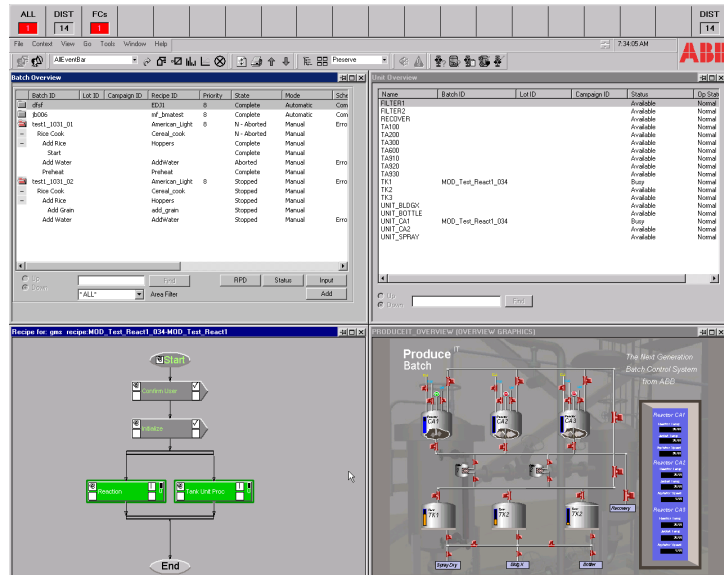


## Features and Benefits

- Tight integration to Operate<sup>IT</sup> Process Portal B1.0:** Seamless integration provides complete ease of navigation, event/alarm management and messaging.
- Flexible recipe editing:** Create a library of master recipes and recipe building blocks following the S88 standard. Provides online editing capability during batch execution.
- Custom batch scheduling:** Schedule control recipes based on a master recipe and batch-specific formula information. Provides the ability to schedule a campaign of batches. Automatic Batch ID generation based on configurable pattern.
- Straightforward equipment editing:** Single plant model for Batch and HSI. Assign equipment attributes and capabilities.
- Informative operator displays:** Provides a graphical representation of the control recipe. Enables an operator to view status information and issue run-time commands. Supports language localization for Western European, North and South American, and Middle Eastern languages.
- Arbitrate batch resources:** Resolves equipment and resource conflicts. Allocates resources based on the priority of each batch.
- Collect and report batch history:** Maintains an archivable record of batch events. Allows an operator to view or print history during or after the execution of a batch.
- Provide XML interface:** Utilizes XML technology to deliver interfaces for external applications following S95 guidelines. Performs actions such as scheduling a batch, retrieving status information, changing batch state and parameters, retrieving batch history variables, and monitoring equipment utilization.



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Produce<sup>IT</sup> Batch is a powerful application software package for configuring, scheduling, and managing flexible batch operations. Produce IT Batch is ABB's Industrial<sup>IT</sup> batch management product.

Produce IT Batch is a true native Windows<sup>®</sup> based product. It is designed around the following standard technologies:

- Windows 2000.
- Web browser technology.
- ActiveX<sup>®</sup> controls.
- SQL based historian.
- COM interfaces.
- OLE DB interfaces.
- XML.

By taking full advantage of these standard technologies, Operate<sup>IT</sup>™ Process Portal B1.0 and Produce IT Batch provide the latest in human system interface (HSI) capabilities. The implementation of these technologies opens the ABB system to the rest of the enterprise management information world through Industrial IT.



## System Overview

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Increasing competitive pressures have forced batch manufacturers to demand greater flexibility from production facilities. These pressures are driving the evolution of interoperability between distributed control systems and enterprise planning and information systems. At corporate sites around the world, business managers, production managers and engineers are dependent upon the seamless exchange of electronic information. Tight integration is critical to the implementation of strategic manufacturing execution systems. Produce IT Batch meets this challenge with the most advanced batch automation system available.

Combining industry standards such as ISA S88, S95, and IEC 61512 along with ABB batch automation expertise, Produce IT Batch delivers an automation solution that provides the following benefits:

- Increased product consistency resulting in better quality.
- Easily created recipes resulting in faster time-to-market and shorter delivery lead times.
- Integrated production management and control resulting in maximized equipment uptime and minimized operating cost.
- Reduced manual documentation resulting in comprehensive audit trails required for regulatory compliance.

Produce IT Batch is comprised of five primary functions:

- Batch overview.
- Unit overview.
- Batch historian overview.
- Equipment configuration.
- Recipe configuration.

