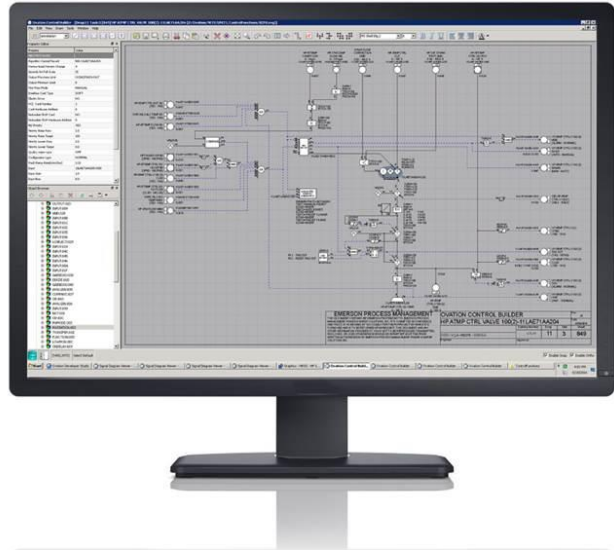




# Ovation™ Engineer Workstation

## Features

- Allows simultaneous engineering of control, database, and graphics through multiple windows
- Uses intuitive Ovation Developer Studio to generate object-oriented graphics, system database, and control
- Helps to easily configure the Ovation system through standard tools such as cut, paste, and drag-and-drop
- Has offline configuration with export features to selectively bring items to the online environment
- Uses dual functionality to function as an operator workstation to minimize hardware costs
- Provides information management at the enterprise level by integrating open database with many third-party software programs.
- Uses straightforward installation through standard Microsoft® Windows® procedures
- Includes system management capabilities for backup, restore, troubleshooting, and status monitoring
- Has comprehensive online help function



## Introduction

Ovation™ automation technology incorporates dynamic, Microsoft® Windows® -based software into its engineer workstation, allowing plant personnel to configure, maintain, and operate an Ovation system all from a single source.

The workstation's intuitive graphical interface enables users to focus on the plant or control process rather than the base program. Engineer software can be implemented on various PC platforms, providing flexibility in processing performance to match budget needs.

Compatibility with many third-party applications and components makes the engineer workstation ready for future upgrades.

## Ovation Developer Studio

The Ovation Developer Studio is a comprehensive software application that manages configuration of the entire Ovation system. As a fully integrated advanced software program, the Ovation Developer Studio creates and

maintains Ovation drop types, control strategies, process graphics, point records and system-wide configurations, including security.

The Ovation Developer Studio is an intuitive, hierarchical, menu-driven interface that uses standard drag-and-drop functionality to easily move or copy elements from one application to another. The object-oriented approach to system configuration provides a familiar operating environment, thus reducing the learning curve, simplifying development, and saving significant engineering effort.

The Ovation Developer Studio is a single launch point for various functions, each aimed at managing and/or configuring a different portion of the Ovation system. The following are various functionalities of the Ovation Developer Studio:

- Define and configure an Ovation system
- Create, modify, and delete points
- Create and modify Ovation nodes (drops)
- Define and configure the I/O modules used in an Ovation system
- Store values from algorithms (typically, for special functions and ladder applications)
- Load control and originating point information into Ovation system nodes
- Link the master database with other system nodes
- Manage Ovation application licensing
- Online upload of Controller changes into the database
- Create point groups used in trends or graphics
- Create, modify, or delete security objects and definitions
- Track changes made to the database
- Create control logic that runs on the Ovation Controller
- Create and edit system process diagrams that display on the operator workstation
- Manage Ovation security privileges

## Dual Functionality

Every engineer workstation package includes operator software offering dual functionality when required. Operator software provides access to dynamic system points, process graphics, standard function displays, trending, and the sophisticated Ovation alarm management program.

Communicating through the Ovation network, the operator displays real-time data through high-speed, high-resolution process graphics, alarm screens, and other graphical user interface (GUI) tools.

## Embedded System Database

Every Ovation system includes one engineer workstation with an embedded Ovation system database for maintaining software and configuring data for all drops throughout the system. The Ovation system database is the central repository for collecting, organizing, and distributing Ovation system data and securing the data from unauthorized access.

The Ovation system database is distributed to all drops, thus coordinating all system configuration activities. The distributed design allows concurrent access to various engineering functions from multiple workstations. As points are added, deleted, or modified in the Ovation system, validity checks for detecting errors are performed within the system database. After the error is corrected, the database simultaneously distributes the new information to each drop on the Ovation network. The Ovation system database provides two types of integrity checking: Single-field checking and Multi-field checking. Single-field checking verifies whether entered values are within an acceptable range. Multi-field checking verifies the acceptability of an entry based on the contents of other related fields.

The Ovation database is fully compliant with industry standards (ODBC/SQL) for integration with third-party data systems, including other plant and business information sources. This allows integration of third-party products for information management at the enterprise level, uniting process control and corporate information sources.

