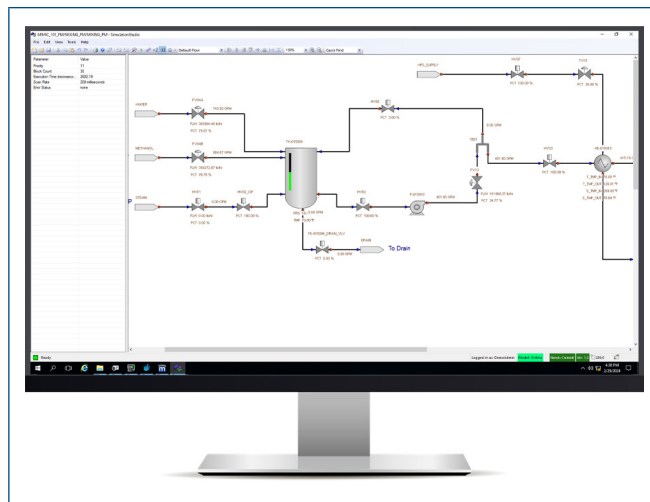# DeltaV™ Mimic

- Improve control performance

- Improve operator performance

- Support cost effective compliance

- Reduce risk of plant operations

- Scalable, flexible model fidelity

- Easy integration

- Comprehensive Operator Training

- Realize lifecycle business results with low total installed cost

Introduction

DeltaV™ Mimic is a real-time, dynamic simulation platform built to deliver the business results of the Digital Twin to the process industries. It is a key technology towards top quartile performance.

Simulation must be a practical investment for any operations manager to make, regardless of the size of the plant or the industry. It must allow plant operations to reduce the cost and risk of improving the operation and control of the plant and support upskilling of the work force. Mimic provides value to the execution of capital projects and control system modernization as well as the lifecycle operation performance of the plant.

Benefits

- **Improve Control Performance –** Mimic provides an environment for process control improvement while reducing the risks and errors in new and existing control system configurations.

- **Improve Operator Performance –** Improve the performance of your operators by allowing training on startup, shutdown, abnormal situations, and infrequent plant upsets. In addition, operator training with Mimic can accelerate new operator skill development and facilitate knowledge transfer from experienced operators to inexperienced operators.

- **Support Cost Effective Compliance –** Mimic minimizes costs associated with compliance by allowing control system and operating procedure validation without impacting the operation of the actual plant.

- **Reduce Risk of Plant Operations –** Mimic's ability to test process safety levels of protection and other operational tasks in an off-line environment reduces the risks associated with running the real-world plant.

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- **Scalable, Flexible Model Fidelity –** From low to medium to high, Mimic provides real-time performance. This unique capability allows you to apply the required level of model complexity to fit the requirements of the unit operation or task.

- **Easy Integration –** Mimic automatically integrates to DeltaV and other control system simulators. Mimic's Simulated IO Drivers integrate signals from the IO and process models to control systems using the communication standards required by the control system vendor. One modeling environment can drive IO signals to different control systems at the same time. Setup and integration time is minimized with utilities in Mimic that read the control system configuration and generate the Simulated IO relationship and IO models automatically.

- **Comprehensive Operator Training –** DeltaV Mimic Train works with process and IO models in a dynamic simulation system, adding the capability of operator training exercises and instructor controls. It functions as a supervisory manager of the training session allowing complete access and control of the Mimic simulation and any OPC DA compatible off-line control system.

Product Description

DeltaV Mimic Foundation is the base license for building, managing, and controlling the digital twin environment.

Explorer

The Explorer allows complete management of the simulation environment from one window. From here, all aspects of the simulation can be configured. It is designed to display the simulation in a hierarchical tree structure, allowing you to better visualize the entire virtual plant. Menus within Explorer allow quick access to other applications in the Mimic environment.

- Structured import/export of configuration components

- Integrated support notifications

- Version control for simulation models

- Process snapshot control and validation

Mimic allows simultaneous user sessions using MS server remote desktop services.
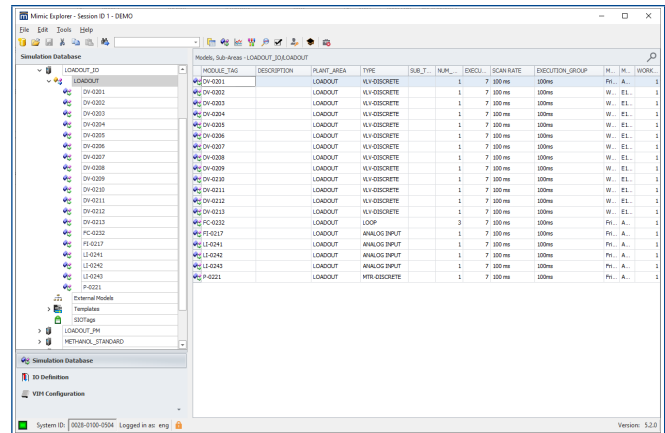
*Explorer in Mimic – one window to the entire simulation environment.*

Simulation Studio

Simulation Studio is the Mimic model and simulation configuration layer. It provides an IEC-1131 based graphical block view of the simulated process, allowing users to configure models, download models into the runtime engine, and to view the model data flow in real-time. Process models can also be configured in graphical mode, a dynamic PFD format. It also allows offline and online viewing of all models. Unit conversions between blocks are automatically calculated by the Mimic simulation engine, reducing model development and maintenance time. Links between Mimic models are cross referenced and displayed at each block, making models easy to understand and maintain.

