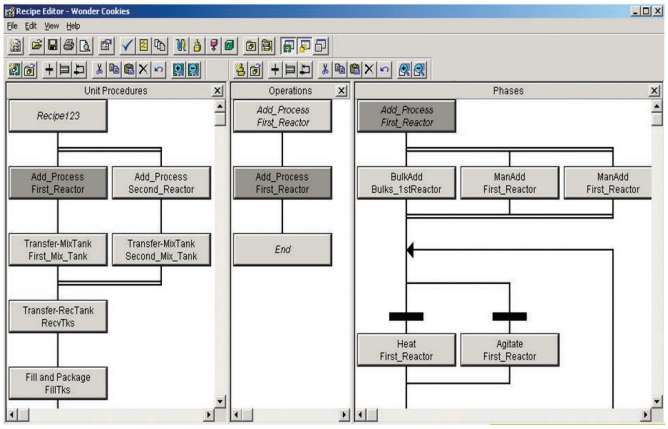


InBatch optimizes throughput and equipment utilization. InBatch's uniqueness is in its comprehensive process capabilities model, going beyond ISA-88 to include connections and transfers. This enables the batch engine to manage flexible product paths, allowing simultaneous multi-product and multi-stream batch execution on shared equipment and connections.

InBatch empowers process engineers. Equipped with easy to use recipe configuration tools, process engineers can quickly create or change recipe procedures and formulas without requiring any expertise in the underlying control system. Such flexibility makes a plant more competitive by enabling recipe improvements, demand responsiveness and a fast time-to-market for new products.

InBatch reduces cost of compliance. Built-in security and material management capabilities including material consumptions, movements and inventory levels contribute to a comprehensive Electronic Batch Record (EBR) in accordance with requirements found in FDA 21 CFR Part 11 regulations.

INBATCH OVERVIEW



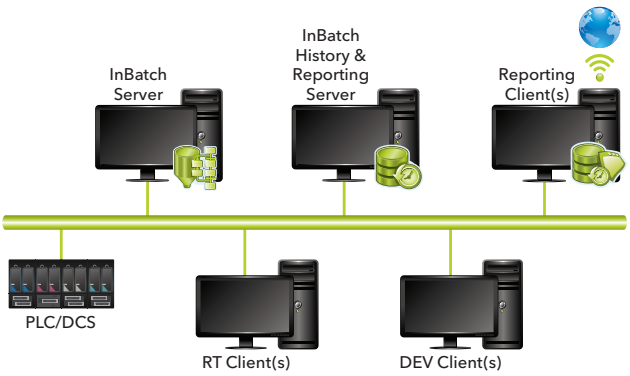
InBatch software is a flexible batch management system that automates batch processes and provides a complete batch history. Consistent with the ISA-88 standard, InBatch software allows you to quickly and easily create recipes and simulate their execution against a model of the process - all before writing one line of control code.

InBatch software excels at automating the simplest to the most complex batch processes managing multiple batches of multiple products on networked equipment or when demanding high flexibility in recipe creation and modification. Integration with ArchestrA® System Platform enables true end to end manufacturing operations management and enhances InBatch with the rich functionality of the whole Wonderware Software portfolio, including Wonderware Historian®, ArchestrA Workflow®, MES Software and InTouch® HMI.

PROCESS MODELING AND RECIPE MANAGEMENT

InBatch's recipes are based on the ISA-88 Process Model by defining the plant's equipment and processing capabilities as well as its control and information requirements. InBatch enhances the ISA-88 model by adding connections and transfer capabilities. Integration of a comprehensive material model eases the process modeling and enhances the batch management capabilities. Once the process model is defined, recipes can be easily created, simulated, scheduled and executed.

BATCH MANAGEMENT, HISTORY AND REPORTING



InBatch software's batch management system consists of scheduling, initializing, equipment arbitration, allocation and release, coordinating the processing of batches with the control system, interfacing with operator runtime clients, and directing batch activity, material consumption and production records to the historical database.

InBatch software offers a comprehensive set of interactive Web-based reports off the shelf. InBatch reports are leveraging Wonderware Information Server.

