

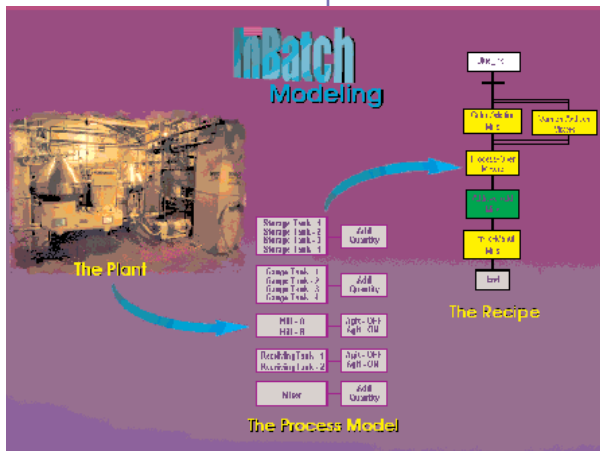


Flexible Batch Management System

InBatch™ 7.1

Product Position

Wonderware® InBatch™ is flexible batch management software designed to model and automate batch-oriented production processes. Designed to be consistent with the Instrument Society of America (ISA) S88.01 standard, InBatch 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 also provides complete production history and material genealogy “out of the box.” InBatch’s powerful batch engine, combined with its integration with FactorySuite 2000, means that you can reduce the cost and time to automate your batch processes by 40 to 60% over competitive solutions.



With InBatch you can:

- Model your plant
- Manage recipes
- Manage materials
- Record history
- Schedule and execute batches
- Generate reports
- Provide batch control redundancy
- Provide function-based security

The Process Model: Production in the batch industries is primarily based on the execution of recipes. InBatch recipes are defined based on the plant’s information and control requirements or what’s called the Process Model. The Process Model defines the plant’s equipment and processing capabilities as well as its control and information requirements. Once a plant’s Process Model is defined, recipes are easily created, scheduled and executed.

Client/Server:

InBatch provides a true scalable client/server environment for batch manufacturing control. The InBatch server provides a high level of field-proven batch capabilities for materials tracking, short-term scheduling, dynamic batch and equipment management, batch history and reporting. InBatch also supports redundancy for mission-critical applications. InTouch® HMI Clients: InBatch uses InTouch, the world’s leading HMI for visualization of batch execution, process status, alarming and trending. InBatch is integrated with InTouch through integrated batch wizards, ActiveX controls and script functions that allow remote access to all server functions.

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PRODUCT DATA SHEET

Applications

InBatch is designed to automate any batch process from the most simple to the most complex and regulated. The fundamental batch system requirements met by InBatch include:

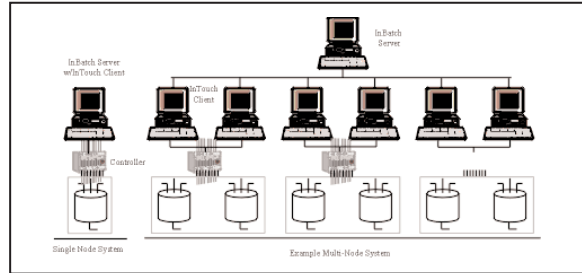
Wonderware® InBatch™ is flexible batch management software designed to model and automate batch-oriented production processes.

- Fast and Easy to Use Recipe/Formula Management System.
- Complete Batch History - Track everything associated with the production of a batch.
- Standard Batch, Production and Process Reports.
- Materials Tracking - Track the usage of all raw materials.
- Equipment History - Track all status changes made to process equipment.
- Simple and Modular Control Logic for easy implementation and maintenance. InBatch also provides standard capabilities for manufacturing processes that require high levels of flexibility.
- Flexible procedure recipes.

- Equipment dependent or independent recipes.
- Flexible batch routing based on status and availability of equipment.
- Event-triggered logging of time-series data for a batch.

InBatch's flexible architecture provides manufacturers with the capability to scale a system to meet their specific requirements. InBatch is designed to scale from a single node application to a large multi-node application. In addition,

InBatch has been designed to meet the requirements of even the most regulated industries. InBatch is 100% compliant with the United States Food and Drug Administration (FDA) final ruling on Electronic Records and Electronic Signatures referred to as 21 CFR Part 11.



