Online Help
Rev 02
July 2022

AMS Machine Works v1.7 User Guide

Online Help

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1.7

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1 Introduction

1.1 About this manual

The AMS Machine Works Online Help guides you through using the software after installation.

For information on the installation, see the AMS Machine Works System Guide (MHM-97926). The System Guide includes information on installing the software and performing administrator functions. The System Guide is included with the installation files. Emerson recommends administrators to read the System Guide before attempting installation and before reading the Online Help.

Table 1-1: Referenced Documents

MHM Numbrer	Document name
MHM-97924-PBF	AMS Asset Monitor Operating Manual
MHM-97932-PBF	AMS Machine Works v1.7 System Guide

1.2 Symbols

Note
This symbol marks passages that contain important information.

⚠ CAUTION

This symbol marks operations that can lead to malfunctions or faulty measurements, but will not damage the device.

1.3 Where to get help

Emerson provides a variety of ways to reach your Product Support team to get the answers you need when you need them:

Phone	Toll free 800.833.8314 (U.S. and Canada) +1.512.832.3774 (Latin America) +63.2 702.1111 (Asia Pacific, Europe, and Middle East)
Email	Guardian.GSC@Emerson.com
Web	http://www.emerson.com/en-us/contact-us

To search for documentation on AMS Machinery Manager, visit https://www.emerson.com/en-us/catalog/ams-ams-machinery-manager.

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For purposes of this Agreement, (a) the words "include," "includes," and "including" shall be deemed to be followed by the words "without limitation"; (b) the word "or" is not exclusive; and (c) the words "herein," "hereof," "hereby," "hereto," and "hereunder" refer to this Agreement as a whole. Unless the context otherwise requires, references herein: (x) to Sections, Annexes, Schedules, and Exhibits refer to the Sections of, and Annexes, Schedules, and Exhibits attached to, this Agreement; (y) to an agreement, instrument, or other document means such agreement, instrument, or other document as amended, supplemented, and modified from time to time to the extent permitted by the provisions thereof and (z) to a statute means such statute as amended from time to time and includes any successor legislation thereto and any regulations promulgated thereunder. This Agreement shall be construed without regard to any presumption or rule requiring construction or interpretation against the party drafting an instrument or causing any instrument to be drafted.

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PRODUCT TERMS:

ADDITIONAL TERMS FOR AMS Machine Works Software: In no case may Licensee use AMS Machine Works Software for control of plant processes. You may make, install, and use a

reasonable number of copies of the Software solely for the purpose of facilitating your use of the Software.

2 Overview

AMS Machine Works combines predictive maintenance techniques with comprehensive analysis tools to provide easy and accurate assessment of the machinery health in your facility. AMS Machine Works brings together related data and prioritizes assets and alarms based on your configuration.

AMS Machine Works v1.7 includes support for AMS Asset Monitor, AMS Wireless Vibration Monitor, AMS 9420 Wireless Vibration Transmitter, Ovation Machinery Health Monitor and AMS 6500 ATG Online Vibration System.

AMS Machine Works provides an intuitive dashboard to help keep up with day-to-day activities and machinery health. AMS Machine Works continues to be part of the Plantweb™ Digital Ecosystem offering additional applications and asset sources.

AMS Machine Works applications

Configuration and interaction with the software happens through these applications, which can be launched from a web browser:

- **Asset Explorer** — access and manage assets in your plant.
- **Analysis Dashboard** — view the status of your machines, devices, and the software at a glance.
- **Device Configuration** — configure data collections.
- **Event Viewer** — view system generated events.
- **Machine Configuration** — configure monitored machines, map measurement points to device channels and set up alerts.
- **Machine Journal** — create journal entries and collaborate on maintenance issues for your plant's machines and devices.
- **User Manager** — control and monitor access to various areas of the software.
- **Vibration Analyzer** — analyze data from machines and devices. Vibration Analyzer can be launched from a web browser, which will open the thick client application. However, the vibration analyzer thick client application will have to be installed in the client machine first.

Essential system functions are performed by web services. These services may or may not have a user interface. Examples of services include management of the database connections and regulation of communication within the system.

An OPC UA server is available for sending scalar data from AMS Machine Works to any OPC UA-compliant client system.

Assets

An asset is any physical component such as a device, machine, or equipment being monitored, or the logical representation of a physical asset.

In AMS Machine Works, assets are typically physical pieces of equipment, such as machinery or monitoring devices. Examples include: motor, pump, fan, turbine, AMS 9420 Wireless Vibration Transmitter, the Emerson Wireless Gateway, and other devices.

Interfaces

An interface collects data from devices about the devices themselves and about the machines they are monitoring.

