

## TRISIM

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### Comprehensive Control System Emulation for Triconex

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**TRISIM is a “Virtual Simulation” of Triconex Trident and Tricon controllers and TRI-GP combined with the base modeling capability from DYNSIM.**

This simulator allows access to emulation available in the TriStation 1131 Version 4 and 5 series software. This software provides a reduced time to commission and improved startup. TRISIM is delivered with AVEVA's turnkey Operator Training Simulator (OTS) or for use by Triconex Trident, Tricon, and TRI-GP users for safety and turbomachinery (TMC) control checkout.



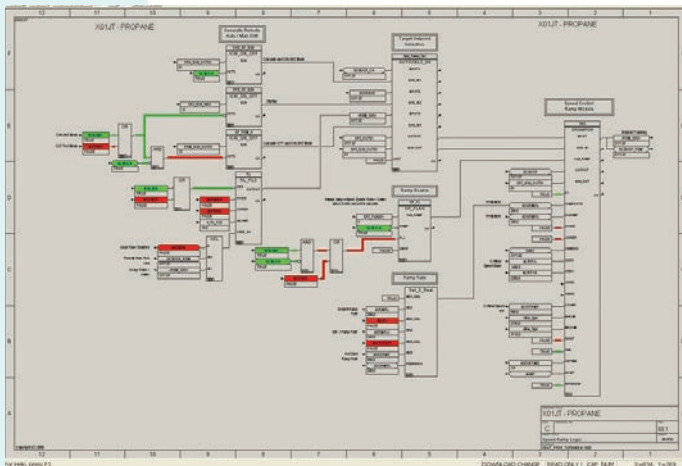
## Introduction

TRISIM™ is part of the SimSci™ Dynamic Simulation Suite of pro-ducts and powered by the SIM4ME® common modeling environment, setting new standards for openness and ease-of-use.

Control software design and testing are critically important components of any successful plant automation project. Today's ROI requirements demand that control configuration be 100% accurate when it arrives at the plant site. Undetected and unresolved software errors can cause costly delays in plant startup and commissioning.

AVEVA proudly offers TRISIM from SimSci for Triconex® Tricon™, Trident™, and TRI-GP™ systems, a uniquely comprehensive Triconex control system checkout and simulation tool that can pay for itself before you start-up your control system.

TRISIM takes full advantage of the SIM4ME common modeling environment; a culmination of over 45 years of experience in providing simulation and optimization products and services to the process industries. Designed with model data inheritance as a key concept, easily expedite comprehensive engineering workflow design, operational analysis, dynamic simulation, operator training, performance monitoring and real-time optimization.



## Summary

As part of the AVEVA Dynamic Simulation Suite of software products, TRISIM provides comprehensive control system simulation for Triconex control systems.

## Business Value

Ensure your ROI on plant start up projects, using TRISIM for software configuration and deployment of your Triconex control system.

Special command and control simulation features allow you to stop or freeze simulation for system stability.

System checkout prior to deployment allows you to use a single control system, without duplicate configurations, saving time and expense.

## Benefits

- Dramatically reduces time to commission and start up a Triconex control system
- Helps control and application engineers design superior quality into real-time control software
- Allows accurate analysis and troubleshooting of Triconex controller system response and performance
- Enables superior operator training in a completely non-destructive environment
- Provides the ideal retrofit/upgrade design environment for control engineers

## The Perfect Off-line Simulation & Testing Tool

### “Perfect Fit” Triconex Connectivity

TRISIM fully integrates with Triconex's TriStation 1131™ Developer's Workbench Version 4 and 5 series software for the ideal simulation platform.



### Signal Cross-Referencing Utilities

The simulation model in TRISIM drives the system's field input/output signals, and the cross-reference database defines the exchange of I/O data between the control blocks and the process model.

### Accurate Process Simulation

TRISIM allows a wide range of simulation models to be generated for testing, validation and training purposes:

- A control model library used for simple "tie-back" simulation models.
- An AVEVA DYNOSIM® model "starter kit" with valves, pumps, vessels, heat exchangers and limited multi-component thermodynamics. With a full DYNOSIM license, these models can be extended to detailed process models including full thermodynamics, compression, distillation, and reactions.

### Simulation Command and Control

TRISIM offers special command and control simulation features to allow engineers absolute command of simulation processes:

- The RUN/FREEZE capability permits users to halt a testing procedure at any point in time and receive a detailed comprehensive view of the entire control system performance
- The STEP capability permits engineers to run a model forward in single steps; enabling an extremely accurate diagnosis of equipment trips and stability issues
- The SPEED capability allows engineers to decrease or increase the simulation speed relative to real-time speed
- The SAVE/RESTORE capability allows accurate archiving of any system state for later use in training and/or troubleshooting

## Key Product Features

- Identical functionality with Tricon and Trident controllers
- Uses standard Triconex configuration software tools (TriStation 1131 Version 4.7+)
- Supports easy "tie-back" and physical process model builds with drag-and-drop functionality
- Supports all Tricon and Trident block algorithms

## TRISIM Applications

The unique features in TRISIM provide unmatched ability and performance in Triconex Tricon, Trident, and TRI-GP system emulation for the following applications:

### Control System Checkout and Engineering

TRISIM enables comprehensive control system checkout and tuning before and after plant startup, without having to employ duplicate control processors and halt the full complement of system hardware. This feature is a strong economic alternative for those who cannot afford additional hardware for projects. Checking out new controls and the corresponding HMI, well in advance of commissioning the control system, dramatically reduces the critical plant start-up time and eliminates unforeseen defects in the control system software. This reduced start-up time translates into significant cost savings, and shortens outage and retrofit times for existing installations.

