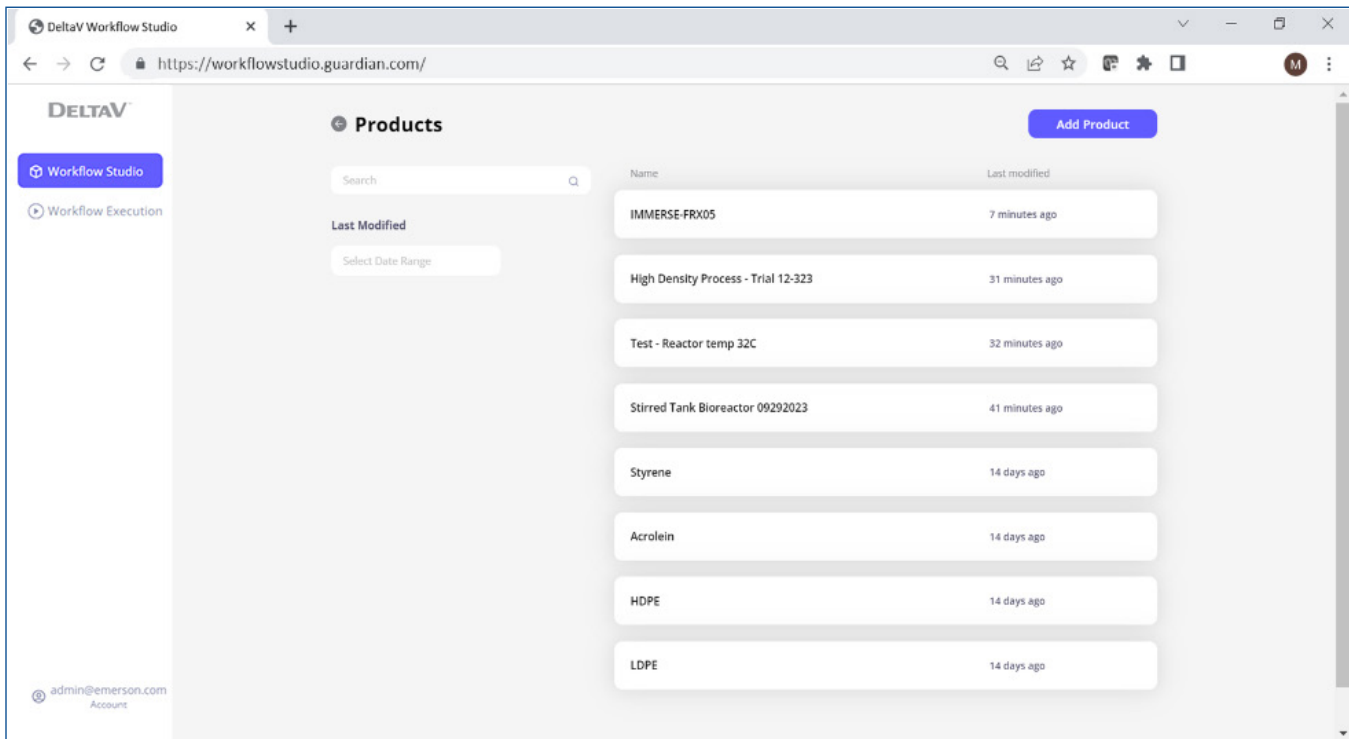


DeltaV™ Workflow Management



- Easy, no-code, paper or digital workflow solution
- Simple recipe or workflow authoring
- Streamlines manufacturing work practices to increase productivity
- Eliminates the costs of maintaining an IT infrastructure without compromising security
- DeltaV™ Workflow Execution option creates digital batch records
- DeltaV Workflow Execution option enforces multi-signature step approvals

Introduction

DeltaV™ Workflow Management provides intuitive and flexible recipe or workflow authoring and the easy creation of digital batch records, delivered as a simple and secure Software-as-a-Service (SaaS) model hosted by Emerson.