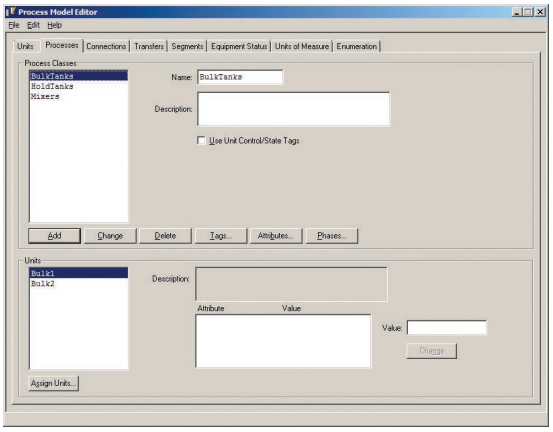
USING WONDERWARE INBATCH SOFTWARE, YOU CAN ACHIEVE:

- A sophisticated batch management engine with connectivity and a defined interface to phase control blocks, eliminating the need to change control code with recipe procedure changes.
- Reconciliation of material inventory with actual quantities in vessels
- Use of material characteristics during the batch process, including the ability to dynamically adjust and apply formula parameters at runtime
- Generation of specific alarms associated with a specific batch
- Comprehensive batch execution and equipment history with full material genealogy
- Automated batch report creation; for example, at the end of each batch

WONDERWARE INBATCH SOFTWARE FEATURES

PROCESS MODELING

A model of the process is created interactively using the InBatch Process Model Editor. A batch processing plant is made up of units, process classes, connections, transfer classes, process- and transfer-phases.

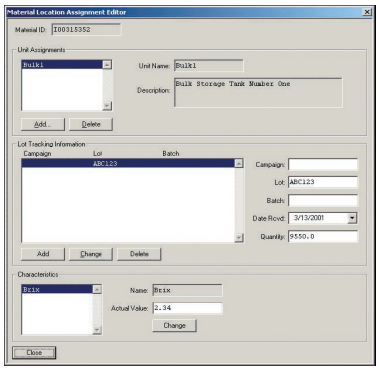


- A "unit" is a piece of equipment that processes materials such as reactors, mixers, blenders. A unit can also simply hold materials such as holding tanks and bulk storage vessels.
- "Process classes" are used to define process capabilities. Each unit in the class has the same processing capabilities and/or performs the same functions.
- "Connections" define equipment that transfers material from a source unit to a destination unit.
- "Transfer" classes are used to define transfer capabilities where all source units are in the same process class and all destination units are in the same process class.
- "Process phases," with their parameters, are used to describe capabilities of process classes.
- "Transfer phases," with their parameters are used to describe capabilities of transfer classes.

Process models for batch facilities are based on two primary modeling approaches: the comprehensive model and the connectionless model. You can also use a hybrid model that contains elements of both.

The comprehensive model uses all of the available configuration tools of the InBatch software including process classes as well as transfer classes. The connectionless model deals only with the definition of process classes. In this case, the movement of material between units is accomplished using complementary transfer phases that are assigned to a process class rather than to a transfer class.

An integral part of process modeling involves defining specific tags for units, processes, connections, and transfers. Tags allow mapping data between InBatch and Controllers or within ArchestrA System Platform.



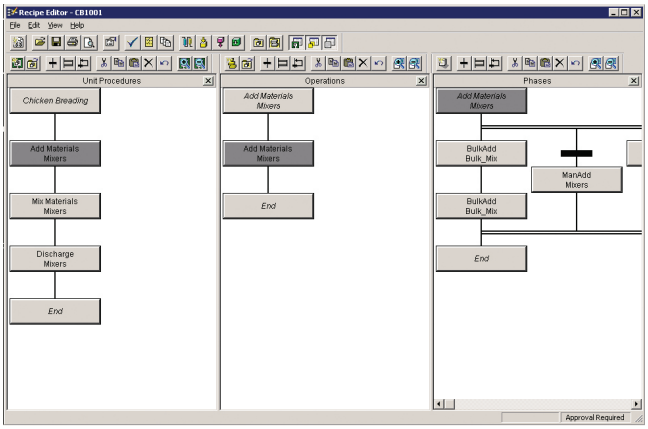
MATERIALS MANAGEMENT

InBatch Materials Management is used to provide materials tracking and tracing. Materials are defined as ingredients, intermediates, finished goods, by-products and others, and include the characteristics of each material. The batch manager uses the materials' location data to access specific details, such as ingredients during the manufacture of a batch. This capability allows master recipes to be independent of a materials' location. Materials can change location with no effect on recipe execution.

The batch management system updates the material database when ingredients are used and when intermediates and finished goods are produced. InBatch provides access to work-in-process (WIP) information and can be used to update higher level management systems and Enterprise Resource Planning (ERP) with ingredient usage, work-in-process, and finished goods production information.

RECIPE MANAGEMENT

RECIPE CONFIGURATION



InBatch coordinates configuring and managing recipes in accordance with the guidelines outlined in the ISA-88 Batch Control Standard. The InBatch Recipe Editor supports all three sublevels of the recipe procedure and provides an IEC 61131-3 graphical environment to configure, copy, and modify master recipes.