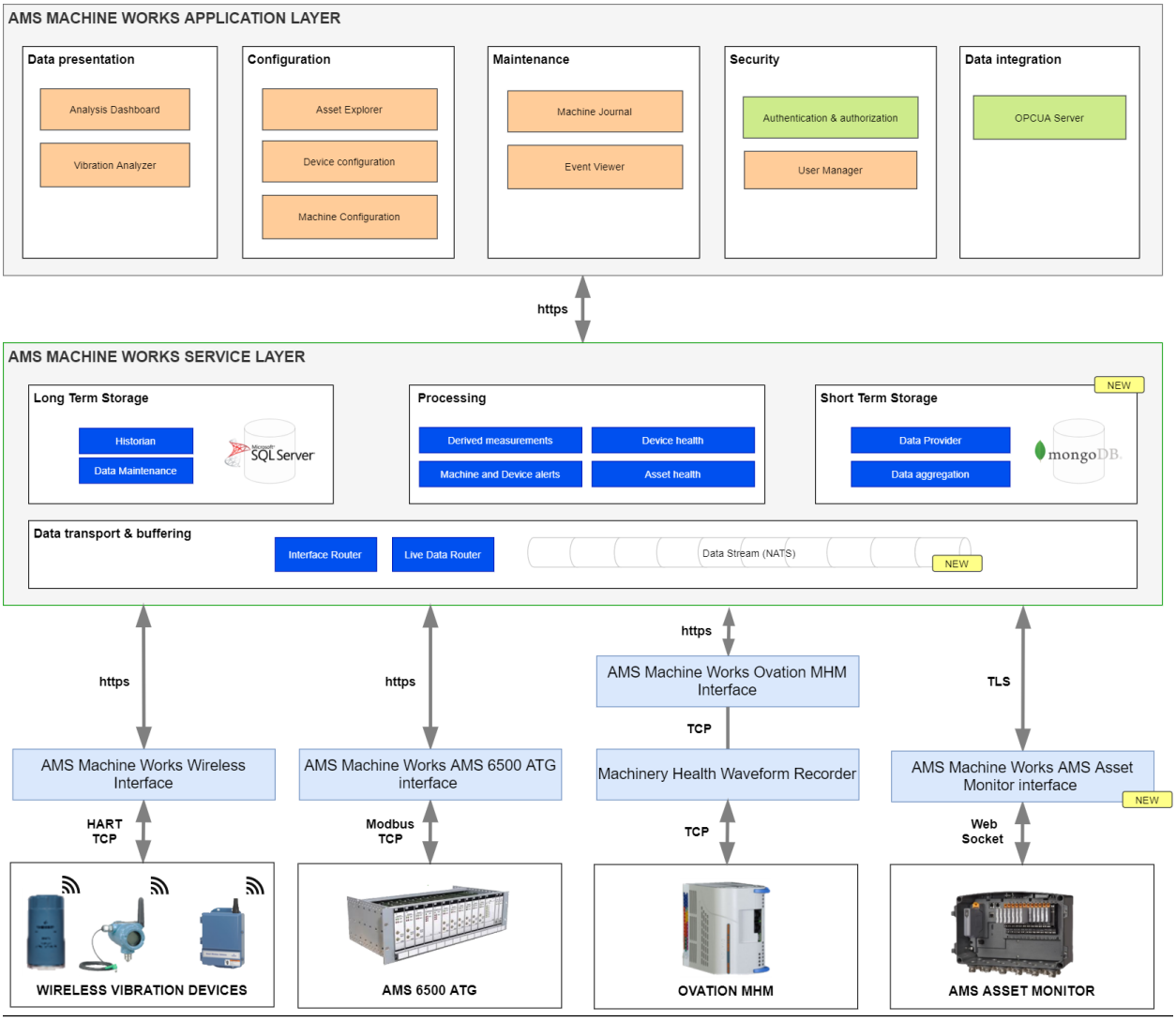
An example of an interface is the AMS Machine Works Wireless Interface. The AMS Machine Works Wireless Interface collects data from wireless vibration devices using a HART TCP connection to a wireless gateway.

2.1 AMS Machine Works Architecture

AMS Machine Works has three distinct architecture layers:

1. **Interface Layer** — connects to devices and collects vibration data
2. **Services Layer** — process the vibration data for health, alerts, aggregation, and calculating further measurements
3. **Application Layer** — contains several web applications for data presentation, configuration, maintenance, security, and data integration

Figure 2-1: AMS Machine Works Architecture



2.2 System components

The system is comprised of many components, described in the table below. Refer to the System Guide for information about where the components are installed.

Table 2-1: System components

Component	Description
AMS Machine Works Web Services	The AMS Machine Works Web Service provides the essential software components and interfaces to Device Configuration, Machine Configuration, AMS Machine Works Analysis Dashboard, and Machine Journal. AMS Machine Works Web Service allows you to create machines in Asset Explorer, perform analysis in AMS Machine Works Vibration Analyzer, and log Journal Entries in Machine Journal. It obtains data from various other components, which can be installed on different servers.
AMS Machine Works Historian	AMS Machine Works Historian keeps records of data so you can analyze the trends in vibration data.
AMS Machine Works Interface Router	AMS Machine Works Interface Router directs vibration data traffic into the AMS Machine Works Historian.
AMS 6500 ATG Interface	AMS 6500 ATG Interface Service allows you to bring data into AMS Machine Works from an AMS 6500 ATG.
Ovation MHM Interface	Ovation MHM Interface interacts with the Ovation Machinery Health Waveform Recorder of an Ovation system to allow you to collect prediction data from Ovation Machinery Health Monitor modules.
Emerson Wireless Interface	Emerson Wireless Interface brings data into AMS Machine Works from wireless devices such as the AMS 9420 Wireless Vibration Transmitter and AMS Wireless Vibration Monitor.
AMS Machine Works Vibration Analyzer	Allows you to analyze vibration data. AMS Machine Works installation must be complete before you can install this component.
AMS Asset Monitor Interface	AMS Asset Monitor Interface Service allows you to bring data into AMS Machine Works from an AMS Asset Monitor.

3 Device Configuration

The Device Configuration application allows you to set up the different types of data you want to collect from devices and how often you want to collect it. The fundamental data acquisition settings for the devices must already be configured using their respective programs. The software does not attempt to change the fundamental data acquisition settings of the devices.