## Batch Overview

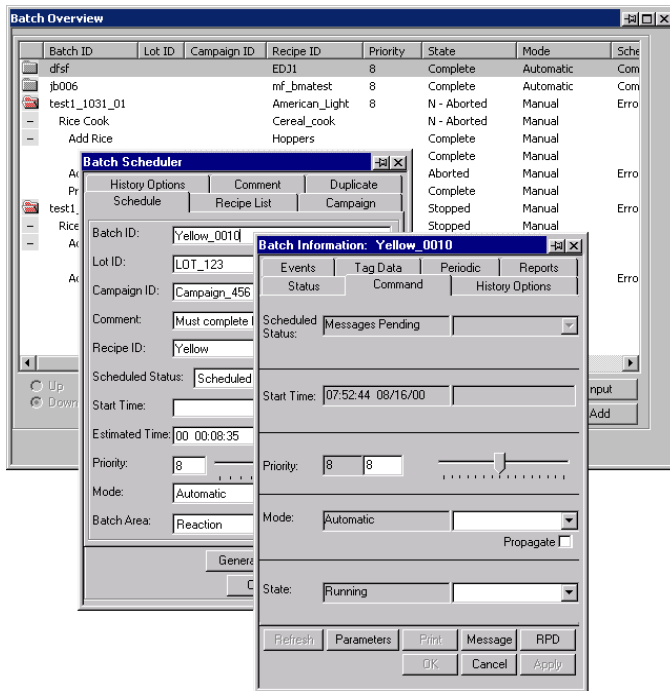
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The batch overview provides a summary of all the batches in the production schedule. This window offers the flexibility to manipulate the batches in the production schedule. Figure 1 illustrates a batch overview window. This window lists detailed information for each batch including:

- Batch, lot and campaign ID.
- Recipe ID.
- Batch priority.
- Batch area.
- Mode of operation (automatic, manual or semi-automatic).
- State (running, aborted, stopping, etc.).
- Scheduled status (not scheduled, scheduled, active, input pending).
- Comments.
- Start and end times.
- Procedure hierarchy with direct access to desired procedure level.

The batch overview options include:

- Scheduling a new batch.
- Invoking the status display for a batch.
- Displaying the recipe procedure diagram for a batch.
- Responding to pending messages for a batch.



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**Figure 1.** Batch Overview Windows

The batch scheduler and batch information status display are accessible from the batch overview window. The scheduler offers self explanatory options making the addition of batches efficient and user friendly. The batch scheduler options include:

- Scheduling a new batch.
- Scheduling a campaign of batches.
- Duplicating an existing batch.

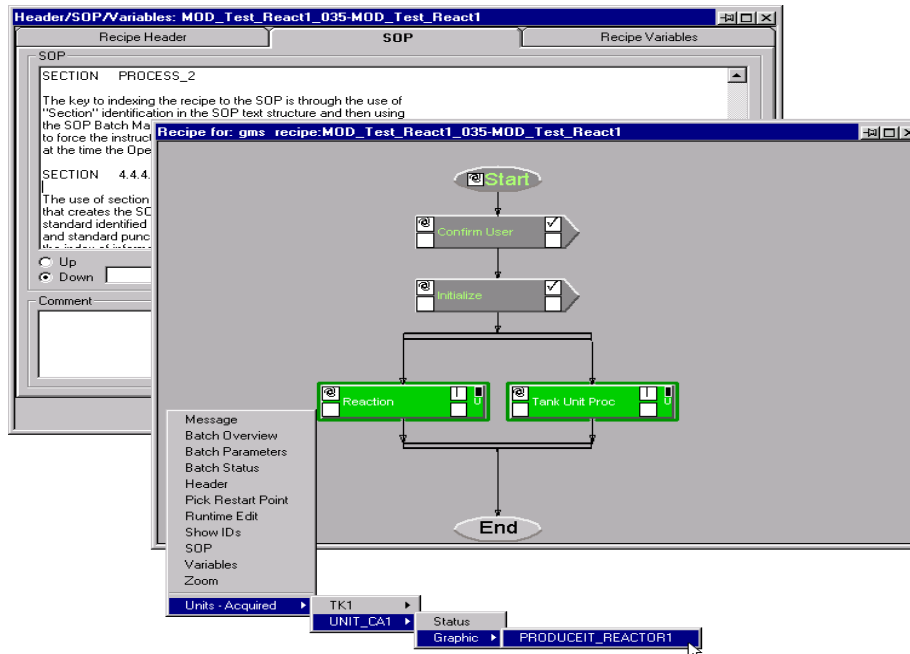
The batch information status display provides batch status information and the ability to issue batch commands.

## Recipe Procedure Diagram

The recipe procedure diagram is based on ISA S88 standards. Figure 2 illustrates the graphical representation of a typical recipe procedure. The current status of each step is displayed by a unique combination of colors and symbols.