The InBatch Recipe Editor uses the information in the process model and materials management as part of recipe procedure development. An InBatch master recipe may or may not be size specific, and can be assigned to any process line that has fits the equipment requirements defined in the recipe. All formula quantities for ingredients, intermediates, by-products, and finished goods are configured as either actual quantities or scalable as a percent of the batch size.

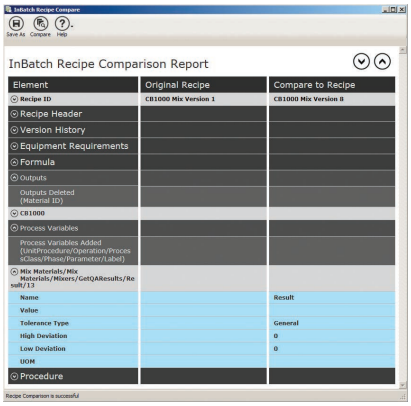
A recipe validation function allows you to validate recipes to verify that the process model, the material information and the reports used in the recipe exist; minimum, maximum, and default batch sizes are defined, and formula parameter are linked appropriately. Additionally, all transition logic, including loop logic, is validated.

A master recipe becomes a control recipe when it is initialized by the InBatch Management System, after it is scheduled to run on a train. Formula quantities expressed as percentages are automatically scaled. At batch completion, an operator with the appropriate security role may save the control recipe with all phase parameter edits and/or the equipment used as a new master recipe.

RECIPE IMPORT/EXPORT FEATURING BatchML

The Recipe Editor features a BatchML standards-based XML file import and export that allows you to move or share recipe information between multiple InBatch or third party systems. The Batch Markup Language (BatchML) is courtesy of the World Batch Forum, and consists of a set of XML schemata. InBatch continues to support a proprietary RCP binary file for export and import.

RECIPE VERSION HISTORY AND RECIPE COMPARISON



InBatch software maintains the history of a master recipe with date and time stamp, author name, and optional comments. Up to five levels of recipe approvals can be implemented.

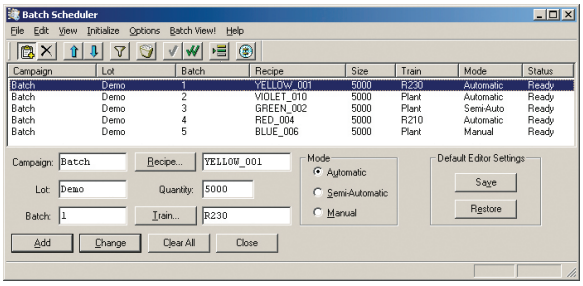
The system can be configured to save the recipe version as BatchML document to disk each time a recipe is saved or approved.

The InBatch recipe comparison allows analyzing the differences of two selected recipe version documents in an interactive drill down report. A “print report” function provides for printing of a comparison report.

BATCH MANAGEMENT

The Batch Management System schedules, initializes, coordinates the processing of batches with the control system, interfaces with operators, and directs batch records to the historical batch database.

BATCH SCHEDULING



A batch is scheduled by entering campaign, lot, and batch ID, as well as the desired batch size. A Recipe as well as the train need to be selected. When the batch size entered is greater than the defined maximum batch size of the recipe, the Batch Scheduler opens a dialog box to confirm the splitting into multiple batches. Once confirmed, the proposed number of batches is automatically generated and are added to the list.

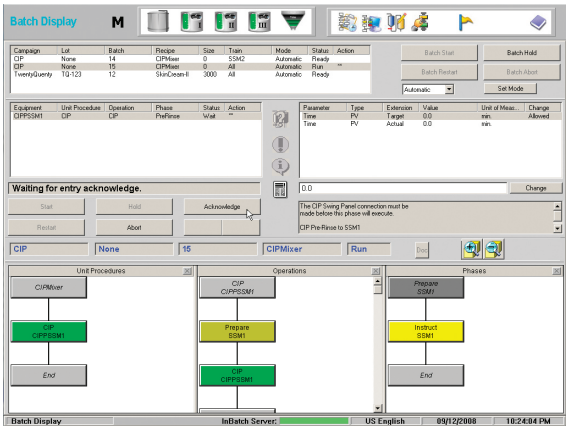
The batch scheduling function maintains a list of batches to be produced. The user can opt to select any listed batch for execution unless the system has been configured to enforce batch execution in order.

BATCH VALIDATION

The batch initialization performs several checks to ensure that the batch can be properly processed. Batch validation includes verification of recipe existence in the database, process model and materials references, equipment requirements are satisfied by the train and batch size against the allowed boundaries.