Views

Views are user configurable views of dynamic Mimic or OPC DA data. Views contain graphs and tabular views of model data as well as graphics of the simulation. These objects are used to view the simulation in the following different ways:

- **Data View –** Tabular views of simulated IO or process model data.

- **Trend View –** Dynamic trends of data from Mimic or external OPC DA server.

- **Graphic View –** Dynamic process flow diagrams of data from Mimic and OPC DA Server for instructor station screens.

- **Unit Operation Views –** Dynamic view of unit operations: Column/Stripper View, Separator View, Reactor View, Pump/Compressor View, Bioreactor View, Fractionator View.
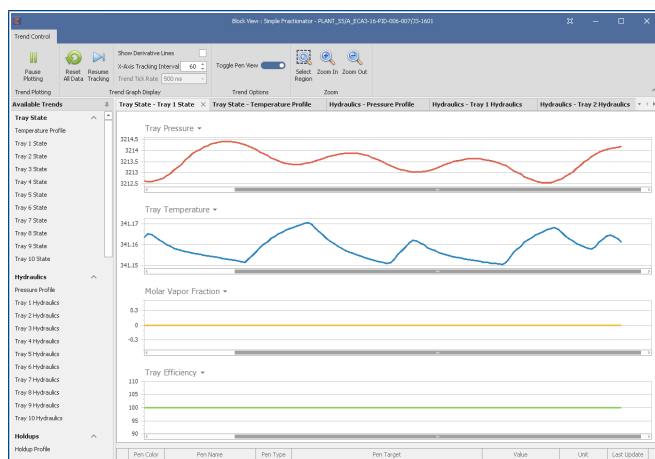
Mimic Trend View showing batch profiles for viable cell and product concentration in the Fractionator Object.

External Model Interface (MEMI)

The Mimic External Model Interface (MEMI) allows external models access to the Mimic modeling environment. Every Mimic system has an OPC DA Server available for complete access to Mimic models and snapshot controls. For higher speed, direct access to Mimic models, MEMI provides a set of direct, data access functions implemented within a DLL. External modeling applications can use these functions to gain real-time, high-speed, read/write access to the Mimic model data.

Model Version Control

The Model Version Control feature keeps track of models and system enhancements, allowing users to archive, restore and view revisions of all process models. It also enables users to maintain an audit trail of model enhancements. A database backup will contain the revision history and content files.

Additional Features

DeltaV Mimic Process

Mimic Process is a set of rigorous first-principles, dynamic models of process plant unit operations designed for high-performance simulations for operator training or automation system testing, including:

- Powerful data visualization tools

- Easy to implement, quick to tune

- Rigorous First Principles Unit Operation Models

- IEC-1131 Function Block objects

- Dynamic Objects with Real Time Convergence

- Unit Operations links with process Streams

- Thermodynamic Properties validated to NIST and DIPPR

- Component Sets Streams Management

- Automatic Engineering Unit Handling

- Dynamic Pressure / Flow Solver

- User Views for Process Analysis

- IEC-1120 Function Block Objects of Dynamic PFD Objects
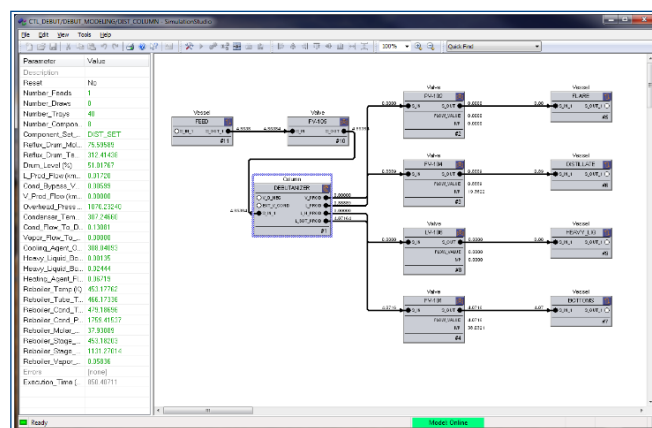
High Fidelity distillation column simulation in the Mimic Simulation Studio.

Mimic Process objects are scalable to the needs of any system:

- **Mimic Process – Core –** Provides the infrastructure for Mimic Process as well as common unit operations including Bins, Compressors, Conveyers, Heat Exchangers, Pumps, Valves, and Vessels.

- **Mimic Process – Power –** Includes Boiler, Steam Header, Furnace, and Turbine unit operations.

