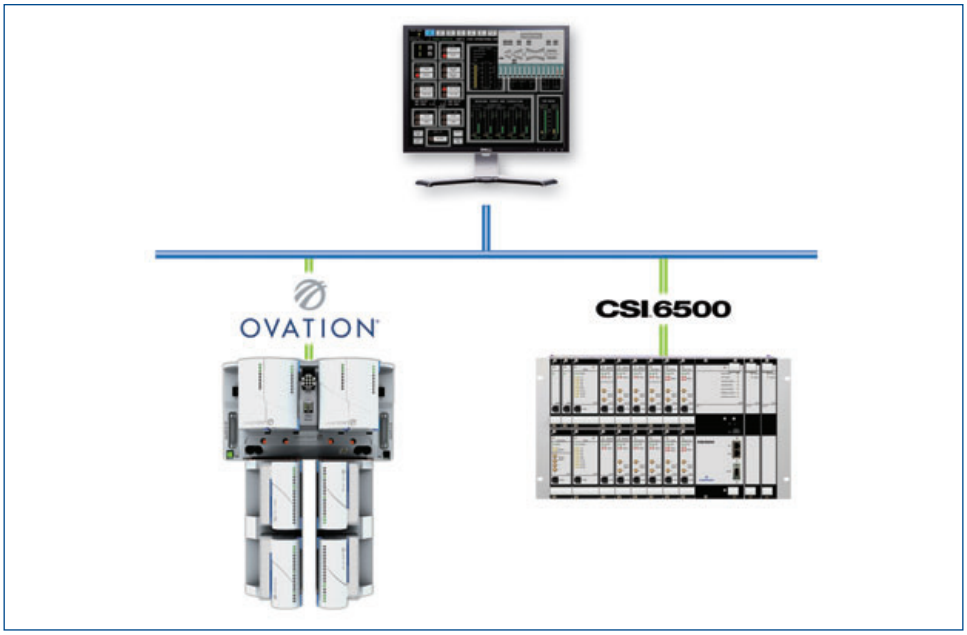
Easy Integration of CSI 6500 Machinery Health Monitor with Ovation

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

- *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*

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.



Give your plant operators visibility to the condition of high stakes assets without the headaches, cost, and time required for manual integration.

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.

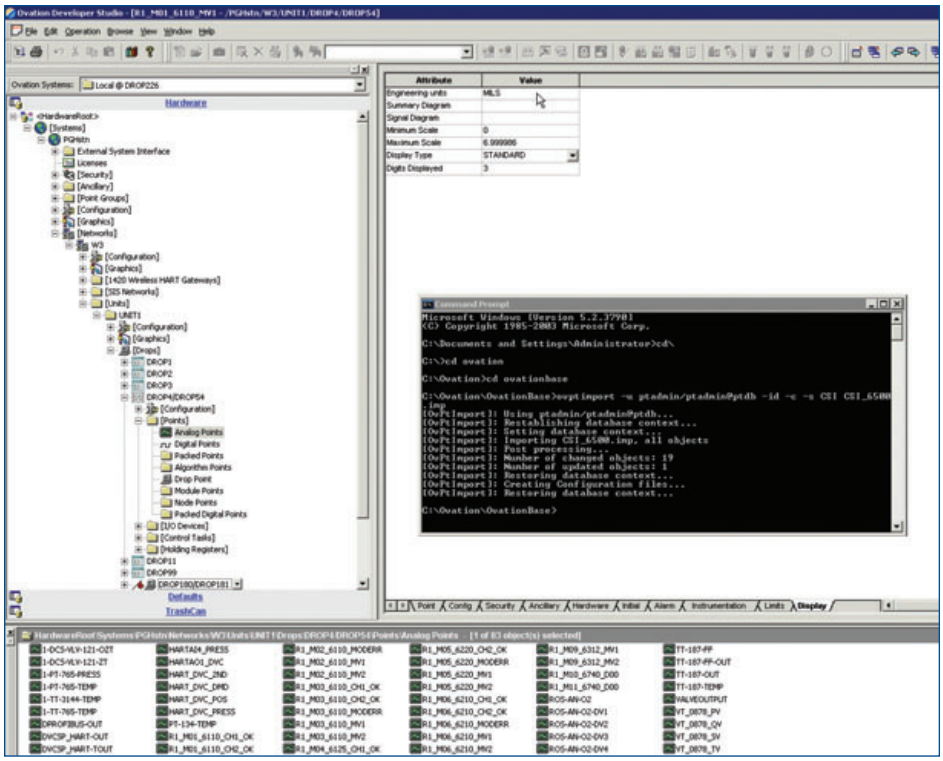
With this many steps, it is certain that network issues, additional testing time, and nuisance alarms will be introduced. All too often, plants don't have the time or staff to complete the integration, leaving plant operators without key machinery health diagnostics, including overall vibration levels,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

An Easy Three-Step Integration Process

Easily connect vibration information from turbomachinery to the Ovation system in three simple steps that take approximately ten minutes. From AMS Suite and the CSI 6500 Machinery Health™ Monitor, asset parameters are scanned, selected, and imported into the Ovation system:

Step 1, Scan: The scan process auto-detects each module in the CSI 6500, and reads the configuration information. There is no need to research user manuals to identify parameters and no need to re-type information in the contol system that was already entered during machinery monitor setup.