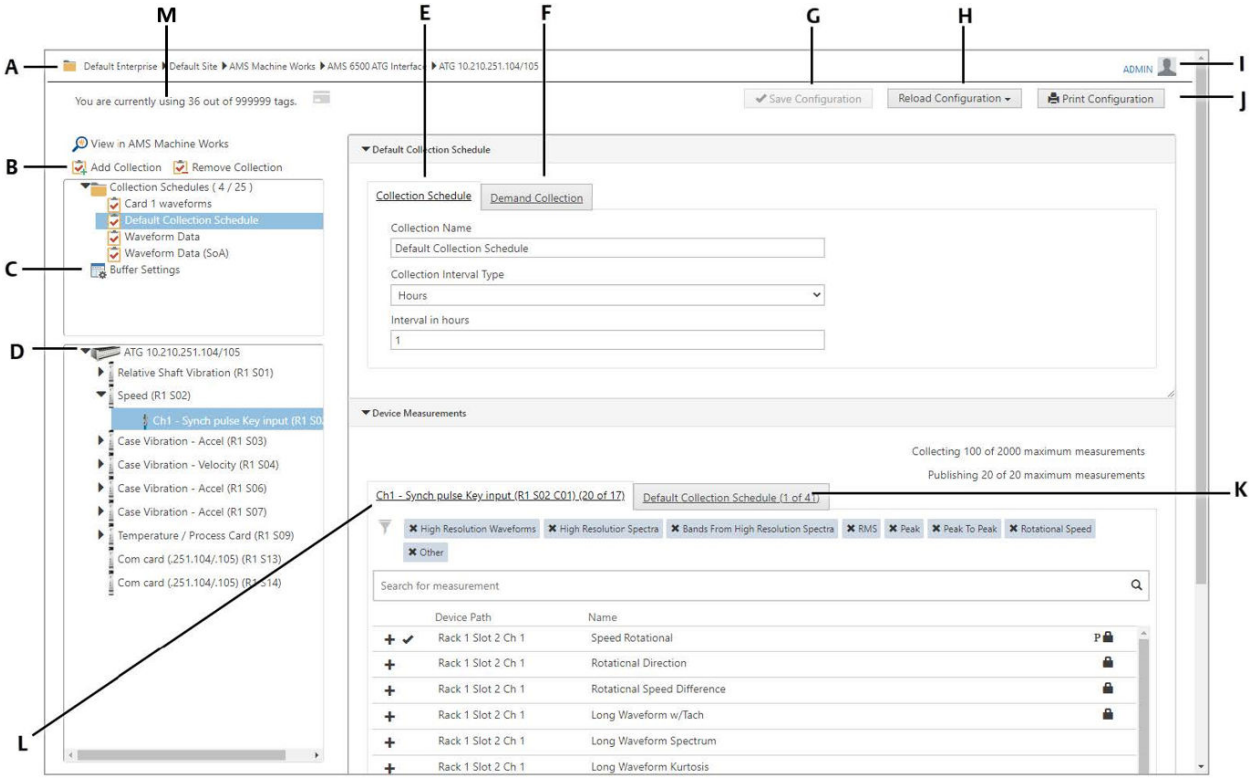
Device Configuration is launched from the Analysis Dashboard or the Asset Explorer utility.

You set up Collections in AMS Machine Works using Device Configuration to save the desired measurements for further analysis in the Analysis Dashboard and Vibration Analyzer.

3.1 Device Configuration User Interface

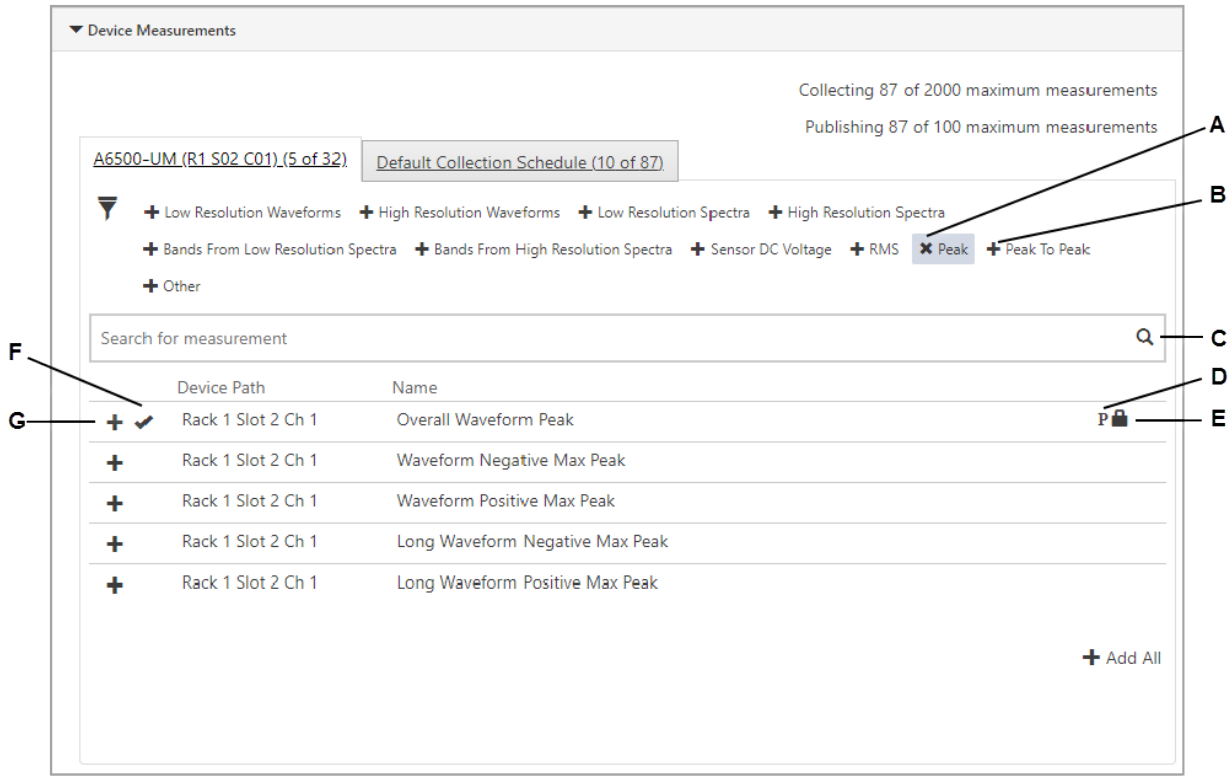
Device Configuration has a very similar interface for all of the device types supported by AMS Machine Works. However, there are a few differences based on the features and capabilities of each device type. As an example, the Device Configuration dialog of the AMS 6500 ATG is shown below, for the purpose of presentation of the general elements of the user interface.