DeltaV Workflow Management solution is comprised of two products: DeltaV Workflow Studio and DeltaV Workflow Execution. DeltaV Workflow Studio is a simple, no-code recipe authoring tool that easily creates recipes and workflows. A report of a recipe created by DeltaV Workflow Studio becomes an unexecuted paper record which the user can print or execute electronically using DeltaV Workflow Execution.

Many Manufacturing Execution Systems (MES) projects can be time consuming to implement and require specialized technical expertise and IT infrastructure and overhead. Moreover, maintenance efforts can be significant due to extensive revalidation requirements for minimal changes.

DeltaV Workflow Management addresses these challenges by providing a lightweight, flexible recipe creation solution that transforms traditional recipe authoring to simple entries and drag and drop exercises. The no-code design provides an easy-to-use experience for authors of any skill level.

Further, the SaaS model of DeltaV Workflow Management removes the barriers of implementing and maintaining an IT infrastructure.

Flexible Solution for Manufacturing

While DeltaV Workflow Studio can be used across multiple industries, the flexible design allows for recipe creation that spans the breadth of the pharmaceutical creation processes in Life Science, providing simple recipe editing and scale up. From discovery to development to full commercial production, DeltaV Workflow Management streamlines the formulation and optimization of recipes.

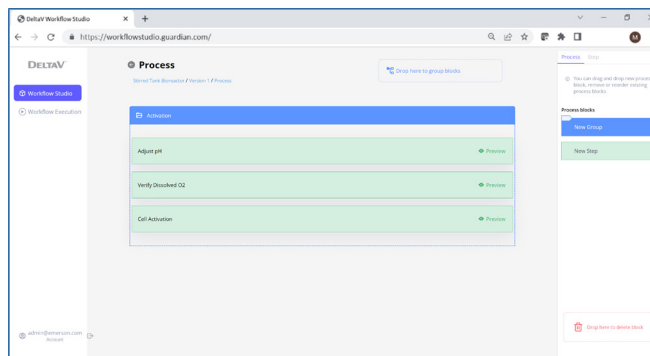
In its simplest form, DeltaV Workflow Studio enables a simple and straightforward way for users to create their recipe or workflow, then print the recipe to paper and implement it following the workflow instructions with the results captured on a simple paper record. An electronic copy of the recipe can also be downloaded and saved; this digital history facilitates integrity and traceability of your recipes or workflows throughout the lifecycle of the manufacturing process.

With the companion product, DeltaV Workflow Execution, the two become a simple digital workflow solution. DeltaV Workflow Execution guides the user through the recipe with prompts, collecting data and digital signatures from the user (or their supervisor as designated by the recipe) and then creates a digital batch record that is much easier to use and maintain than paper records. This approach allows manufacturers to move paper-based batch records to a digital environment where scientists and engineers can create, modify, and track recipes easily and efficiently. It can also eliminate paper from clean room implementations, and all of the potential contamination related to handling paper.

From pre-clinical to clinical activities, DeltaV Workflow Management makes it easier for manufacturers to comply with GxP procedures and validation by digitally creating and maintaining recipe versions, and batch records.

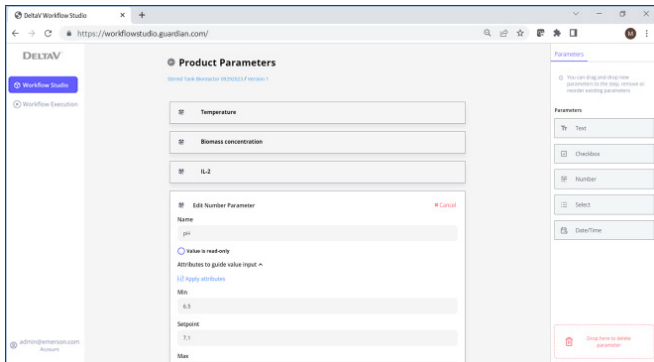
Simple and Efficient Recipe Creation and Editing

DeltaV Workflow Management provides a block structure with drag and drop recipe components to make serial recipe building fast and easy. A collection of out-of-the-box process blocks represent the steps of a recipe or workflow. These can be rearranged and ordered as needed, and similar steps can be organized into groups to simplify complex recipes during recipe execution. Parallel steps and conditional logic are not yet available but are on the roadmap for a future release; DeltaV Workflow Studio provides a serial step structure.



