



Wonderware[®]
by AVEVA

RECIPE MANAGEMENT

Digital Formula Management
and Recipe Execution

Secure process and product quality while increasing operational agility and the ability to manage more product variations.

The control system neutral software enables standardization of formula and recipe management across the business and helps speed up new product introduction processes.



Summary

Simplify recipe optimization, deployment, adaption and execution in manufacturing operations with a commercial off-the-shelf formula and recipe management software. Electronic recipe management secures consistency in product quality and increases efficiency through automation of equipment setup processes and recipe execution. The automation system neutral software enables standardization and central management of product formulations for use in multiple production locations and is designed for operational team collaboration to adopt new recipes faster.

Business Value

Increase business agility by managing more product variation with reliable consistency and quality, and the ability to take new products to market faster.

Benefits

- Reduce machine setup and changeover times
- Consistent batch to batch production results
- Improve operational performance and flexibility
- Reduce risks of managing product variation
- Improve productivity and quality with reports and records of execution history
- Lower cost of compliance with electronic change and execution history, including electronic signatures
- Facilitate standardization of recipe management to improve the new product introduction process
- Fast time to value with rich out of the box functionality
- Reduce total cost of ownership with a web based application architecture

Overview

Effective formula and recipe management connects the world of product development with the people and systems operating production equipment on the plant floor.

Scalability for Formula or Recipe management:

- Formula Management and Download, enables fast and consistent equipment set up – the key to flexibility for many CPG or Food and Beverages manufacturing processes.
- Recipe Management and Execution, provides automation and repeatability of recipe execution on production units, work cells or production lines for batch oriented and hybrid processes.

The web based application and user interface empowers collaboration across R&D, process engineering and shop floor operations on desktop, HMI and mobile devices.

Connect to any control system through integration with System Platform, powered by Wonderware or OPC UA (DA spec) support

This unique approach provides recipe agility and process and product quality, and helps to reduce the number of systems used for recipe management in plants today.

The screenshot shows a web-based interface for managing formula templates. The main heading is 'ftPackaging' with a sub-heading 'Formula Template for the Packaging gear'. The interface includes a navigation menu with 'Formula Templates', 'Check Out', 'Set Date', 'Validate', and 'Duplicate'. It also shows 'Version 1', 'State Current', and 'Matches 2 of 2 Formulas'. Below this is a 'Parameters' section with an 'Export' button and a search field. The parameters table is as follows:

Parameter	Group	Data Type	Default Value	Min Value	Max Value	Frequently Used	UOM	EngRef	QNS
epPackagingMain...		Boolean	False			Yes		ERM1123	
epPackagingSize		Integer	1	1	2	Yes		ERP2100	
epPackagingSpeed	QAM	Integer	20	0	100	Yes	%	ERP503	4

At the bottom right of the table, it says '1 - 4 of 4 items'.



Formula Management and Download

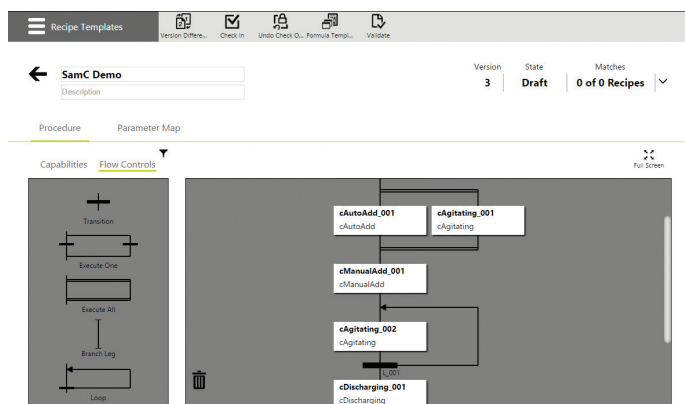
A formula template defines a set of parameters with default values. Parameter extensions are offered to extend the default parameter structure by adding columns for individual needs.

Users can quickly generate formula variations by saving formula instances with specific parameter values. Changes made to a formula template will be populated to unmodified (default) parameter values in its formula instances.