## Ovation Developer Studio Applications

The Ovation Developer Studio is comprised of various applications, each aimed at configuring a different portion of the Ovation system:

- Ovation Control Builder
- Ovation Graphics Builder
- Security definition
- General system configuration tools
- Trend/diagram group building
- I/O device configuration
- Point configuration
- Historian configuration
- Alarm strategy configuration

### Ovation Control Builder

The Ovation Control Builder application supports the use of advanced algorithms and smart control strategies that leverage technologies such as fuzzy logic, artificial intelligence, and digital bus interfaces to help users to maximize efficiency and lower operating costs.

Unlike third-party packages, the drawing capabilities in the Ovation Control Builder are tailored specifically for creating and editing control logic, thereby simplifying and streamlining the logic development process.

The Ovation Control Builder features a comprehensive and intuitive GUI for control building, as well as simplified navigation and reporting capabilities.

The Ovation Control Builder presents information in an industry-supported SAMA format but can also utilize any other custom format through the use of an internal symbol builder include ladder logic. By utilizing the symbology and drawing capability of the graphical user interface, the user is automatically supplied with online/offline documentation of control strategies.

The Ovation Control Builder provides an efficient method for developing Ovation control strategies and automatically generating executable code for download to Ovation Controllers. Ovation control strategies can be saved as macros or algorithms in a library for future access and modification to fit a plant's ever-changing

needs. Stored strategies can be re-applied to similar applications throughout the plant to minimize engineering time.

The Ovation Control Builder displays logic execution in a standard and editable PDF environment. Rendering the logic in this format opens the door to file sharing not only within the user's organization, but also among Engineering, Procurement, and Construction (EPC) contractors, architect-engineering firms, and control system and equipment vendors. This type of engineering collaboration during the control design process allows all parties to stay informed while also maximizing productivity and efficiency.

The Ovation Control Builder automatically generates default points that are associated with algorithms and permits the creation of newly calculated points during control configuration. The Ovation system includes a vast library containing hundreds of built-in, standard algorithms and the ability to embed advanced control algorithms.

Additionally, the Ovation system provides a mechanism for creating user-defined algorithms to meet the challenging applications found in today's industry processes.

Advanced algorithms take control to a higher level by incorporating fuzzy logic, neural networks, model predictive control, and industry-specific, advanced applications to reduce variability and optimize performance over a full range of processes.

Online control tuning and viewing facilities, also known as the signal diagram display system, exhibits floating and dockable windows in a user-definable layout. Windows for control navigation, changing and viewing algorithm details, viewing tracking details, and input/output details provide extra flexibility while navigating through information required for control visualization and tuning activities.

Additional features include:

- Configurable color schemes for background
- Signal animation
- Configurable state and value display of control signals
- Display of the signal name activated by a hovering cursor
- Quick access and maintenance of previously visited control drawings
- Shading current algorithm selection

Size, format, and style of all control drawings are user definable for customization to fit particular operating philosophies. Custom title block, border configuration, and numbering schemes simultaneously prepare the control drawings for documentation as control is developed.

The Ovation Control Builder also incorporates control strategy management that eases the administration of multiple control strategies. Management capabilities include revision of document parameters such as titles, import/export control, global system point changes, reorder control execution, and duplication of strategies.

## Ovation Graphics Builder

The Ovation Graphics Builder application creates and edits crisp, full-color Ovation system displays with a resolution of 16,000 pixels.

Standard click-and-drag features (such as draw, move, and resize objects) and drawing attributes (such as color, line width, fill pattern, and text size) are available from scrolling menus for customizing displays to fit particular plant process needs.

Interactive features can be built into the graphics including buttons, checkboxes, choice items, event menus, and sliders.

An extensive symbol editor creates, defines, and stores up to 1000 custom shapes. A shape library keeps symbols for quick recall when building a new graphic or editing an existing one.

The Graphics Builder supports the use of conditional logic such as IF and LOOP commands and mathematical calculations. Most importantly, existing source code files can be reused, thus eliminating the need to re-create graphics that reference the same component.

## Shapes and Symbols

Various shapes such as lines, rectangles, circles, dots, arches, polygons, and ellipses are created, edited, or deleted through the Graphics Builder. Shapes are drawn, moved, or resized using click-and-drag actions.

A scrolling pictorial list displays all defined shapes for sharing with other diagrams at program start-up. Shape attributes such as color, line width, fill pattern, and text size are selected from menus or scrolling lists.

## Macros

The Graphics Builder supports macros for automating the tedious and repetitive task of redrawing diagrams. Macros are graphic files containing display items and control logic used to predefine or prebuild a pictorial element such as a template for a control station or graphic items such as pumps and valves. Elements are saved as a diagram for later use as building blocks in other graphic diagrams.

Macros simplify construction of multiple control stations, resulting in reduced graphics building time. Unmacro support provides the ability to replace a specific macro in a graphic with the individual commands that comprise the macro. This allows the user to edit/copy macro graphic commands to the main display code.