The recipe procedure display options include:

- Navigating to a higher or lower level of the recipe procedure diagram.
- Navigation to user defined HSI graphic display for acquired and reserved units.
- Changing the operating mode (automatic, manual or semi-automatic) at any level in the recipe procedure.
- Changing the state (running, aborted, stopping) of an active step at any level in the recipe procedure.
- Responding to pending messages.
- Invoking the online recipe editor to make changes to the active batch control recipe.
- Selecting a recipe restart point.
- Changing the breakpoint or skip status of any step in the recipe procedure.



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**Figure 2.** Recipe Procedure Diagram Window

- Viewing recipe header information.
- Viewing formula information.
- Viewing the standard operating procedure.
- Invoking the active equipment phase faceplate to perform manual control of that phase.
- Invoking the controller specific equipment phase debugger from the equipment phase faceplate.

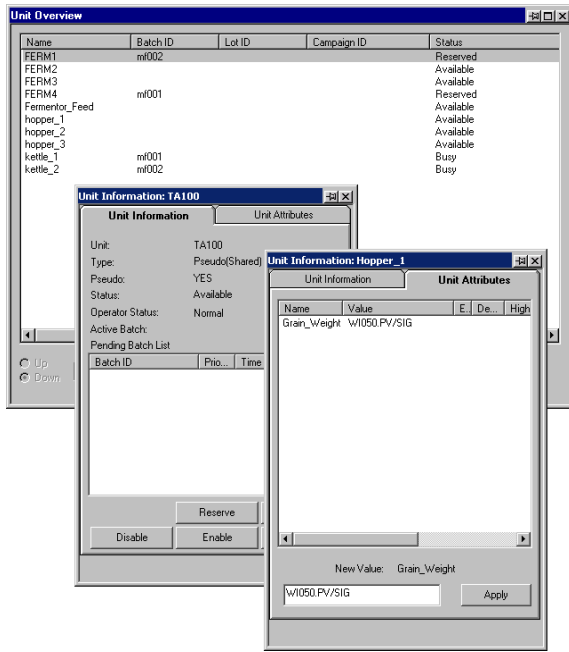
## Unit Overview

The unit overview window displays the status of all batch equipment configured in the system as illustrated in Figure 3. At the overview level the following information is provided:

- Equipment name and status (available, busy, reserved).
- Batch, lot and campaign ID (if the equipment is in use).
- Operator status (normal, disabled).

The unit information display is accessible from the unit overview window. The unit information display can be invoked for any equipment on the unit overview. From this display, the following additional details are presented:

- Type of equipment (unit, shared equipment module).
- Attributes of the equipment including name, value, engineering units and description.
- Pending batch list, if applicable, contains batch ID, priority and reservation time.

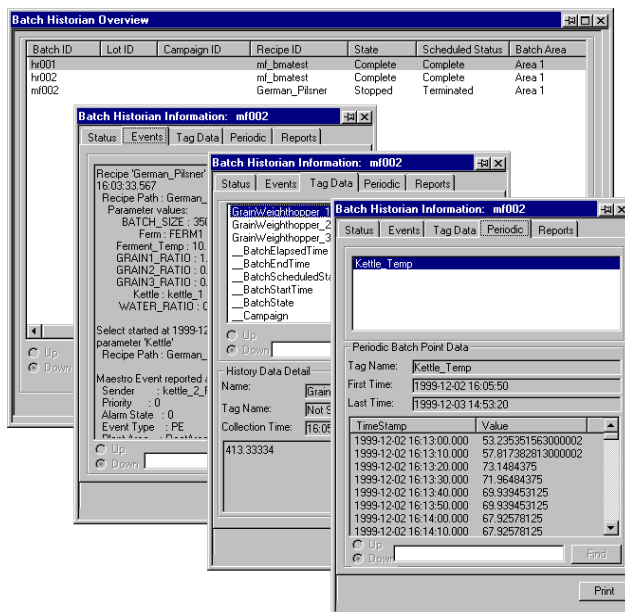


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Figure 3. Unit Overview Windows

## Batch Historian Overview

Batch events tag data and periodic data can be displayed in the batch historian overview window for each completed and terminated batch (Figure 4). Batch reports also can be generated using Excel spreadsheets. Similar information for active batches can be accessed from the batch information status display.



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Figure 4. Batch Historian Overview Windows

## Inform<sup>IT</sup> Enterprise Historian

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The Production Data Log (PDL) history option to Inform IT Enterprise Historian provides hierarchical history logs of batch data. Often when a batch is being produced, the information associations are not time related and cannot be preconfigured or anticipated. ABB's PDL has built-in provisions for the organization, storage and retrieval of this type of information. PDL organizes critical process data such as operator interventions, alarm and events, equipment usage, and batch procedure start, stop and duration times.

The information is available to Inform IT's Reports, Microsoft Access and Excel, and other network-based report packages and applications. PDL transforms data into useful information for intelligent decision making.