Drag and Drop Block Components for Simple Recipe Creation.

The details of each process step are defined by the author. Parameters can also be easily added to steps to denote where and how an operator should record data entries. Basic parameter types include Text, Checkbox, Number, Reference, Selection List, Date/Time. The author can also add signatures to each step with a simple click of a radio button. These parameters can later be referenced in steps.

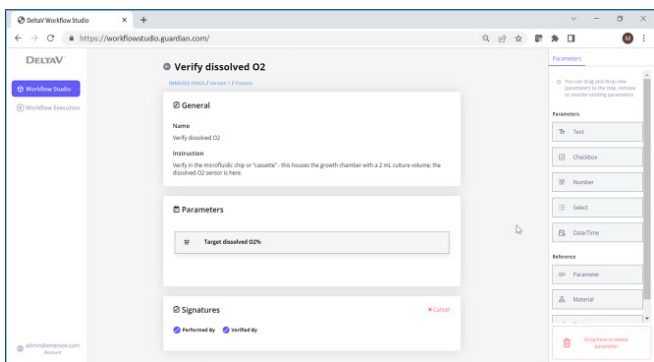


Easily Add Details, Parameters, Equipment, and Materials for Process Steps.

Materials and equipment can also be added and referenced in steps. However, currently there is no integration with any other material and equipment modules (e.g. DeltaV Materials Management Package, DeltaV Equipment Management Package, or ERP data sources); any equipment and materials references are manually entered at this time.

Out of the Box Support for Industry Standards, Electronic Signatures, and Role-Based Access

The process steps, groups, parameters, and signatures are easy to locate and intuitive to use, right out of the box. The structure of the recipe editor provides flexibility but also supports industry standards for recipes such as ISA88 and ISA95. Recipe steps can be built to require electronic signatures and mandatory field completion, in accordance with FDA CFR21 Pt11. When recipes are executed, each transaction has a date/time stamp for batch record reports and auditing.

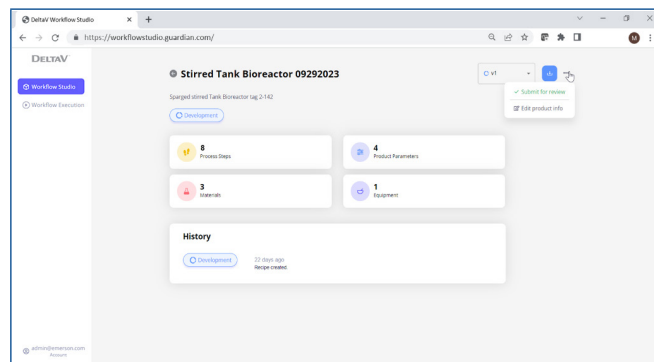


Quickly and Easily Include Electronic Signatures in Recipe Steps.

Role-based access control is also available out of the box. Users can be assigned a role or multiple roles with specific permissions to allow access to perform certain actions throughout the application, such as creating, reviewing, and executing recipes. With proper permissions (and following company standard operating practice guides), users can also publish recipes to different environments for recipe testing or execution, increment the recipe through the recipe lifecycle, and copy a recipe to Development to edit and repurpose it.

Built-in Recipe Version Control

DeltaV Workflow Studio offers built-in recipe versioning, featuring a clear digital record of versions, changes, and current states for each recipe. Users can seamlessly increment recipes throughout their lifecycle and effortlessly create new versions for testing modifications by duplicating existing ones.



Recipe Overview with History of Recipe States.

	In Review	Recipe is locked and is pending approval.
	Retired	Previously effective recipe retired from use.
	Effective	Recipe is approved, locked and ready to use.
	Development	Build and modify recipe.

States can be Assigned to Indicate Recipe Stage.