Figure 3-1: Device Configuration: AMS 6500 ATG



A. ***Site navigation*** *— Contains the name and location of the device you are configuring.*
B. ***Collection Schedules*** *— View the current list of Collections defined for this device.*
C. ***Buffer Settings*** *— Define how often selected data will be updated in the AMS Machine Works Analysis Dashboard.*
D. ***Device*** *— Select a part of the device to display a list of available device measurements.*
E. ***Collection Schedule*** *— View or change the name and collection interval.*
F. ***Demand Collection*** *— Request that a Collection be processed immediately rather than waiting for the collection time defined schedule.*
G. ***Save Configuration*** *— Save the configuration.*
H. ***Reload Configuration*** *— Select to start over with the already saved configuration, or select* **Restore Default** *from the drop down menu to reload the configuration from the device.*
I. ***User*** *— Shows the user currently logged in.*
J. ***Print Configuration*** *— Display the configuration as a report in print preview mode.*
K. ***Collection tab*** *— View added measurements for the selected device, card, or channel.*
L. ***Available measurements tab*** *— View available measurements for the selected device, card, or channel.*
M. ***Tag Licensing*** *— Displays the total number of vibration tags currently in use by AMS Machine Works out of how many it is licensed for. Adding more devices will not be possible while the licensed amount is exceeded*

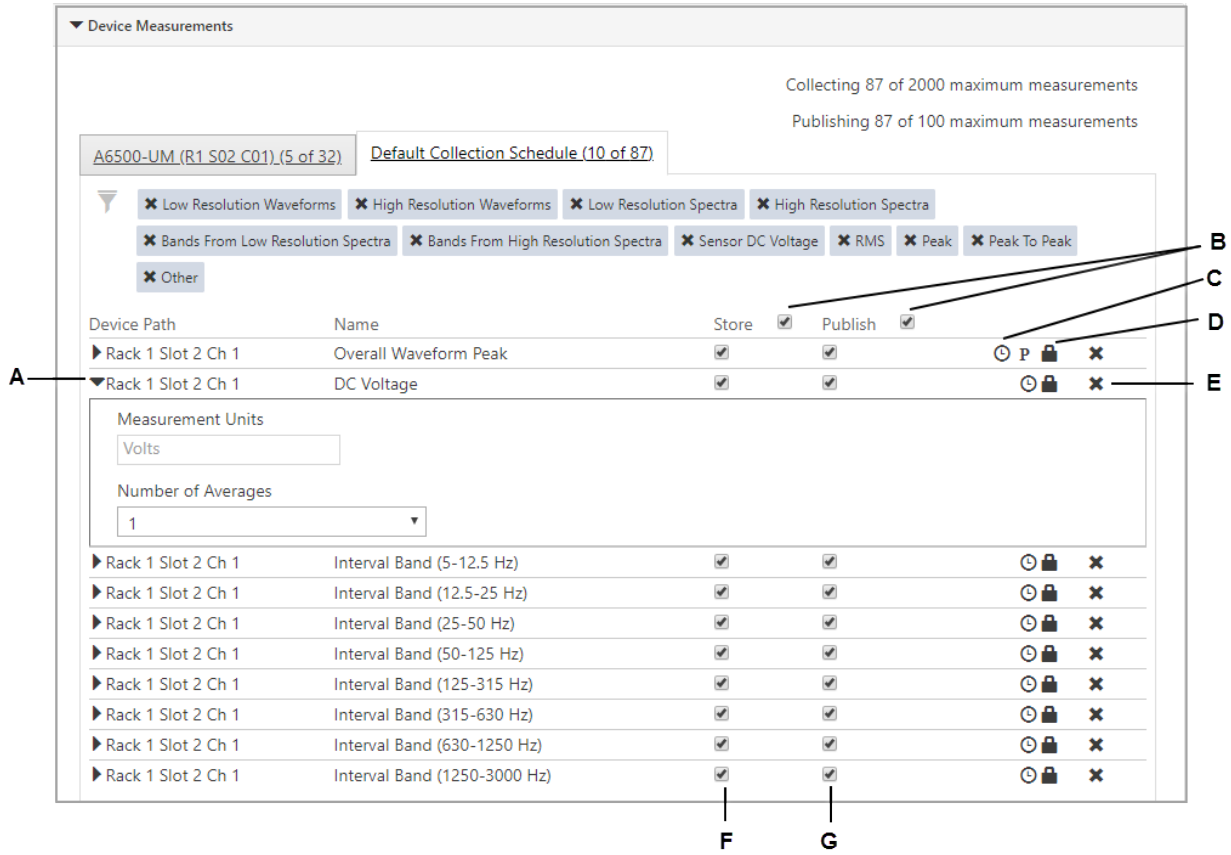
Figure 3-2: Device Configuration: Available measurements tab



A. ***Filter applied*** — *"Peak" filter applied causes a presentation of selected measurement types*
B. ***Filter not applied*** — *Peak To Peak filter icon shown*
C. ***Search*** — *Find desired measurements by typing the measurement name*
D. ***P icon*** — *Indicates a primary measurement*
E. ***Lock icon*** — *Indicates measurement type that is calculated in the device (Measurements with no lock icon indicates calculations that are performed on the data after it is loaded into AMS Machine Works.)*
F. ***Check mark icon*** — *Indicates that a measurement has been added to the collection*
G. ***Add icon*** — *Click to add a measurement to the collection*

Note
As a rule, measurements labeled with P are primary measurements collected at a fastest rate (1 sec) by the device when compared to other native measurements collected from the device.