- **Complete Batch History is Automatic:** InBatch automatically stores all batch history to a standard open historical database. All production activity, material usage, material production, operator changes, comments, alarms and equipment history is automatically logged. Zero custom code is required to log or retrieve batch history, because InBatch provides a full complement of standard batch report templates.

Faster Time To Market

■ Fast and Easy Recipe

Development: Recipes can be developed by production personnel (not engineering) using an easy-to-use graphical user interface. The recipe management system contains many ease-of-use features including a Sequential Function Chart (SFC) like procedure editor, a library for saving and retrieving operations, the capability to drag-and-drop procedure objects for fast editing and the pick-and-click formula editor.

- **Simulate Execution of New Recipe:** In an R&D environment, new recipes can be run in simulation against the process models of various production facilities to address scaling issues and determine if the particular plant has the required equipment, processing capability and materials to manufacture the recipe.

- **Validate the Recipe not the Control System:** When a new recipe must be produced, only the recipe needs to be validated, not the control system. That's because the control system never changes when new recipes are added. The time to re-validate a control system can be enormous in comparison to the time it takes to validate a new recipe.

Benefits

Reduces Life-Cycle Engineering Effort

- **Simplify and Reduce Control Code:** InBatch reduces the implementation and maintenance cost by 40-60% by simplifying and reducing the control code needed for unit-to-unit material transfers and unit control.

Control code, implemented as phases, is modular and structured. A phase is designed to do a specific function like transfer a material from Vessel 1 to Blender 5, Heat or Mix. The approach of using modular and structured phases for both unit-to-unit control as well as unit control drastically reduces the initial engineering effort, extends system capabilities and reduces the amount of custom control code.

- **Re-Usable Phase Logic Libraries:** Phase logic is modular and allows users to create standard phase logic libraries that can be re-used over and over again throughout the enterprise.

- **Simulate Recipe Execution:** Simulating recipe execution prior to writing control code is another significant benefit. This ability to "test drive" the control strategy is a powerful design tool that is another way to reduce engineering costs by virtually eliminating scope changes, costly control code changes and re-writes.

Increased Production Flexibility

InBatch provides production flexibility, allowing manufacturers to react to their markets and the unexpected plant floor events. With InBatch, each recipe can have a very different procedure and formula and can be scheduled for production on different process equipment each time a batch is produced. The capability to configure how process equipment will be utilized based on a recipe and on how it is scheduled provides manufacturers with the flexibility they need to compete.

Features

Process Modeling

Plant production in manufacturing industries is based primarily on batching or the execution of recipes. In InBatch, the building blocks for recipes are based on the Process and Information Model of the plant. The Model defines the plant's equipment and processing capabilities along with a structure for addressing the information requirements of the plant. The model establishes the rules by which the plant's equipment and control systems are reconfigured to produce batches. The recipe for the batch defines the equipment and control configuration, as well as the formula needed to produce a batch.

■ **The Physical Plant:** A process plant is made up of Units and Equipment Modules. Units process materials such as storage tanks, silos, hold tanks, reactors, blenders, distillation columns, palletizers etc. InBatch defines Connections as Equipment Modules; they transfer material between units. Equipment Modules take the form of pipes, pumps, valves, separators, condensers, flowmeters, etc. Equipment Modules can also be abstract in nature, as in the case of an operator moving product manually from one unit to another.

■ **Equipment Processing Capabilities:** Units that have the same processing capabilities are in the same Process Class. Each Process Class, and therefore each unit in the Process Class, has processing capabilities that are defined by Phases. Each Process Phase defines a process action, such as: mix, heat, cool, cook and agitate.

■ **Material Transfer Capabilities:** Connections that have the same material transfer capabilities, i.e. the same source and destination process classes, are in the same Transfer Class. Each Transfer Class, and therefore, each connection in the Transfer Class, has its transfer capabilities defined by Transfer Phases. Each Transfer Phase defines a material transfer action for the Transfer Class.