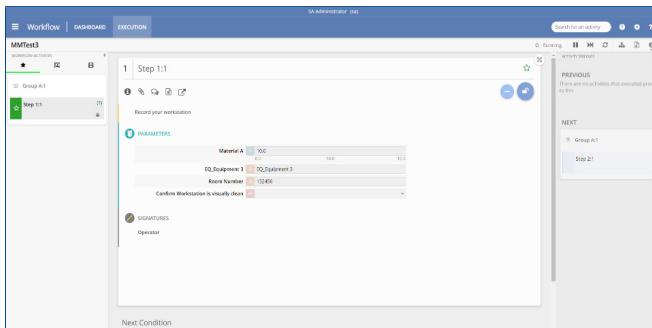
Version management is also provided depending on the assignment of recipe states. For example, if a new recipe version is created and assigned the Effective state, the state of the previous version will automatically move from Effective to Retired.

Executing Recipes Created in DeltaV Workflow Management

To easily execute a recipe, DeltaV Workflow Management is integrated with DeltaV Workflow Execution, which utilizes the same recipe execution engine as DeltaV MES (formerly Syncade). More information on this can be found in the **DeltaV MES product data sheet**.

With proper permissions (and following company standard operating practice guides), users can publish recipes to different environments for recipe testing or execution.

Alternatively, recipes may be printed to hard copy, and operators can record batch record details on paper without using DeltaV Workflow Execution.



Execute a Recipe in DeltaV Workflow Execution.

Reduced Cost of Ownership with a Secure SaaS Solution

DeltaV Workflow Management is a SaaS solution offered on a subscription basis and centrally hosted by Emerson on Microsoft Azure. This ensures a lightweight, scalable, performant solution that allows your focus to remain on recipe management and execution, removing the burden of managing the IT and infrastructure.

What Does SaaS Mean for My Organization?

DeltaV Workflow Management is fully managed by Emerson, meaning there is nothing for you to install, configure, manage, or troubleshoot. Authenticated users simply log into the application via a browser (e.g., Chrome, Microsoft Edge).

Emerson is responsible for supporting and managing all aspects of the application except for your company's data, which is stored in a segmented manner and cannot be accessed by any other company. Emerson will update DeltaV Workflow Management as updates and security patches becomes available. These maintenance updates and upgrades are planned ahead of time and communicated accordingly to minimize interruptions to operations.

Maintaining Data and Application Integrity

Emerson SaaS solutions are developed with cybersecurity as the top priority, and industry best practices have been leveraged to protect the integrity of your company's data. The connection from your manufacturing floor to the cloud is secured with end-to-end encryption, and Emerson provides best-in-class identity access management to protect against unauthorized access. A whitepaper containing more detail around security measures and policies for DeltaV Workflow Management is also available from Emerson.

DELTA V						
Doc #		Revision #		Page 1 of 6		
Batch #						
1. Materials Section						
ID	Name	Quantity Required	Lot #	Expiration Date	Recorded By / Date	Verified By / Date
01	Material A	10 mg				
02	Material B	50 mL				
03	Material C	1 g				
04	Material D	1 L				
05	Material E	10 M				

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Unexecuted Paper Batch Record.

Ordering Information

DeltaV Workflow Management has several solutions available as a 1-year subscription offering that may or may not include DeltaV Workflow Execution.

Tiers for DeltaV Workflow Management and DeltaV Workflow Execution	
DWFMS1BPS020_Y1FYXX	DeltaV Workflow Management Basic Solution - Includes 1 DeltaV Workflow Management environment and 20 named users
DWFMS1APS020_Y1FYXX	DeltaV Workflow Management Advanced Solution - Includes 1 DeltaV Workflow Management environment, 1 DeltaV Workflow Execution environment, and 20 named users

Additional named users are available for each solution.

Additional Licenses	
DWFMS1BUS001_Y1FYXX	Additional named user for DeltaV Workflow Management Basic Solution
DWFMS1AUS001_Y1FYXX	Additional named user for DeltaV Workflow Management Advanced Solution

**If additional execution environment is needed for DeltaV Workflow Management Advanced Solution, contact your local Emerson salesperson.*

Contact your local salesperson about options for unlimited users. Product support is included in each solution.

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