- **Mimic Process – Separations –** Includes Separator, Vessel VLE, Surface Condenser, Jet Condenser, Distillation Column, Stripper, and Fractionator unit operations.

- **Mimic Process – Solids –** Includes Conveyer, Compactor, Crusher, Cyclone, Mill, Screen, Centrifuge Decanter, Flotation Cell, and Settling Tank unit operations.

- **Mimic Process – Reactions –** Includes Continuous Stir Tank Reactor and Plug Flow Reactor unit operations.

- **Mimic Process – Bioreactor –** Includes Bioreactor unit operation.

DeltaV Mimic Train

Mimic Train is a comprehensive training management and administration software, including:

- **Training Courses –** operator training exercises, views, scoring, and records.

- **State Based Training Engine –** executes the training exercises.

- **Default & Custom Malfunctions –** directly linked to the IO or Mimic modeling objects.

- **Key Performance Indicator Scoring –** critical process data points against which the student's performance can be evaluated.

- **Records & Reports –** a record of each exercise that is executed that can be exported to LMS.

- **Custom Interfaces –** Mimic user types: Engineer, Instructor, Student, Evaluator.

- **Enterprise Capabilities –** enterprise level record management.

- **Views –** additional graphical, interactive resources such as remote access to DeltaV control systems, component studio graphics, remote desktop, PDFs, web links, and online resources.

- **Playback –** record, playback, pause, and resume the actions taken during a training scenario to identify critical actions taken by a student to reinforce learning opportunities that drive key performance indicators.

DeltaV Mimic Test Bench

Mimic Test Bench provides a way to automate Instrument, Control, and Safety System (ICSS) configuration testing and document the testing of these systems. Users can create a test to set, examine, verify, and monitor values in both the Mimic simulation and any offline control system with an OPC DA server, like DeltaV Simulate.

DeltaV Mimic and Aspen Simulation Links

The Mimic Aspen HYSYS and Aspen Plus Links allow direct integration of HYSYS and Aspen Plus Dynamics models into Mimic, enabling those models to be used for control system development and testing, operator training, and continuous improvement and OPEx initiatives. Built upon the proven communication bridge architecture in Mimic, the Aspen links provides:

- Movement of IO data between DeltaV Mimic and DeltaV Simulate or other control systems simulators.

- Support for multiple Aspen HYSYS cases in a single machine or across multiple machines.

- Support for multiple Aspen Plus cases across multiple machines.

- Synchronization of variables between cases in the same machine or across several machines.

- Synchronization of execution for multiple cases in the same machine.

- Pause and resume the models and external systems.

- Ability to run the models and external systems at speeds other than real-time.

- Ability to create, store, and restore snapshot.

DeltaV Mimic Synchronize

Mimic Synchronize provides the tools needed to maintain your Digital Twin more easily with DeltaV and Mimic. Mimic Synchronize allows DeltaV power users to keep DeltaV Simulate and production DeltaV systems aligned, ensuring the maximum return from your Multi-Purpose Dynamic Simulation (MPDS) system or Operator Training System (OTS).

Mimic Synchronize enables users to:

- Efficiently update DeltaV Snapshots.
- Perform rule-based verification of changes and updates.
- Logging of every step and parameter processed for simplified MOC.

System Capacities

Below are configuration capacity limits in Mimic.

- Simulated IO Tags Per System – 1000 and greater (1000 SIO Tags Increments).
- Runtime Simulation Nodes Per System – 512.
- Defined Simulation Nodes Per System – no limit.
- Simulated IO Tags Per Node – 40,000.
- Remote Terminal Sessions for Mimic Server – 10.

Specifications

Operating System	Microsoft Windows 10; Microsoft Windows Server 2016, 2019, or 2022
CPU	x86 2.5 GHz dual-core CPU
Memory	Minimum 4GB
Disk Space	10 GB free space before installing Mimic

Product Support

Mimic Product Support is delivered through Guardian™. Guardian is Emerson's digital platform for addressing the end-to-end lifecycle needs of automation & control software and asset performance management solutions. The Guardian digital experience enables users to quickly connect to product support; securely manage subscriptions; get intuitive views into system health; and explore additional software and services that propel performance.

Ordering Information

DeltaV Mimic is licensed on a Flexible Subscription Unit (FSU) basis. An FSU is a currency that can be used to access any Mimic feature licensed on an FSU basis, with each feature requiring its own number of FSUs. The FSU subscription is offered in one-year, three-year, and five-year terms. To purchase, extend, or expand a license, please contact your Emerson Sales Representative.

Related Products

- DeltaV
- DeltaV Mimic Foundation
- DeltaV Mimic Field 3D
- DeltaV Mimic Process
- DeltaV Mimic Test Bench
- DeltaV Mimic Train
- DeltaV Mimic Simulated I/O Drivers
- DeltaV Mimic Synchronize
- DeltaV Mimic and Aspen Simulation Links
- DeltaV Mimic Aspen HYSYS Packages
- DeltaV Simulation Cloud

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