BATCH EXECUTION

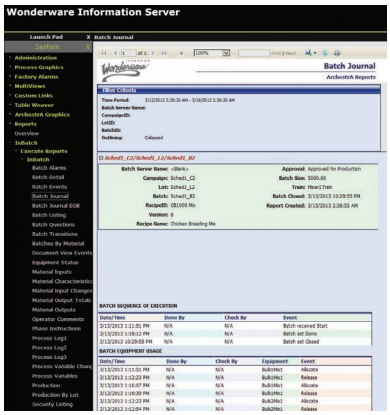
The Batch Manager directs and supervises the processing of each batch by interpreting a recipe and enabling the control system. Based on the recipe procedure, the Batch Manager activates phases to run. Before activating a phase, the Batch Manager verifies that the phase is ready to be processed. If so, phase parameter values are downloaded, and the phase is started. The Batch Manager also interfaces with the batch display modules to provide operators with information enabling interaction on the batches running in the system.



BATCH HISTORY – ELECTRONIC BATCH RECORD (EBR)

InBatch software automatically captures and stores all data associated with the batch execution. This includes material genealogy, batch events, phase events and equipment arbitration, including allocation and release, equipment status changes, operator actions and comments, and any alarms associated with a particular batch. InBatch also maintains a complete trail of all security system events. Additionally, InBatch supports Microsoft® SQL Server 2012 for its historical database.

BATCH REPORTS



InBatch software includes a comprehensive set of more than 20 Web-based production reports, leveraging Wonderware® Information Server. InBatch can automatically trigger reports during batch execution or at the end of a batch. Reports can be customized to help users easily schedule, generate and view batch reports within a browser. Automatic capture of records and related reporting capabilities provide immediate access to accurate information from your batch processes and help to eliminate paper records and reduce batch release cycles.

REGULATORY COMPLIANCE

InBatch software provides comprehensive capabilities to facilitate the design and implementation of systems, applications and solutions that comply with regulations such as FDA 21 CFR Part 11. InBatch software has played a critical role in the creation of many FDA-validated applications in industry.

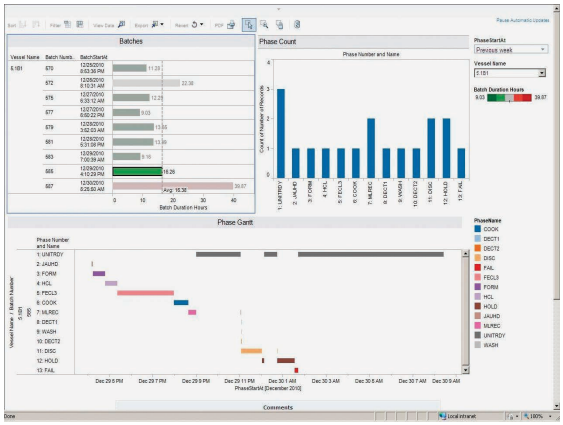
InBatch enables enforced batch sequencing; the operator is restricted to execute only the currently-active step. In addition, each step can have "done-by" and "check-by" security applied, to ensure that the steps are performed in the order presented. The "done-by/check-by" security becomes an electronic signature in the batch record to comply with 21CFR Part 11 requirements.

ENHANCED MANUFACTURING OPERATIONS MANAGEMENT

ARCHESTRA PLATFORM INTEGRATION

InBatch's rich functionality can be used stand alone, but it is best leveraged and easily extended with the power of ArchestrA System Platform. InBatch provides batch object templates for units, connections, segments and phases and a model import utility to automatically build and synchronize the InBatch process model in the Wonderware Application Server model. This platform integration simplifies building a common real time data model across all manufacturing operations which may span across receiving, batching, filling, packaging and shipping. InBatch execution information is available to be directly leveraged by other software functionality such as Wonderware Historian, Wonderware MES Software, or ArchestrA Workflow to provide activities such as Asset Utilization and OEE monitoring, Quality sample plan execution and statistical process control, and triggering workflows for any planned or unplanned events.

WONDERWARE INTELLIGENCE



For advanced analytics and reporting, Wonderware Intelligence (Enterprise Manufacturing Intelligence) can be used to create a real-time oriented information model which contextualizes data from multiple data sources.

