

Easy Integration of CSI 6500 Machinery Health Monitor with Ovation

- Easy three-step integration process of machinery protection with the Ovation™ expert control system
- Eliminate complex and expensive integration
- Out-of-the box machinery health diagnostics for operators
- Build operator graphics quickly with pre-configured macros
- Complete machinery monitoring for protection, prediction, and performance monitoring



Fast, trouble-free integration delivers critical machinery health feedback to operators.

Introduction

As turbomachinery and mechanical equipment health deteriorates, performance decreases, throughput is reduced, and unplanned shutdowns are possible. When operators have visibility to the performance of these high stakes assets, they can make process adjustments and reduce process disruptions. Real-time integration of machinery information in the Ovation system delivers actionable information to operations staff and protects the condition of critical machinery assets.

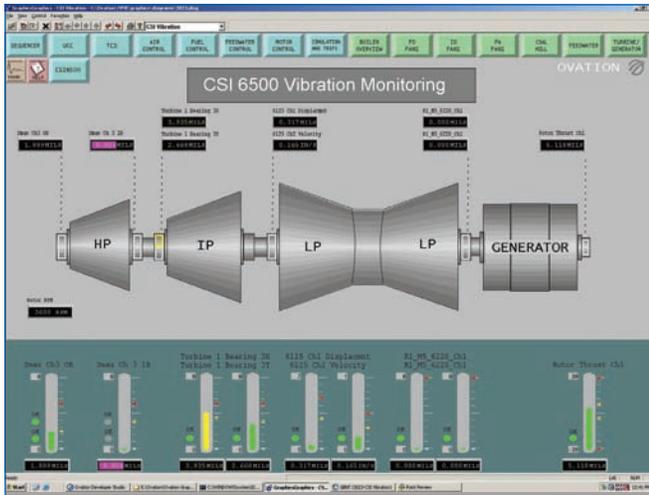
Eliminate Complex and Expensive Integration

Control room operators use real-time vibration information as start-up permissives and to make start-up decisions for critical turbomachinery. In traditional control systems, integration with machinery monitors is complex and expensive, requiring Modbus expertise, system expertise, and specific machinery knowledge. Typical machinery protection systems can require

3,000+ steps for 24 vibration channels to complete the integration process — not to mention the learning process to determine how to carry out these 3,000 steps. It typically takes up to 3 weeks to integrate one protection rack with a process control system.

With this many steps, it is certain that network issues, additional testing time, and nuisance alarms will be introduced. All too often, plants don't have the time or staff to complete the integration, leaving plant operators without key machinery health diagnostics, including overall vibration levels, thrust position, and eccentricity values.

The easy three-step integration between the CSI 6500 machinery protection system and the Ovation system saves hundreds of man-hours and gives you a complete, error-free integration of machinery information with the Ovation system.



Import a picture of your turbine generator. Use the bar graph macro, number and text macro, and bearing highlight macro to animate your graphic to direct attention to problem areas and display key machinery health information.

During the import, all of the analog points are automatically created under the designated drop in the Ovation Developer Studio. Points become a native part of the control system and include scale factors, full scale range, and engineering units from all of the data selected in Step 2.

To complete this step, right click on the drop and select load for both the primary and secondary. Step 3 typically takes about 3 minutes.

Machinery Health Diagnostics for Operators

When the .imp file is imported to the Ovation system, many engineering tasks are completed automatically:

- All point names are defined
- All engineering units are defined
- Full scale range and scale factors imported
- Automatic sync of vibration trip setpoints

The Ovation system now comes with a library of macros that facilitates graphic user interface development. You can attach vibration data points to bar graph macros and all properties of the point are instantly configured in the macro. Bearing highlight, text, and number element macros are also included to facilitate graphic animation and vibration value readouts.

The .imp file is pre-configured with automatic sensor health and automatic synchronization of alarm limits so if alarm limits are changed in the protection system, they are automatically updated in the control system.

With vibration data as a native part of Ovation, operators can instantly see machinery health degradation as a result of real-time operator or process changes.

After the 3-step easy integration process is complete, you can use the library of pre-configured macros to develop the operator screens.

Creating operator screens can be easily accomplished by launching the Graphics Builder and selecting Macros. For example, to create a bar graph, select the bar graph macro and type in the 4 pre-configured point names - two for vibration value, and two for sensor health. Drag the macro onto the operator screen, download the drop, launch Ovation Graphics, and you are done.

Repeat the same process with the number and text box elements and the graphical bearing highlighter that visually points the operator to the specific machine bearing with an issue.

Build Operator Graphics

Traditionally, once data pipes were established via Modbus or another bus protocol, extensive services were required to actually make the data useful for the operator through control strategies and operator graphics.

With Integrated Machinery Protection and Prediction, points in the Developer Studio are automatically configured in the Ovation system during the import process. In addition, macros are included to enable quick creation of operator graphics.

You can custom configure operator graphics using three fundamental dynamos to create a functional operator interface. Pre-defined dynamos are:

- **Bar graph macro** that indicates vibration level proportional to bar height, relative to alarm limits.
- **Num element macro** that displays sensor/bearing description, vibration value, and units anywhere on the screen in text form.
- **Highlight macro** that can be layered over any machinery graphic to visually point the operator to the exact location of the fault on the machine.

Building a dynamic operator interface like this used to require custom programming. With Integrated Machinery Protection and Prediction, you can drag and drop macros to quickly create your unique interface.

Total Machinery Monitoring Solution

Integrated Machinery Monitoring delivers prediction, protection, and performance monitoring for a comprehensive solution in a single rack:

- Machinery Protection with full API 670 protection to avoid catastrophic failures, increase safety, and satisfy insurers
- Machinery Prediction to maximize availability, increase dependability, and reduce maintenance costs
- Performance Monitoring to maximize production, reduce energy consumption, and minimize emissions

Integration with the Ovation system delivers critical missing machinery health feedback to operators.

Comprehensive protection, plant-wide prediction, and performance monitoring integrated with process control provides confidence that your mechanical equipment is truly operating reliably.

Emerson's Integrated Machinery Protection and Prediction solution, a key component of the PlantWeb™ digital plant architecture, delivers a tremendous savings in time, resources, improved integration quality, and a more complete integration than any other control system.

Prerequisites

- Ovation in Windows, v2.4 or higher and one spare I/O device in the controller
- AMS Machinery Manager 5.4 or higher
- CSI 6500 A6824R (simplex) or A6824R (simplex or redundant)

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