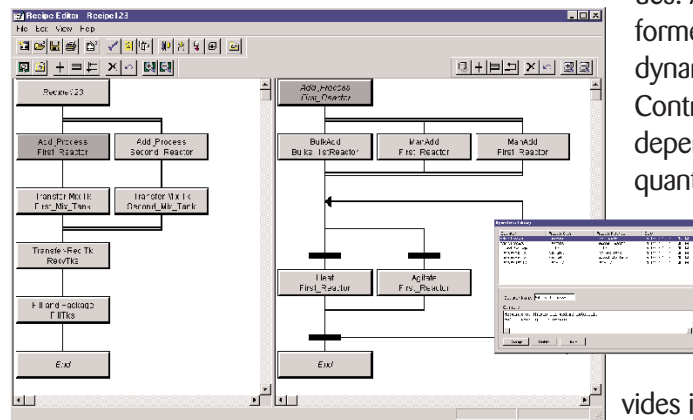
■ **The Phase - Information and Control Object:** The lowest common denominator of this structure is a phase. Fundamentally, a phase performs an action and is configured with parameters. All phases have a robust and universal interface that can be implemented in any control system or computer. The phase structure forces a modular and structured approach to control system programming.

Recipe Management

■ **Recipe Creation:** A recipe defines the equipment, materials and procedure required to produce one batch of product. Recipes are created in InBatch by selecting equipment and processing capabilities from the Process Model.

■ **Master Recipes:** Recipes are entered as Master Recipes. A Master Recipe is equipment and path independent and allows for scalable batch sizes, which means material quantities are entered as nominal values.

A master recipe is transformed into a control recipe dynamically during runtime. Control recipes are equipment dependent with nominal material quantities being transformed into actual quantities based on the batch size.



▼ Header

A recipe Header provides information about the type, state, purpose, source, version, product identification, originator, issue date and general instructions about the recipe. The recipe type and recipe state properties are useful for categorizing and managing large numbers of recipes and are available for sorting and filtering recipes during recipe creation and batch scheduling.

▼ Equipment Requirements

The Equipment Requirements specify the Process Classes and their respective attributes needed to produce one batch. Attributes might be capacity, blending efficiency, heating efficiency and material of construction.

▼ Formula

The Formula specifies the Material Inputs, the Material Outputs (finished goods and by-products) and Process Variables for a recipe.

▼ Procedure

The Procedure consists of user-defined operations required to execute one batch of a recipe. The recipe's equipment requirements define the processing capabilities (phases) that are available. Each operation and its phases are associated with a Process or Transfer Class. These phases are organized and executed in a specific

sequence. Procedures are constructed in a Sequential Function Chart (SFC) format to have parallel and/or sequential operations and phases. As Phases are inserted into the procedure, process variable Material Inputs and Outputs, defined in the Formula, are linked to the phases transferring materials, operator interaction with the execution of the phase is defined, and instructions and documents such as standard operating procedures (SOPs) can be assigned.

Batch Management

The InBatch Server provides batch management activities involved in the production of batches. This includes Short Term Scheduling, Batch Initialization, Batch and Unit Management and Batch History and Reporting.

■ **Schedule Dispatching:** Short term scheduling involves prioritizing and scheduling batches for production based on a master schedule. The InBatch schedule dispatch module provides the capability to create, edit and dispatch batches.

■ **Batch and Unit Management:** Batch Execution is the process of dynamically acquiring and releasing equipment (units), configuring and enabling phases and capturing and storing data. As each equipment independent phase is encountered, it is transformed into an equipment dependent phase and executed. This process is referred to as the Master to Control recipe transformation.

■ **History/Electronic Batch Record and Reporting:** Batch History is the result of capturing and storing, for a specific batch, all materials used and produced, the equipment that was used, the alarm events that occurred, and any operator actions and relevant process variables that were trended. Comprehensive batch reports are easily configured and triggered at runtime. Batch, production and process reports are created using Crystal Reports.

Integration With FactorySuite 2000 Components

■ InTouch – “Batch”

Visualization: Wonderware InTouch, the world's leading MMI, provides a single integrated view of all your batch process control and information re-sources. InTouch enables engineers, supervisors, managers and operators to view and interact with the workings of an entire operation through graphical representations of their production processes.

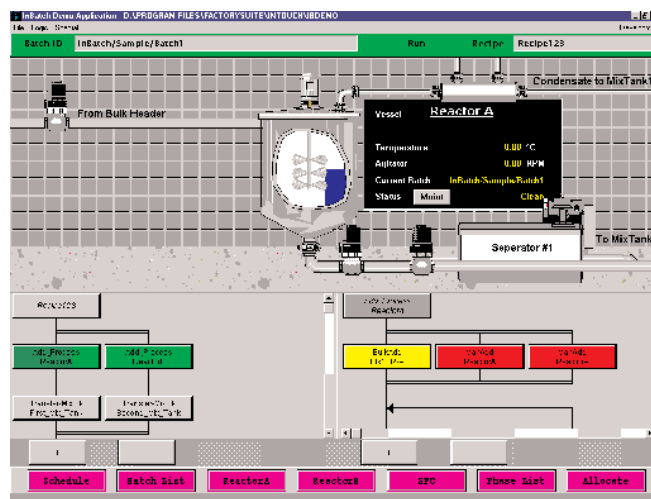
■ InTouch Batch Wizards:

InBatch provides 20 pre-configured InTouch Batch Wizards and numerous script functions that are used for rapid application development.