Equipment contains a set of related parameters and is managed as part of the systems equipment model. Equipment parameters are mapped to control systems variables and IO through Wonderware System Platform or OPC UA.

Formula download is easy, using the web based user interface. Operators assign a formula by browsing and selecting from a list of available formula instances for specific equipment. Operators can then review the assigned target values, adjust them within given limits, and download the formula to the connected automation system.

An electronic record is automatically created for each formula download, documenting the parameter values and when configured - the electronic signatures provided, for example when changing default values, or downloading a formula.

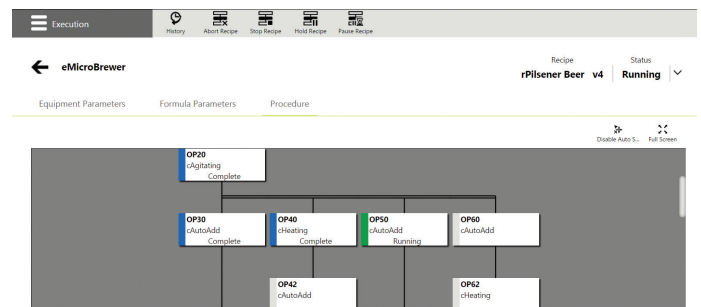


Recipe Management and Execution

Recipe management and execution adds the ability to create procedures defining the order in which capabilities are executed in a recipe. A capability is a generic item that can be used across any equipment that features a specific functionality. Manual capabilities are available for manual entry and acknowledgment.

A recipe template contains the defined procedure and a mapped formula template, associating formula parameters with capability parameters.

A recipe is derived from a recipe template by selecting a specific formula instance. Recipes define the make of a product using a defined procedure with a set of product specific parameter values.



To execute a recipe an operator simply assigns a recipe to equipment and starts, monitors and controls the execution. Parameter values can be adjusted within the defined limits either prior to a recipe start or even prior to a capability being executed.

The recipe procedure is coordinated with the control system using a state interface that can be configured to provide full alignment with ISA-88 standards.



Role-based Security and Electronic Signatures

The software includes the configuration of users and user groups with individual permissions for viewing, editing and downloading formulas or execution through the provided user interface. Electronic signatures (done by / check by) including optional comment enforcement for actions are available to facilitate implementations that comply with life science industry regulations such as FDA 21 CFR Part 11 or cGMP guidelines (EudraLex Vol. 4 Annex 11).

Done By/Check By Setti...			
Update Cancel			
Done By	Check By	Comment	Action
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Assign Formula
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Download Formula
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Assign Recipe
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Start Recipe
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hold Recipe
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Restart Recipe
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Abort Recipe
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Stop Recipe

Recipe Version Control

Equipment, formula and recipe templates, as well as all instances are "versioned" items. Any time one of these configurations is changed, its version number

is incremented. An updated "current" template provides change notifications and enforces updates of related instances. A new version of a formula, recipe or equipment requires approval prior to production use.

Electronic History Records and Reporting

Comprehensive history records and reporting allows users to view historical information about formulas and recipes that have been created, changed and executed including done by and check by information.

Users are provided with views into equipment, formula and recipe execution history and parameter value details within the web-based user interface. Item version comparison views and importing formula values from recipe execution history helps to capture and replicate the 'golden batch' setup.

To reduce the efforts of individual report creation the software comes with a set of Microsoft SQL Server Reporting Services (SSRS) report samples.

Technical Specifications:

Operating Systems

- Windows 8.1 or newer, Professional or Enterprise Edition (32-Bit and 64-Bit)
- Windows Server 2012 or newer, Standard or Data Center Edition

Database Technology

- Microsoft SQL Server 2012 or newer, Express, Standard or Enterprise Edition

Browsers

- Microsoft Internet Explorer, Version 10 or higher on Windows OS
- Google Chrome, Version 32 or higher on Windows OS
- Mozilla Firefox, Version 26 or higher on Windows OS
- Apple Safari, Version 6.0 on iPad devices

For more information on AVEVA Recipe Management software and other Manufacturing Operations Management solutions, please visit:

<https://sw.aveva.com/operate-and-optimise/batch-and-hybrid-management/recipe-management>

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