Figure 3-3: Device Configuration: Collection tab



A. ***Show details*** — *View measurement details and make changes in enabled fields, if needed.*
B. ***Check boxes*** — *Place a check mark or remove a check mark in all of the displayed measurements.*
C. ***Clock icon*** — *Indicates a minimum time limit for time-based collections containing this measurement. Hover the mouse over the icon to see the estimated time for collection.*
D. ***Lock icon*** — *Indicates measurement type that is calculated in the device (Measurements with no lock icon indicate calculations that are performed on the data after it is loaded into AMS Machine Works.)*
E. ***Remove icon*** — *Click to remove the measurement from the collection.*
F. ***Store*** — *Place a check mark to store the data for use by AMS Machine Works, for future use in applications such as Vibration Analyzer. Clearing the* ***Store*** *check box will prevent the data from storing to Historian. However, that data can still be published to other systems via OPC UA.*
G. ***Publish*** — *Place a check mark to Publish data to latest values in Asset explorer and to other systems via OPC UA. OPC UA will have to be installed in the AMS Machine Works Server and OPC UA client will have to be configured.* ***Publish*** *is applicable only to scalar values. Waveforms and spectra are not available via OPC UA currently.*

3.2 Buffer Settings

Certain devices in our product portfolio are classified as online devices that can publish data at a much faster rate than other devices (such as AMS 6500 ATG and Ovation MHM). The **Buffer Settings** option defines how often the data from the device will be updated in

the AMS Machine Works Analysis Dashboard. This allows the Analysis Dashboard to be updated much faster than the allowable intervals chosen in Collection Schedule, which are sent to the AMS Machine Works Historian for long term storage and analysis in Vibration Analyzer. However, even if the Analysis Dashboard buffer controls are disabled, the Analysis Dashboard will still display any data collected using the Collection Schedules.

From the **Buffer Settings** menu, you can select the icons to enable the data to be updated on the Analysis Dashboard, and select the icons to edit the settings.

Note

Buffer settings are only applicable to AMS 6500 ATG and Ovation MHM devices. Buffer Settings are not applicable for AMS Asset Monitor and Wireless Devices.
Ovation MHM and AMS 6500 ATG devices are online devices and can publish data at a much faster rate. The Buffer settings in AMS Machine Works provides the mechanism to store them at a faster rate for the short term (to be visualized in Analysis Dashboard) while storing the data at a slower rate in the long-term database.

For AMS Asset Monitor, the rate at which the data is updated in the Analysis Dashboard is determined by the settings defined in the AMS Asset Monitor User Interface (under Data Collections Tab for Waveforms and Scalar update rate for Scalars)

For Wireless devices, the rate at which the data is updated in the Analysis Dashboard is the same as the update rate defined in the collections for long term storage and visualizing it in vibration analyzer

Figure 3-4: Device Configuration: Buffer General Settings

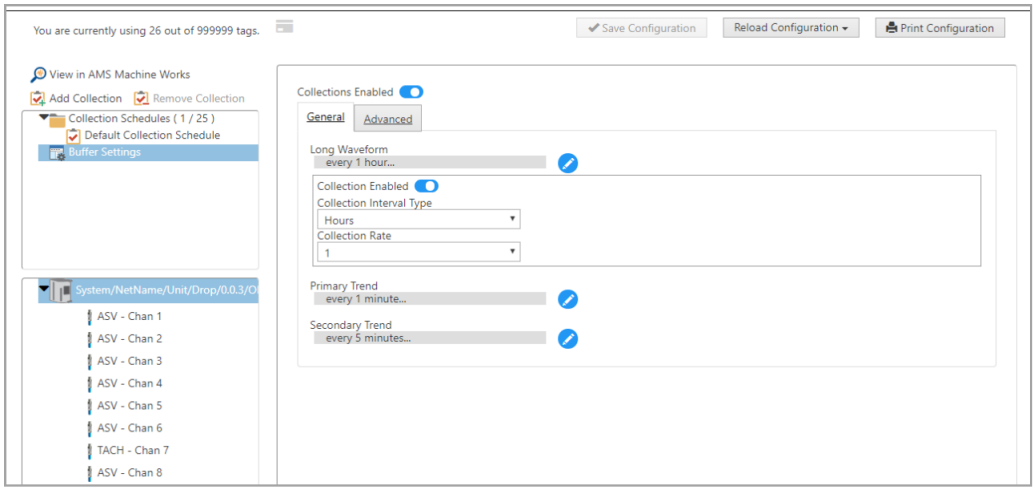
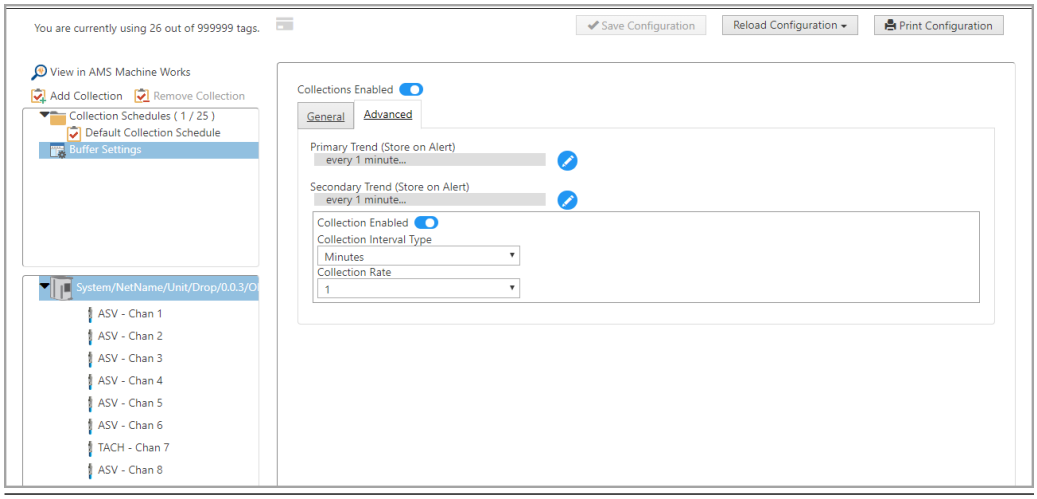