With batch event data stored hierarchically in PDL, the user can easily perform batch to batch analysis of trend data using associations to batch data to select desired batches and trend variables for analysis. Correlations of trend data are also possible through the use of Inform IT Enterprise Historian.

## Equipment Configuration

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Produce IT Batch supports network, multipath and single path equipment configurations. This allows for support of complex batch production facilities. Units, shared-use equipment modules and exclusive-use equipment modules are all configured using this tool. Pseudo resources can also be configured and can be used to identify resources, such as an operator, required at specified points in a recipe.

Equipment configurations contain equipment and other resources that are used during the execution of a batch. The following information can be defined for equipment:

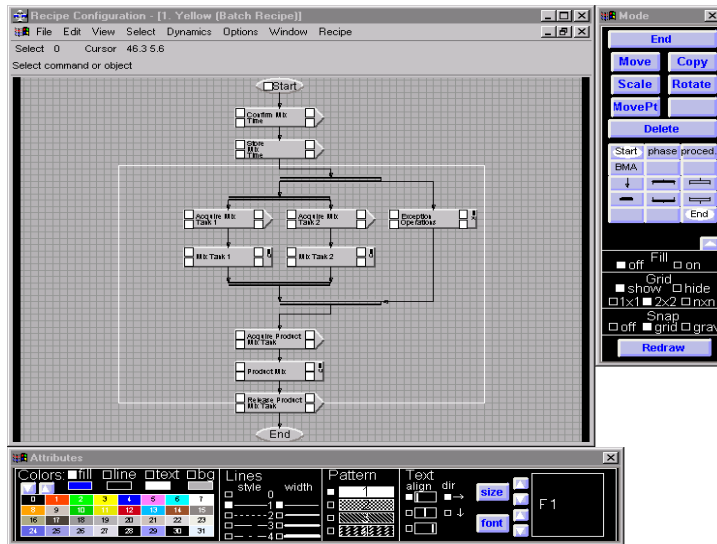
- Description – Describes the equipment.
- Attributes – Defines specific characteristics of the equipment (operating temperatures, construction materials, etc.). Attributes include name, value, engineering units and a description.
- Capabilities – Specifies which phases can be processed by the equipment (heat, react, mix, etc.) and the parameters for those phases.
- Shared - Defines equipment as exclusive use or shared to multiple batches.
- Equipment Type – Identifies equipment as unit, area, process cell, etc. including user defined.
- Controller Type – Harmony, Melody, Freelance, AC 800F, AC 800M/C, Sattline, MOD 300, and third-party PLCs via OPC<sup>TM</sup>.

## Recipe Configuration

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The Produce IT Batch recipe configuration tool (Figure 5) provides the ability to configure the following information for each recipe:

- Recipe procedure.
- Formula.
- Equipment requirements.
- Header and other information.



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Figure 5. Recipe Configuration Tool

## Recipe Procedure

The recipe procedure is configured graphically through a specialized editor. The diagram is a procedure function chart based on ISA S88. The user has the option of having the strict ISA S88 procedure levels enforced, or the user may make use of full collapsibility and expandability to provide additional flexibility. The recipe configuration tool supports conditional transitions, logical branching, parallel branching and looping structures and dynamic block labels for superior operational display.

The recipe configuration tool supports the creation and modification of recipe procedural building blocks. These building blocks can be used in multiple recipe procedures. When a modification is made to a building block, all the recipes utilizing that modified element are updated. The recipe configuration tool also supports the creation of exception recipes for enhanced exception handling at the procedure level in addition to controller based exception handling.

## Formula

Formula information includes input parameters, process parameters and output parameters. Produce IT Batch allows formula information to be assigned at any level of the recipe procedure. Formula information includes the following data:

- Parameter names.
- Parameter descriptions.
- Actual and default values.
- Allowable ranges.
- Engineering units.
- User access level.

## Equipment Requirements

Equipment requirements are specified in the recipe through equipment allocation batch manager actions:

- Reserve unit – Reserve one or more units for use within a batch.
- Unreserve unit – Release a unit that was previously reserved.
- Acquire unit – Acquire one or more units for a specific purpose during batch execution.
- Release unit – Release a unit that was previously acquired.
- Select unit – Select a unit from available units based upon selection criteria and attributes.
- Deselect unit – Release a unit that was previously selected.

## Header and Other Information

Header and other information can be configured for a recipe, including:

- Master recipe and version.
- Author, work station name, and creation date.
- Description and header text (optional).
- Standard operating procedures (SOP) (optional).

Standard operating procedures can be defined for the operator. They can be invoked during the execution of the recipe to display the SOP applicable to the current step in the recipe.

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*For more information, contact us at [Batch@us.abb.com](mailto:Batch@us.abb.com)*

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