## Integrated Source Editor

A line-by-line source editor simplifies the graphic modification process, allowing graphics editing in text mode. Changes made to a graphic object (text, shape, and so forth) can be viewed in the source code. Additional features of the source editor include global edits and online modifications.

The integrated source editor scrolls to the middle of the window, so commands immediately preceding the selected item command are visible without manually scrolling the source editor window.

## Security Definition

Ovation system security is designed to meet the requirements imposed by the North American Electric Reliability Corporation Critical Infrastructure Protection (NERC CIP) standards.

By taking a proactive role in addressing the increasing concerns in protecting cyber assets, Ovation incorporates a strong security model with user accounts management, strong password encryptions, and a robust engineering and operating environment managed from a central location to prevent unauthorized transactions and increase system reliability and availability.

The Ovation Developer Studio incorporates a security definition application that protects Ovation engineering and operating environments. The security tool defines a set of functions that can be enabled or disabled based on user rights and local or remote access privileges. Additionally, access and rights can be granted for the whole plant or an isolated area.

The Ovation security model has been designed to meet stringent regulations and provide a safe environment that prevents use or misuse of the system resources.

## General System Configuration

General system configuration applications within the Ovation Developer Studio define and maintain the configuration data of all Ovation system drops. Building an Ovation system can be done without connecting to the actual system hardware. The entire system configuration can be defined prior to its assembly.

Installation routines are included with every Ovation Developer Studio module. These routines incorporate a set of default configuration values and a set of derived values that are based on the system configuration, allowing installation to run automatically. Configurations can be modified or added at any time, even when the system is active.

Ovation's open system architecture allows configuration of devices outside of the Ovation system such as field devices, select third-party I/O modules, and external interfaces using Open Platform Communications (OPC) or Modbus.

## Diagram Group Configuration

Point groups are various points grouped together for process diagram purposes. You can add point groups through the Developer Studio or through your Ovation import file from the system. Point groups allow generic graphics to be created that do not have hard-coded points, but rather reference points through a point group.

Up to 5,000 diagram groups can be defined, and each group can reference up to 250 Ovation points.

## I/O Device Configuration

The Ovation Developer Studio I/O device configuration tool uses a hierarchical format for adding and maintaining I/O modules within Ovation Controllers and numerous types of I/O interfaces. Ovation I/O and an increasing number of third-party I/O data can be consolidated and managed from a single Ovation system, saving countless hours when configuring and changing system I/O. A pull-down list of all available I/O makes the addition of new modules to a Controller quick and easy.

I/O configuration is performed through various windows and pull-down menus that change context based on the type of I/O. Additionally, as a standard feature, Ovation provides a large area to configure ancillary information that can be used to document and identify a piece of equipment from anywhere in the Ovation network. The configured ancillary data can be used for Piping and Instrumentation Drawing (P&ID) references, cable numbers, color labels, and any other pertinent data.

## Point Configuration

Process points are added, deleted, or modified through the Ovation Developer Studio point configuration module. This tool defines each point parameter such as I/O type, module type, hardware address, termination information, sensor type, calibration, and conversion coefficients. To prevent name duplication, the point configuration tool

performs an immediate system-wide consistency check of any added points, validating the attributes of each process point, and verifying that deleted points are not required in other areas.

## Historian Configuration

The Ovation Developer Studio historian configuration tool allows the user to establish and manage important historical functions such as archival time, retry periods, disk criteria, scanners, scan groups, historian points, and collection of alarm operator and sequenced events.

## Alarm Strategy Configuration

The Ovation Developer Studio alarm configuration tool is used to build and implement an alarm strategy that quickly alerts plant staff of operations outside of normal limits and enables them to swiftly remedy the situation. This tool enables configuration of important alarm criteria such as filters, collectors, audio, historical storage, iconic, printing, colors, bitmaps, and blinking.

## System Viewer I/O Graphic

The System Viewer I/O Graphic automatically generates a real-time, live display of a drop's I/O from the Controller to the individual points or channels on modules. This allows technicians, project engineers, installation engineers, and plant operators to effectively monitor their I/O at a glance when operating, performing maintenance, and commissioning the plant.

## Summary

As a single integrated software package, the multiple functionalities of the engineer workstation, combined with the Ovation Developer Studio, make it one of the industry's most technologically advanced tools for managing graphics, process points, and control strategies.

©2022 Emerson. All rights reserved. The Emerson logo is a trademark and service mark of Emerson Electric Co. Ovation™ is a mark of one of the Emerson Automation Solutions family of business units. All other marks are the property of their respective owners. The contents of this publication are presented for information purposes only, and while effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. All sales are governed by our terms and conditions, which are available on request. We reserve the right to modify or improve the designs or specifications of our products at any time without notice.

Emerson strives to deliver products, services, and documentation that reflect our commitment to diversity and inclusion. Some publications, including software and related materials, may reference non-inclusive industry terms. As diversity and inclusive language continue to evolve, Emerson will periodically re-assess the usage of such terms and make appropriate changes.