Figure 3-5: Device Configuration: Buffer Advanced settings



3.3 Device Configuration recommended practices

Add measurements to collections only as needed for analysis

Evaluate which measurements you need before adding them to a collection schedule. Only add a measurement to a collection schedule after carefully determining that it is necessary for analysis. Long waveforms, waveforms, and spectra are data-heavy measurements. While it is convenient to add all the measurements, collecting unnecessary data needlessly uses system resources which could impact performance.

Create collections in groups for analysis

The more measurements there are in the collection, the more time it takes to complete a Demand collection. When you have long waveforms in a collection, the demand acquisition can take several minutes to complete. Demand collection times can also vary depending on the type of the device. For wireless devices, usually hours for waveforms and spectra collection and several minutes for scalars. For AMS Asset Monitor, AMS 6500 ATG, and Ovation MHM devices, usually minutes for waveforms, spectra and scalar data collection.

3.4 Configure device collection schedules in bulk

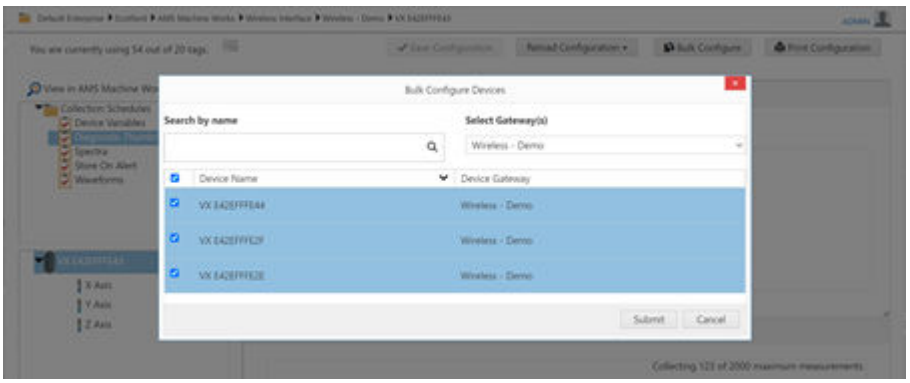
AMS Machine Works Device configuration application for wireless devices comes with the capability to bulk configure device collection schedules for several wireless devices at once using a single device as the master.

Note
This bulk configuration setting is not available for devices such as AMS Asset Monitor, AMS 6500 ATG, or Ovation Machinery Health Waveform Recorder. However, for those devices you can use copy and paste between cards or channels in order to configure Collections.

1. Open the Device Configuration application for a wireless device.

2. Complete the device configuration for all collection schedules by selecting the collection interval, selecting the required measurements, selecting store, and publish options.
3. Save the device. Now this device becomes the master for the bulk configuration.
4. Select Bulk configure option on the top right of the screen (It is recommended to bulk configure by selecting devices in a gateway. Don't bulk configure for the entire system at once).
5. Select a gateway.
6. Review the devices that should have the same device collection schedules and measurement selections as saved in the master device. Check the devices if you want the configuration to be configured in bulk.
7. Once selection is complete, click **Submit**.
8. This should configure the selected devices with the collection schedule and measurement selections as configured in the master device.
9. Repeat this, as needed, for devices in other gateways.

Figure 3-6: Bulk Configure Devices



Note

- Bulk configuration functionality is now improved and can complete the bulk configuration even if the devices have different F-MAX, LOR, or other measurement settings in the field.
- If the difference between the master device and the bulk configure device is very different, then those measurements that are different are not copied over; but every other measurement that is the same should be configured successfully. For Example: Interval bands are configured in different axis. i.e. Master device has IB1 to IB4 configured on Z-axis; bulk configure device has IB1 to IB4 configured on X-axis).

3.5 Combined Measurement Locations

Combined measurement locations appear at the bottom of each card in Device Configuration.

Combined measurements are applicable to AMS 6500 ATG and Ovation MHM devices only. The ATG channels can be configured in AMS Machine Studio as combined measurements to enable a CML pseudo channel which can be mapped to machine train measurement points and used for further analysis. Data from CML channels can be used for Orbit Analysis since the data from the X and Y channels are collected at the same time.

Figure 3-7: Combined Measurement Locations selected

3.6 Collection Schedules

Collection schedules are logical entities to group the types of data collected from a device. For AMS 6500 ATG and Ovation MHM, collection schedules are user defined and customizable. You can create up to 25 collection schedules per device. We recommend to limit to 3-4 per device. If you have the ATG assigned to more than one machine, it might be logical to create 3-4 collections by machine. Our recommendation is the following:

- Native scalar variables
- Native waveforms and spectrums along with non-Native scalar variables

However, for Wireless and Asset monitor devices, these logical entities are fixed[1].

By default, one collection task, a default collection schedule, is created when an AMS 6500 ATG device is added to AMS Machine Works. This collection task contains all the scalar parameters that are native to (that is, calculated by) the device itself. It does not contain any bulk data or parameters calculated by the interface that require bulk data to be read from the device.

3.7 Device configuration and store on alert

In order to configure store-on-alert, at least one collection task must exist for the device whose channel will be mapped to the measurement location on the machine where the alert will be created in Machine Configuration.