### Factory Acceptance Testing

TRISIM provides accurate and cost effective means to satisfy the rigorous scrutiny of Factory Acceptance Testing (FAT), regardless of system complexity. The bundled process modeling tool can provide virtually all the necessary conditions to thoroughly exercise your entire control system.



## Operator Training

TRISIM allows operators to learn about control system response and performance in absolute safety. Operators can run through a wide variety of start-up, shutdown and malfunction scenarios. It comes equipped with a consistent and reusable training environment to test operators' reactions and response times. Training exercises can be replayed, baselined and certified to provide a convenient review and teaching tool.

## Plant Performance Improvement

TRISIM provides the ideal no-risk experimental environment for evaluating proposed control system revamps, retrofits and upgrades. It is the ideal test bed for process modifications, control strategy development and system additions or changes.

SimSci's combination of industry experience, proven technology, and service expertise provides the right tools to achieve and maintain optimal control of your plant.

## Dynamic Simulation Suite

TRISIM is part of the Dynamic Simulation Suite (DSS) of products. DSS provides rigorous dynamic simulation for plant engineers, operators, and managers to use in optimizing plant operations and design. DSS is comprised of DYNMIME, SCP, and TRISIM; and engine links and emulations for

every major control system vendor; offering a professional grade alternative to dated, fragmented and hard-to-use products with which many plants currently struggle. All DSS products can communicate with each other, allowing a perfect combination to suit your exact plant requirements.

## Unique Advantages of the Dynamic Simulation Suite

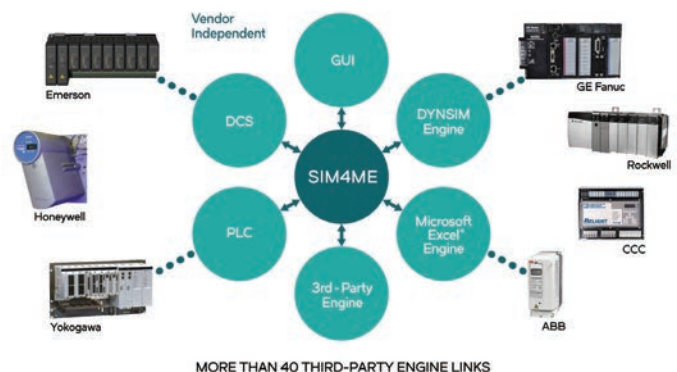
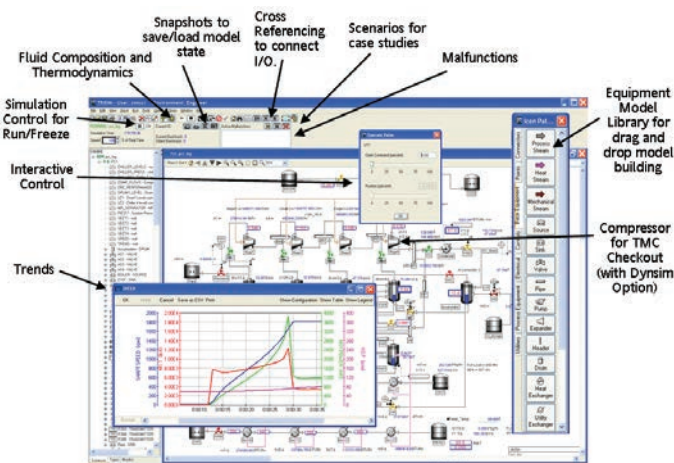
### A single, integrated dynamic simulation/emulation environment.

SimSci's DSS provides all the power you need in a single, integrated environment. A single model serves equally well for Design, Control Checkout, and OTS applications.

### Modular architecture means easy third-party connections.

Easily link to third-party software with modern, modular, open architecture. Significantly reduce the time, difficulty, and expense of building links to third-party DCS, PLC, or other dynamic process simulation engine applications.

## Modular System Architecture Controls Emulations & Engine Links



## Unit Operations/Models

### Process Models

- Source
- Sink
- Valve
- Pipe
- Pump
- Expander
- Header
- Mixer
- Splitter
- Drum
- Heat Exchanger
- Utility Exchanger
- Stream Set
- Transmitter
- Stream Send
- Stream Receive
- Shaft
- Utilities
- Controls
- Electrical
- Flow Network Components
- Points
- Primitives
- Widgets
- Connectors
- References
- User Templates

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