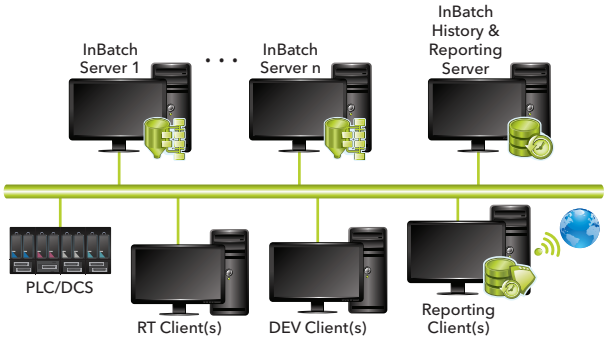
Wonderware Intelligence provides powerful analytics and interactive dashboard visualization in a self-service access approach which empowers operational stakeholders.

Wonderware Intelligence comes with a preconfigured data model, dashboards and reports for InBatch.

WONDERWARE INBATCH ARCHITECTURE

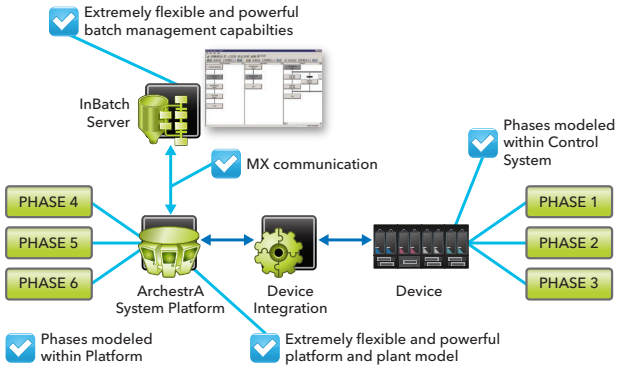
Server – The InBatch Server hosts a process model, material and recipe information, coordinates batch execution, and facilitates operator interaction by either being directly connected to a control system or via ArchestrA System Platform integration. Multiple InBatch Servers can be configured to share a single Batch History database. InBatch facilitates the deployment of solution architectures to meet the needs of critical batch applications and high availability:

- InBatch Server Warm Restart Capability - Batch Manager has the ability to restore a previously known-good state of the system upon restart after unexpected system shutdown.
- Redundant InBatch Server Option - the Redundant Batch Server mirrors the operations of the primary server. In the event that a hardware issue occurs on the primary server, the back-up server automatically assumes the status as the primary server and continues the batch execution.
- InBatch supports Microsoft Hyper-V and VMware vSphere virtualization platforms options to implement HA (High Availability) and DR (Disaster Recovery) architectures.



Clients – InBatch software provides remote development and runtime client applications, as well as ActiveX Controls that can be easily integrated into Wonderware InTouch HMI process graphic displays, providing operators with an integrated user interface to the batch server. The Terminal Server Edition for InBatch clients is a cost-effective solution for applications that benefit from central administration and maintenance of multiple InBatch clients. An Operator Runtime client failover option provides support for Terminal Server high availability concepts.

Interfaces – InBatch software includes a set of programmatic interfaces to develop custom batch interface applications, provide access to the material and the recipe databases, to access the batch function interface and to extend the capabilities of the Batch Manager.



Connectivity – InBatch offers connectivity to any control system or plant floor device through Wonderware DA Servers. External databases and other software systems can be connected through ArchestrA System Platform.

ArchestrA System Platform Integration – InBatch includes a communication interface, a set of Batch Automation Object templates, ArchestrA Graphics and an InBatch model import utility for the ArchestrA IDE. Batch Events are exposed using the ArchestrA Service Bus.

TECHNICAL SPECIFICATIONS

OPERATING SYSTEMS

Wonderware InBatch Software supports the Microsoft Windows platform, including:

Server

- Windows 2003 R2 in (32-bit)
- Windows Server 2008 (32- and 64-bit)
- Windows Server 2008 R2

Client

- Windows XP Professional in 32-bit architectures
- Windows Vista Business, Enterprise or Ultimate in 32-bit and 64-bit architectures
- Windows 7 Professional or Enterprise in 32 bit and 64 bit architectures

DATABASE TECHNOLOGY

Wonderware InBatch Software supports the following RDBMS:

- Microsoft SQL Server 2008 in Standard or Enterprise editions (32-bit)
- Microsoft SQL Server 2008 R2 in Standard or Enterprise editions in (32- and 64-bit)
- Microsoft SQL Server 2012 in Standard or Enterprise editions in (32- and 64-bit)

VIRTUALIZATION

Wonderware InBatch Software supports the following virtualization platforms including options for High Availability (HA) and Disaster Recovery (DR):

- Microsoft® Hyper-V™
- VMware vSphere 5.x

For more information on Wonderware InBatch, please contact your local Wonderware distributor, or visit iom.invensys.com.

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Invensys Operations Management • 10900 Equity Drive, Houston, TX 77041 • Tel: (713) 329-1600 • Fax: (713) 329-1700 • iom.invensys.com

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