

Process Intelligence & Simulation Solutions

Understand the Process. Scale with Confidence.

Acuflow brings Tridiagonal Software's advanced process-modeling and simulation platforms to pharmaceutical, biopharma and process-industry teams. From stirred-tank mixing analysis and automated CFD to AI-powered process intelligence, digital twins and decision-support applications, Tridiagonal helps engineers and scientists improve process development, scale-up, technology transfer and optimization.

[EXPLORE SOLUTIONS](#)[TALK TO AN EXPERT](#)

OUR SOLUTIONS

Two Platforms. Different Questions. One Process-Intelligence Ecosystem.

MixIT®	SimSight
Stirred Tank Mixing Software	AI-Powered Process Intelligence Platform

PRODUCT 1

MixIT®

Stirred Tank Mixing Software

MixIT is designed for stirred-tank process development, scale-up and troubleshooting. It combines process data, mixing science, empirical correlations and advanced 3D CFD models in one collaborative engineering platform.

Features

- Intuitive engineering GUI
- Shared reactor database
- Empirical correlations
- Complex impeller library
- Fully automated CFD analysis
- Vortex-shape prediction
- Reports and visualization
- Reactor / process tagging
- Multiple turbulence models
- Custom correlation capability
- Custom baffles and internals
- Fluid-rheology analysis
- Lab-to-plant process-data integration
- Enterprise knowledge sharing
- Available through MixIT Enterprise and MixIT On Cloud pathways

MixIT Technical Capabilities

Capability	Technical Function
Reactor Database	Store geometry, operating conditions, plant measurements, experimental results and CFD data
Reactor Analysis	Compare multiple reactors and evaluate mixing performance
Automated CFD	Automated geometry creation, simulation, analysis and reporting
Flow Analysis	Evaluate velocity patterns and circulation behavior
Tracer Analysis	Study mixing and residence-time behavior
Heat Transfer	Analyze thermal performance in stirred vessels
Impeller Analysis	Evaluate multiple impeller geometries and configurations
Vortex Prediction	Predict vortex shape and free-surface effects
Fluid Rheology	Model Newtonian and non-Newtonian fluids
Scale-Up Analysis	Compare conditions across reactor scales
Reporting	Generate engineering reports and visualizations

MixIT Applications

Process / Unit Operation	Analysis
Blending	Mixing Time
Solid-Liquid Operations	Solid Suspension Cloud Height Njs
Crystallization	Meso-Mixing Particle Size Distribution Heating / Cooling Anti-Solvent Mixing
Fermentation	Energy Dissipation Volumetric Mass Transfer Oxygen Transfer
Hydrogenation	Bubble Size Gas Distribution Entrainment
Emulsification	Shear Rate Energy Dissipation Droplet Size Distribution
Bioreactors	Nutrient Mixing Gas Distribution Bubble Size Strain Rate
Extraction	Droplet Size Circulation Time
Polymerization	Particle Size Distribution Heat Transfer P/V
Chlorination / Nitration	Bubble Size Gas Distribution Entrainment

PRODUCT 2

SimSight

AI-Powered Process Intelligence Platform

SimSight blends physics-based simulation, historical process data and advanced analytics to accelerate process development, scale-up, monitoring and optimization. It provides an environment for equipment knowledge, process models, visualization and reusable decision-support applications.

Features

- Physics-based process models
- Historical process-data integration
- Advanced analytics
- Knowledge database
- Asset / equipment library
- Process-parameter analysis
- Process-metric analysis
- Scenario comparison
- Flow and mixing visualization
- Custom decision-support apps
- Browser-enabled application environment
- Python / Jupyter app deployment

- Reusable process knowledge
- Customizable enterprise workflows
- Digital twin and hybrid-modeling workflows

SimSight Technical Capabilities

Capability	Technical Function
Knowledge Database	Store and retrieve fundamental equipment and process knowledge
Asset Library	Organize reusable knowledge about process equipment
Analyze	Evaluate scale-up, process-transfer and operating scenarios
Explore	Study relationships between process parameters and process metrics
Curate	Build reusable libraries of assets, SUBs, SUMs and process knowledge
Deploy	Develop and deploy browser-enabled Python / Jupyter applications
Visualize	Compare flow and mixing behavior across process conditions
Hybrid Modeling	Combine physics-driven and data-driven approaches
Historical Data Analytics	Identify patterns and trends from prior operating data
Decision Support	Convert models and knowledge into repeatable engineering workflows

SimSight Applications

Application	Purpose
Bioreactor Scale-Up	Understand how the internal equipment environment changes across scales and support comparable process conditions.
Process Scale-Up	Support consistent process performance from lab through production.
Blend-Time Prediction	Predict blend-time performance rapidly across operating conditions.
Crystallization	Predict particle-size distribution and support process-condition evaluation.
Mass-Transfer Analysis	Evaluate and optimize kLa and related mass-transfer behavior.
Reduced-Order Models	Generate faster predictions of complex flow fields for repeated engineering use.
Process Transfer	Compare equipment and process conditions to support technology transfer.
Equipment Digitalization	Capture vessel characteristics, engineering models and process knowledge digitally.

WHERE TRIDIAGONAL FITS

Across the Process Lifecycle

Process Development	Equipment Selection	Design & Optimization	Scale-Up	Technology Transfer	Manufacturing Support	Continuous Improvement
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WHY TRIDIAGONAL SOFTWARE?

- Built around process engineering, modeling and simulation.
- Specialized platforms for design, scale-up, optimization, technology transfer and troubleshooting.
- Combines engineering science with CFD, process data and advanced analytics.
- Supports multiple process-industry environments including Pharma, BioPharma, Chemicals, CPG, Oil & Gas and OEM.

[Talk to an Expert](#)

What Process Challenge Are You Trying to Solve?

Whether you are troubleshooting a mixing issue, scaling a bioreactor, evaluating reactor design, planning technology transfer or building process-intelligence capability, start with the application.

Name*

Company*

Mobile*

E-mail*

Process / Application*

Tell us about your challenge

SUBMIT

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