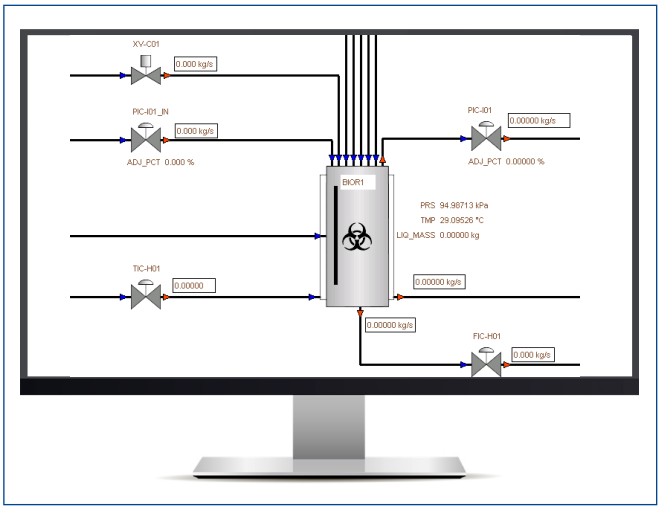
DeltaV™ Mimic OEM Bioreactor Package

- High-fidelity process and control modelling of bioreactors
- Supports mammalian, bacterial, yeast and fungal cell cultures
- Supports continuous, batch, semi-batch or any combination of reactor modes
- Accelerates control system testing, operator training, and technology transfer
- Matches product development lab data to the reaction kinetics
- Delivers analytical data through virtual experimentation to aid in process discovery and repeatability



Introduction

The DeltaV™ Mimic OEM Bioreactor Package provides a software-based digital twin of a lab or pilot-scale bioreactor. Offered exclusively to OEMs, it can help OEMs differentiate their bioreactor offerings by:

- Training pharmaceutical operators on the process and controls of the specific bioreactor
- Tuning controls
- Developing and testing batch sequences
- Proving that scale-up is possible

The Mimic OEM Bioreactor Package includes the software and licenses for OEMs to develop a high-fidelity Digital Twin of your custom bioreactor skids.

Benefits

- **Complete package –** Includes software for process and control modelling, lease licenses for 12-months (renewable annually), and product support delivered through Guardian.
- **Supports different cell cultures –** The default setup of the bioreactor unit operation is for the most sophisticated case of a bioreactor with mammalian cell cultures used today for most new biologics (highly complex proteins), but the equation parameters can be adjusted to model fermenters that use yeast cells (ethanol), fungal cells (antibiotics), and bacterial cells (less complex proteins).
- **Supports continuous, batch, semi-batch or any combination of reactor modes –** The Bioreactor object provides a dynamic model of a batch bioreactor or fermenter with or without an agitator and sparge and can also model continuous biological reactions including startup and shutdown. Reactor materials and heat transfer are completely configurable, supporting the use of single use, glass or stainless-steel vessels.

- **Accelerates control system testing, operator training, and technology transfer –** Biological kinetics is orders of magnitude slower than chemical kinetics. Bioreactors and fermenter batches generally take days or weeks to complete. The use of speedup factors is an essential aspect of modeling these processes. The Bioreactor object can run 1000 times real time so that a 10-day batch is completed in 15 minutes. Instead of waiting for days to see the effect of changes in operational, process, and control system conditions, the model provides complete batch profiles and scenarios in a matter of minutes.
- **Matches product development lab data to the reaction kinetics –** Many pharmaceutical manufacturers either have incomplete or highly proprietary equations for kinetics. General purpose biological kinetic equations for the effect of operating conditions on cell growth rate and product formation rate enable the user to readily match existing profiles of cell and product formations without the use of proprietary kinetics.
- **Delivers analytical data through virtual experimentation to aid in process discovery and repeatability –** Besides testing configurations and training operators, the Bioreactor model can be used to do a design of experiments (DOE) and explore "what if" scenarios to track down the causes of variability. Process repeatability is a foremost concern for manufacturers in the beverage, food, and drug industries. If the bioreactor model matches the change with time of process inputs and process outputs, the model can be used to rapidly explore scenarios. By varying kinetic parameters, sequences, and setpoints, the correlations between process inputs and selected process outputs can be studied with data analytics. Principal component analysis (PCA) and Projection to Latent Structures (PLS) can be used to identify the major contributors to batch repeatability. These tools can potentially lead to the online diagnosis of bad batches.

Product Description

The DeltaV Mimic OEM Bioreactor Package includes:

- Mimic 100 SIO Tag Base
- Advanced Modelling Objects - Core
- Advanced Modelling Objects - Bioreactor
- DeltaV Simulate OPC SIO Driver

These licenses are leased on a 12-month basis. Upon expiry, these licenses may be renewed for the upcoming year through the OEM, for the end-user.

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

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