Increasing productivity and performance

EcoStruxure™
Triconex®
Software applications and tools

schneider-electric.com/triconex
As the foremost supplier of safety instrumented systems, Schneider Electric’s EcoStruxure Triconex solutions protect people, the surrounding communities, and the environment while keeping production operating safely and continuously for the operating life of the asset.

EcoStruxure Triconex Safety Systems deliver:

- Safer, more reliable, uninterrupted operations
- Increased plant uptime, minimum unplanned downtime and potential production loss
- Avoidance of costly harm to plant assets, reputational damage, and regulatory compliance fines
- Lower operational risk, impact on health, safety and the environment
- Maximum value of ownership

EcoStruxure Triconex Safety Systems (Tricon, Tricon CX, Trident and Tri-GP) meet the stringent needs of applications in high-hazard industries such as oil and gas, refining, chemicals, petrochemicals, power, pharmaceutical, and nuclear.

Certified by TÜV Rheinland for use in safety applications up to safety integrity level 3 (SIL3) EcoStruxure Triconex Safety systems are renowned throughout the world for safety, availability, and security, and can be used for all major safety and critical control applications, including:

- Emergency shutdown (ESD)
- Fire and gas (F&G)
- Burner management system (BMS)
- High integrity pressure protection system (HIPPS)
- Turbomachinery protection and control (TMC)

When safety and profitability are critical to the success of your operations, you can rely on EcoStruxure Triconex Safety Systems.
Increasing safety productivity and performance

Engineer the safety system faster
EcoStruxure Triconex - TriStation TS1131
EcoStruxure Triconex - TriStation Emulator
EcoStruxure Triconex - Report Generator

Resolve maintenance issues faster
EcoStruxure Triconex - Enhanced Diagnostic Monitor
EcoStruxure Triconex - Sequence of Events [SOE]
EcoStruxure Triconex - TriLogger

Validate/revalidate application logic faster
EcoStruxure Triconex - Safety Validator

Manage system changes faster
EcoStruxure System Advisor - Process Safety

Restart operations faster
SIF Manager

Manage process issues faster
EcoStruxure Triconex - Safety View
EcoStruxure Triconex - TriStation TS1131

Quick and easy system configuration and programming

TriStation TS1131 is the engineering and maintenance software toolset for the EcoStruxure Triconex family of logic solvers specifically designed to help you throughout the safety lifecycle.

TriStation tools are easy to learn, efficient to program and test, and require minimal training.

TriStation TS1131 allows you to:

- Define the controller configuration
- Create programs, functions and function blocks.
- Test and validate applications
- Download and monitor applications

The inherent error checking helps users avoid mistakes and speeds up the engineering process.

Features

- Optional Cause and Effect matrix programming language
- Graphical drag and drop programming
- Multiple projects handled from the same environment
- Comprehensive library of validated function blocks
- Application validation using powerful emulation tools
- Password protection for projects and controller access
- Project history automatically recorded
- “Free form entry” of annotations and comments
- Reports and documentation
- Import/Export facilities

Benefits

- Software license same cost regardless of tag size
- No hard lock licence required
- IEC61131-3 compliant
- TÜV Certified, including TÜV approved functional blocks
EcoStruxure Triconex - TriStation Emulator

Test applications in an offline environment

The TriStation Emulator allows you to emulate and execute TriStation TS1131 application logic without connecting to the physical Tricon CX, Tricon, Trident or Tri-GP controller. Using the emulator, you can test your application logic in an offline environment, without exposing your online processes to potential application errors.

Features
- Emulation of application logic, peer to peer communications, SOE data, Modbus communications
- Enable, disable or force points to specific values
- Configurable color coding for easy visual program monitoring
- Monitor and display running application logic and values
- Third-party simulation software can be used in conjunction with the emulator (external DDE servers/Modbus master, slave protocols)
- Monitor program scan times and execution times
- Separate application from TriStation so can be updated at any time without having to re-install TriStation TS1131

Benefits
- Identify application logic errors or anomalies early in the project
- Avoid costly re-work
- Avoid potential operational issues or upsets
- Ideal for testing modification prior to implementing on the controller
- Can be used with Safety Validator for automated application logic testing and validation
EcoStruxure Triconex - Report Generator

Comprehensive reporting made easy

The TriStation Report Generator allows quick and easy report generation across one or more EcoStruxure Triconex controllers or projects. Information from multiple controllers can be combined into a single report.

Default reports are available for peer-to-peer function block usage, peer-to-peer configuration and duplicate IDs, as well as tag name cross references.