■ **InTouch Alarm and Event History:** All InTouch alarms and operator events are automatically associated with a batch and stored in the IndustrialSQL Server Factory Database, which is the InBatch Historical Repository.

■ **ActiveX Batch Objects:** InBatch comes with ActiveX objects that can be imbedded in an InTouch display to access all batch execution, scheduling and monitoring functions. These controls can be used to interface to InTrack or other third party systems.

■ **IndustrialSQL Server, the Batch Historian:** The IndustrialSQL Server Factory Database is the InBatch Historical Repository. All batch history, InTouch alarms and events, operator comments, material usage and production are stored in IndustrialSQL Server. IndustrialSQL Server embeds Microsoft® SQL Server™, providing universal data access, a powerful relational engine, and tight integration with Microsoft BackOffice™. IndustrialSQL Server provides manufacturers with universal data access with any tool that supports SQL or



ODBC, so batch and production information is easily accessed, analyzed, reported and automatically passed to enterprise planning systems.

■ **InControl Phase Logic:** InControl is Wonderware's NT-based real-time open architecture control system that allows you to design, create, test and run phase logic for your batch process. InControl provides an integrated control solution alternative that replaces proprietary control systems with open architecture NT-based control, providing a lower cost control architecture with integrated connectivity, powerful processing capability, and easy expandability.

Ease of Use

■ **Model the Plant:** With the InBatch Process Model Editor, a plant's equipment and processing capabilities are easily defined. The simple, yet powerful capability, is the basis for all the recipe and batch management capabilities provided with InBatch.

■ **Use Wizards to Create Your Operator Interface:** InBatch clients provide "out of the box" functionality by including a complete application framework with ActiveX objects, scripts and a library of Batch Wizards. As an example, the Schedule Wizard enables the operator to add, change, or delete a batch from the schedule. The batch information will include the campaign/lot/batch ID along with the assigned recipe, train and quantity to be produced. The InBatch Scheduler Wizard will only allow recipes that have been approved for test or for production to be scheduled.

■ **Rapid Recipe Development:** The InBatch Recipe Management System provides users with a graphical approach to creating new recipes. Recipe history and up to 5 levels of approval are standard features of the recipe system.

Extensibility

■ **ActiveX Batch Objects:** InBatch includes an ActiveX control that provides a SFC-like recipe procedure window that can be imbedded in any batch client display. Additionally, an ActiveX control is provided to access all batch execution, scheduling and monitoring functions. These controls can be used to add special capabilities based on your application needs such as interfacing to third party ERP, Scheduling or LIMS systems.

■ **OLE Automation Servers:** InBatch includes two new automation servers that provide read and write access to the InBatch material and recipe databases. These servers allow a user to create their own application specific logic that can be used to query and modify materials and recipes prior to and during batch execution.

■ **COM-Based Batch Function Interface:** The InBatch batch management system can be modified with application-specific logic placed at strategic points during batch scheduling and execution. These "hooks" exist for batch and phase initiation and completion as well as for equipment allocation, and provide a powerful option for satisfying project-specific requirements.

■ **ERP Integration:** InBatch interfaces with planning systems such as SAP and Baan through the partnership that Wonderware has created with Hewlett-Packard. The Hewlett-Packard Enterprise Link middleware software can be used to exchange material, recipe, schedule and batch history information with these and other business level systems.

Connectivity

InBatch uses all SuiteLink-supported I/O Servers.

Specifications

Server Hardware:	Minimum: Intel Pentium 200MHz PC with 64 MB RAM
Preferred:	Intel Pentium 400MHz PC with 128 MB RAM
Software:	Windows NT 4.0 - Service Pack 5
Display:	1024x768 Required
Recipe Printer:	Postscript Required
Client:	See InTouch System Requirements



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