1 *Creating custom collection tasks does not apply to wireless devices. The system provides a set of predefined collection tasks. An important reason for this difference is to help the user manage battery life for wireless devices.*

Related information

Configure Store on Alert for AMS 6500 ATG
Configure Store on Alert for AMS Wireless Vibration Monitor
Configure Store on Alert for AMS 9420
Configure Store on Alert for Ovation Machinery Health Module
Configure Store on Alert for AMS Asset Monitor

4 Machine Configuration

You can set up monitored assets ("machines") and monitoring assets ("asset sources") in the system from Machine Configuration. This is launched from the Analysis Dashboard or the Asset Explorer utility.

Machine trains

When you create a machine, you are actually creating a machine train. Just like an individual machine, machine trains are created from templates. The following are some basic components of a machine train template:

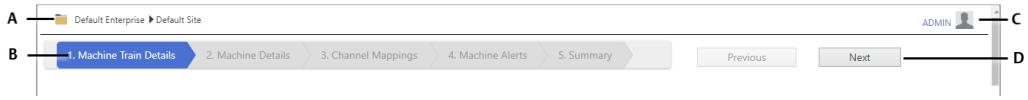
Driver	A machine that acts as the driving component in the train — For example, a motor.
Intermediate	An optional component, such as a gearbox, that connects the Driver and Driven.
Driven	The machine component that is being driven and is typically performing some process function, such as pumping.

You can only configure one machine train at a time, but you can use Bulk Edit to make copies of the machine train to populate your site with identical machine trains.

4.1 Machine Configuration User Interface

Machine Configuration guides you through creating the components of the machine train. You can configure up to three machine components per machine train. For example, configure a driver component such as a motor, an intermediate component such as a gearbox and a driven component such as a pump, fan, agitator, blower, or generator. You will need at least one machine component in your train to successfully create a machine in AMS Machine Works.

Figure 4-1: Machine Configuration navigation



A. Location where new machine train will be created
B. Wizard progress indicator and tab selector
C. Username of logged in user
D. Previous and Next navigate between steps

To navigate between steps, click **Previous** or **Next** or select any step in the Wizard progress indicator. You can only proceed to the next screen after completing all required information on the current screen. You can skip between any screens already completed. If you skip through the steps without configuring the details, the Machine Configuration application will supply default values.

Note
While Machine Configuration will allow you to accept default values for many fields, in order to perform thorough machine health analysis, Emerson recommends that you provide as complete and accurate information about your machines as possible.

4.2 Add a Machine Train

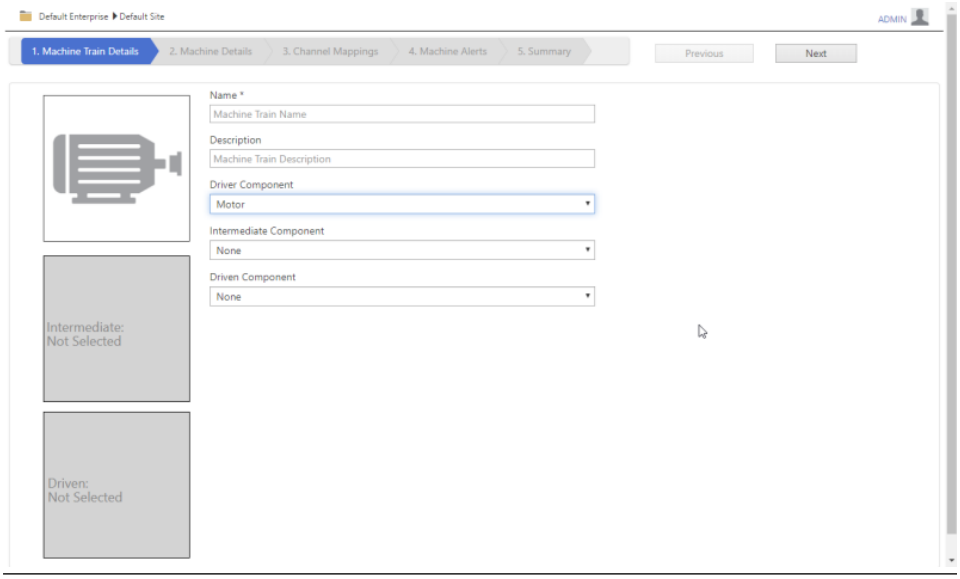
Procedure

1. In the Asset Explorer utility, select a location in the Location navigator.
2. From the **Home** ribbon menu, click **New Train**.
   The **Machine Configuration** user interface appears in a new browser window. The navigation wizard is at step **1. Machine Train Details**.
3. In the **Machine Train Information** section, enter a name and a description for the machine train.
4. Select one or more components.

   Note
   You can set up a single machine component in your machine train by selecting only one component. However, to add an entire machine train, select a driver component, an optional intermediate component, and a driven component.

   When you select a component, an image replaces the gray box.

   Figure 4-2: Machine Train Details with a motor added as the Driver Component



5. Click **Next**.
   The navigation wizard advances to **2. Machine Details** screen.
6. In **Machine Details**, enter a name and description for each machine component. Each component is shown on the left side of the screen. If you selected only one

component for this machine train, only one component icon is listed on the left. If you selected driver, intermediate, and driven components, each component has an icon displayed on the left.