CSI 6500 macros are included the Ovation software. All points and point properties are automatically defined in Developer Studio and are native to the Ovation environment.

AMS Suite scans the CSI 6500 via Ethernet or serial connection and discovers the monitor and all of its properties. Automatically collected information includes monitoring module type, module name, sensor name, bearing name, machine name, engineering units, sensor sensitivity, alarm limits, module health status, scale factor, full scale range, and relay states. This scan typically takes about 20 seconds. By using the easy integration process, alert and alarm limits in the machinery monitor always remain synched with the process control system.

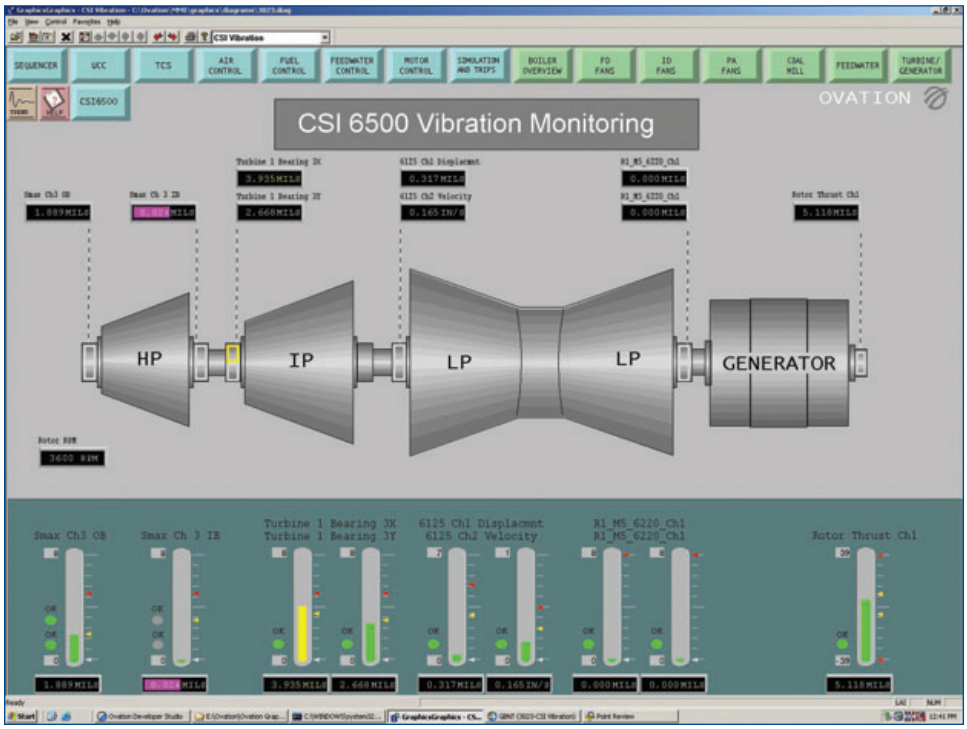
Step 2, Select: After the automatic scan in step 1, the machinery health values are presented for selection. You can accept the defaults or simply check a box to select values as viewable for the operator.

Choose from overall vibration peak and phase, relay states, and indicate which monitoring modules and sensors should be imported.

The physical connection between the CSI 6500 and Ovation is via Ethernet to the controller. During the parameter selection process, enable redundant communications by simply checking a box. The need to create duplicate mapping for redundancy is gone.

To complete step 2, type the Ovation system name, Ovation network name, Ovation unit name, drop name, Ovation I/O device number, and PLC host index. Then accept the defaults to complete the creation of the .imp file. Step 2 typically takes about 3 minutes.

Step 3, Import: After the autoscan and select steps are complete go to the Ovation system and copy the .imp file into the c:\Ovation\OvationBase directory. Complete the run ovptimport at the command prompt, load primary and secondary drops and the import is done. This step typically takes about 3 minutes.



Import a picture of your turbine generator. Use the bar graph macro, number and text macro, and bearing highlight marco 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 marco** that indicates vibration level proportional to bar height, relative to alarm limits.
- **Num element marco** that displays sensor/bearing description, vibration value, and units anywhere on the screen in text form.
- **Highlight marco** 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 marcros 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 availablity, 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.

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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)

Related Products

CSI 6500 Machinery Health Monitor. Housed in a single chassis, the CSI 6500 combines proven prediction and protection to provide a complete online machinery monitoring solution.

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