Custom reports can be generated for any data available in the report generator database. The TriStation Report Generator is also used in conjunction with Safety Validator for creating automated test cases as well as automatically creating the associated test projects and configuration files.

Features
- Create reports from single or multiple controllers
- Find specific text within reports
- View, export, print, refresh, and copy reports
- View in report generator environment
- View and export to PDF and Excel

Benefits
- Saves time
- Reduces effort and man power
- Minimizes errors
- Increases quality
The Enhanced Diagnostic Monitor (EnDM) software application monitors the status and health information of the EcoStruxure Triconex controllers. Comprehensive system diagnostics within the controllers are automatic and logged, no user code is required.

The Enhanced Diagnostic Monitor is quick and simple to use, providing more detailed information and insight into:

- System information
- Diagnostics and health information
- Health status of modules, including field/power/voter health
- System alarms

Clear indication, health classification together with colour coding aid quick analysis to determine any potential remedial actions.

**Features**

- NAMUR 107 symbols
- Monitor controller(s) hardware
- Display system status, health and conditions
- Display extended module information and firmware versions
- Collect system status (periodic or on demand)
- Monitor the controller(s) program scan time
- Monitor and change controller(s) memory allocation
- View project information stored in the controller(s)
- Display communication performance and status
- Collect, view and report system events
- Can operate independently from TriStation TS1131

**Benefits**

- Saves valuable time to identify system health conditions
- Avoid costly downtime
- Efficient to operate
- Minimizes the likelihood of human error
Understanding the sequence of events that lead to unsafe process conditions and possible shutdowns is vital. The Sequence of Events [SOE] data software application retrieves and displays events recorded by EcoStruxure Triconex controllers and organizes them in user readable view for trip analysis:

- Collect and analyze event data
- Export event data
- Print event reports

Each EcoStruxure Triconex controller collects and stores events locally, recording the date, time and state of the event. SOE data from as many as 254 controllers on a network can be collected manually, automatically, for specified periods and for specific snapshots.

### Features
- Manual or automatic data collection
- View event data
- Find, filter and search for specific events
- Copy event data
- Events can be color coded for easier analysis
- Manual or automatic data export
- Generate event reports

### Benefits
- Quick and easy event analysis
- Find the cause of faults more quickly
- Resolve issues faster
EcoStruxure Triconex - TriLogger

Quick and accurate resolution to operating issues

The TriLogger software suite provides exceptional ease, speed and reliability in recording, playing back and analyzing high speed operating data from the EcoStruxure Triconex controllers. The TriLogger suite includes:

- **TriLogger Event** high speed data collection and recording
- **TriLogger Playback** off-line analysis and plotting of data
- **TriLogger Remote** remote view of real time data and manual triggering event recorders

TriLogger is ideal for applications with fast transients e.g. compressor surge. TriLogger replays up to 12 trend sets, each with up to six points in real time, locally on site or remotely.

**Features**
- High point capacity (up to 4,000 points)
- Seven minutes of high resolution operating data per set
- Real-time viewing and trending with a manual trigger
- Configurable event triggers and times
- Forward and reverse playback
- Click and drag zooming
- Export data to Excel
- Up to three concurrent remote connections

**Benefits**
- Quick and accurate resolution to operational issues
- Superior alternative to DCS historians when fast data logging is required
Safety Validator provides the easiest and quickest way to test and validate EcoStruxure Triconex’ application logic.

The powerful, easy to use TÜV Certified application automatically verifies that the application logic running in your Tricon controller is working as intended. Safety Validator automatically documents the results, saving effort, time and money.

Automated testing is a valuable way to perform testing of Triconex application logic, ensuring that the functionality, new features or modifications operate as intended.

Automated testing compliments manual testing methods. No programming is required — simply configure Safety Validator for your specific test requirements.

Tests, test cases and test scripts are quickly and easily created. Tests can be run on the TriStation TS1131 emulator or on the EcoStruxure Triconex controllers. Test results are self-documented, making it ideal for use on new projects or when revalidating the safety system at periodic intervals.

**Test any application**

Safety Validator can be used to test:

- Emergency shutdown applications
- Fire and gas applications
- High integrity pressure protection applications
- Burner management applications
- Boiler protection applications
- Pipeline protection applications
- Turbomachinery safety and protection applications

**Features**

- TÜV Certified
- Automatically test and document Tricon application logic
- East-to-create test procedures
- Quick and easy to use tests, test cases and test scripts
- Run a single test, set of tests, or subset of tests
- Tests can run on TriStation TS1131 emulator or EcoStruxure Triconex controller
- Single stop or continuous tests

**Benefits**

In addition to saving time, money and effort, Safety Validator also:

- Can be up to 50 percent faster than traditional manual testing
- Increases test accuracy and test coverage
- Optimizes test resources
- Increases test efficiency
- Ensures repeatable test quality
EcoStruxure System Advisor – Process Safety

Quick and easy change management

EcoStruxure System Advisor – Process Safety is an essential tool to manage and document changes throughout the operating life of the system. Designed specifically for use with EcoStruxure Triconex Safety Systems it delivers increased insight into the configuration, changes and I/O management. It helps meet the increasing demand of audits, compliance and traceability to ensure your Triconex safety systems are continually operating in a safe and secure way.

Features

System Documentation
- Provides complete I/O documentation
- Documents all tagname references (including tagname references to EcoStruxure Foxboro DCS)
- Documents cause and effect matrix [CEM], Structured Text, Ladder and Function block code

Change Tracking
Tracks a range of configuration changes, including:
- Logic
- Tagnames
- TriStation 1131 configuration and security
- Hardware, execution order, and SOE configuration

I/O Management
- Documents I/O
- Finds spare I/O
- Reserves I/O

Reporting
- Stores all historical information in a server database
- Provides historical view by date and change
- Allows customized views by filtering and sorting

Benefits
- Increase personnel productivity
- Accelerate troubleshooting time
- Reduce audit costs for regulatory compliance
- Lower project quality assurance activities
- Reduce costs associated with managing documentation updates
- Increased accuracy, reduce the likelihood of unexpected plant outages
- Safeguard knowledge to future proof investments
Every operating asset has outages, albeit planned or unplanned resulting in costly downtime.

When an outage occurs the team needs information fast i.e. what happened? How did the outage occur? Do we have all of the information to understand what happened? Did the system(s) work as intended? And finally, is it safe to restart production?

Minimizing outage time is critical so having better information and easily absorbed facts is vitally important in order to restart sooner.

SIF Manager streamlines trip investigation and eliminates the complicated, time-consuming, often error-prone data collection and manual handling of trip data.

SIF Manager captures every trip on every Safety Instrumented Function (SIF) automatically.

Comprehensive trip reports and trends are automatically generated detailing a full sequence of events, SIF response times, valve response times, and full sequence of events for every SIF component.

A complete audit trail for every SIF under management is also provided.

Features
Quickly analyse and understand the outage:
- Automatic trip reports
- Automatic trip trends
- Automatic trip sequence of events
- Critical trip event details
- Trip investigation history audit trail
- Safety-related legislation incorporated
- Leverage existing information and systems
- Highly scalable to meet current and future needs

Benefits
Restart operation faster:
- Accelerate trip investigation
- Quickly analyse each trip event
- Confirm trip activation sequence
- Easily verify SIF loop performance
- Digital evidence for investigation report
- Consolidated environment for all data
- Restart operations faster
Safety View alarm and bypass management allows you to manage operational risks with confidence. It reduces the likelihood of unscheduled asset downtime and production interruption, reduces maintenance costs and maximizes your return on investment.

Safety View is an online software application that provides situational awareness of critical conditions and the visibility of the risk being managed.

Safety View draws the plant operator’s attention to critical changes in process conditions that require immediate action. It also provides clear indication to operators, maintenance engineers and shift supervisors of all safety critical devices that have been placed in bypass thus reducing the risk levels for which they were designed.

A core role of Safety View is to replace traditional hardwired annunciator panels and bypass switch arrangements, while providing more intuitive information of the operator.

Safety View provides contextual information to facilitate decision support. The adaptable design allows it to be configured to your specific requirements. Safety View can be used in simplex or redundant configuration for maximum availability.

Features
Safety View provides contextual information to facilitate more informed decision making:
- TÜV Certified for the highest levels of integrity
- ISA18.1 Annunciator sequences include (Code M, A, R)
- Redundancy for maximum availability
- Alarm functions include — Enable/disable individual alarms and group alarms, reactivate alarms on shift hand over, silence alarms, clear first out alarms, reset alarms in ring back state
- Bypass functions include — apply and remove bypass tags, add / review notes for bypassed tags, configurable bypass behaviour
- General purpose buttons
- Secure access and audit trail
- Shift change one time activation

Benefits
Safety View allows you to:
- Enhance operator performance and response to critical conditions
- Reduces the likelihood of an adverse safety event
- Minimizes operator errors leading to unscheduled asset time
EcoStruxure Triconex Safety Systems - the markets most dependable safety systems drive measurable operation profitability improvements - safely.