7. Configure the details for each of the components manually or by using a pre-configured machine component.
8. Click **Search Library** to select from a library of pre-configured machine components.
9. An additional custom measurement location can be added by selecting **Add Custom Position** below the machine component icon, if needed.
10. Click **Add Bearing** and look up your bearing by manufacturer, model, or other identification.
11. When you locate the bearing, click the + icon in the Add column beside the bearing to add it to the machine

    You can create a custom bearing, if needed. Click **Create Custom Bearing** and add the information about your bearing. Supply the most accurate information possible. Otherwise, analysis features will be negatively impacted.
12. If you have other components like this, you can save this configuration to the library. Click **Save to Library**.
13. Click **Next**.
    The navigation wizard advances to **3. Channel Mappings**.
14. In the **Network Devices** list, select one or more monitoring devices. Then, drag and drop the sensors or channels onto the matching measurement locations on the machine.

    Click **Add Device** if your device is not listed. If your machine has more than one monitoring device, select all applicable monitoring devices.
15. Click **Add Measurement Location** to create a combined measurement location, if required.

    Note
    For a combined measurement location, you can change the orientation to Horizontal + Vertical. You can also drag and drop a combined measurement location in this custom measurement location.
16. Click **Next**.
    The navigation wizard advances to **4. Machine Alerts**.
17. In **Machine Alerts**, select **Add Alerts**.

    Click the type of alarm to filter the alarms displayed in the list of alarms. View the lists of alerts on the **All Alerts** tab.

    The **Add Alerts** window displays the alerts from the device. You can select from predefined alarms.

    If alerts are defined within the device itself, you may choose to reuse these alerts as the machine alerts. However, in many cases you may want to modify, disable or create entirely new alerts for machines.

Note
Any changes made to alerts for machines will not be downloaded to the devices monitoring the machines. Use the configuration applications provided with the devices to edit the configurations of the devices.

18. Place a check in the box beside one or more alerts and then click **Add**.
    The added alerts appear in the **Machine Alerts** list.
19. If the alert needs additional values, fill in any additional required alarm values. Click **x** to remove an alert from the list.

    Expand the alert to display configuration types and **Store on Alert**.
20. Click **Next**.
    The navigation wizard advances to **5. Summary**.
21. Review the configuration settings. The Machine Train will be saved automatically when the Summary page displays.
22. Click **Print** to save a PDF report of the configuration. Exit the print preview by printing the report or by clicking **Cancel**.
23. Click **Bulk Edit** if you want to make copies of this configuration.
24. To change any settings, use the wizard navigation to go to the step needed to make a change. If you make changes, save the configuration before closing **Machine Configuration**.
25. Close the **Machine Configuration** tab in the browser.

The new machine train appears in Asset Explorer.

Note
Another way to create a new Machine Train is to use the copy and paste functions in Asset Explorer for copying an entire Machine Train. However, Emerson recommends you do not use the cut, copy, paste, or delete functions on the individual components of the Machine Train.

4.3 View or print a summary of a machine train configuration

You can print a summary of the machine train configuration that you have already created.

Prerequisites

Install a PDF generator as a printer on the computer if you want to save the report as a PDF. Contact your IT department if you do not have a PDF option in your list of printers.

Procedure

1. In the Asset Explorer utility, select a machine train from the Location navigator.
2. From the **Home** ribbon, click **Edit** → **Edit Machine**.
   The **Machine Configuration** user interface appears in a new browser window.
3. In the wizard navigation, select **5. Summary**.
4. In **Machine Train Summary**, click **Print**.

A new window displays a print preview of the summary.

5. Click **Print** to print the summary or click **Cancel** to close print preview.

4.4 Copy Trains and Alerts to edit machines in bulk

The Copy Trains and Copy Alerts options are available in the Machine Configuration user interface. During machine configuration, these options appear at the summary step after you have configured your machine train. To make copies of a machine you have already created, in Asset Explorer select a component of the machine train and select **Edit** → **Edit Machine**, then click **5. Summary** in the Machine Configuration navigation menu.

When editing a machine train, you have the option to create a duplicate of the current machine train an arbitrary (n) number of times under a specified location in the hierarchy. This will copy machine details except for mappings of device channels to machine measurement locations. The prediction alert levels are copied. However, they will not be processed by the system until you map one or more device channels where those alerts can be evaluated at the device level. After you add a device to the machine, you can return to the Summary menu and apply the prediction alert levels to a specified set of machines. The **Copy Alerts** button is available to copy only the alerts.

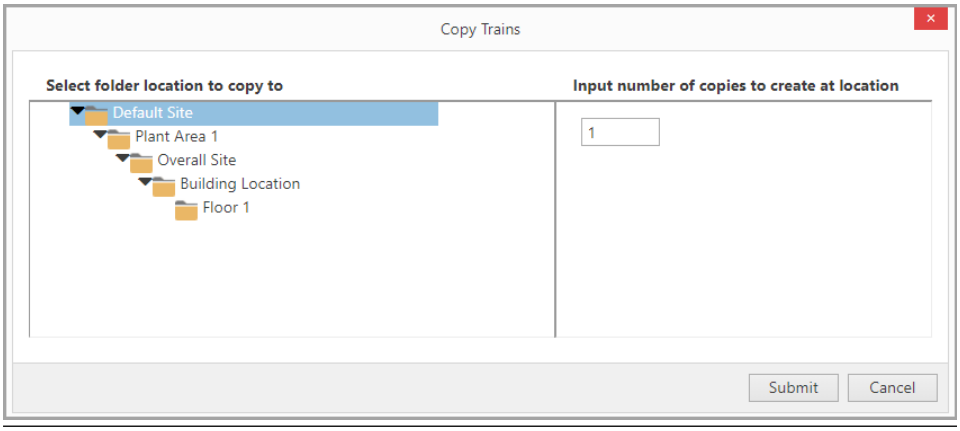
Procedure

1. From the **Summary** in Machine Configuration, click **Copy Train**.

   The Copy Train dialog appears.

2. In the **Copy Train** tab, select the location in the hierarchy where you want to copy the configuration.. Select the number of copies to create and click **Submit**.

Figure 4-3: Copy Train dialog



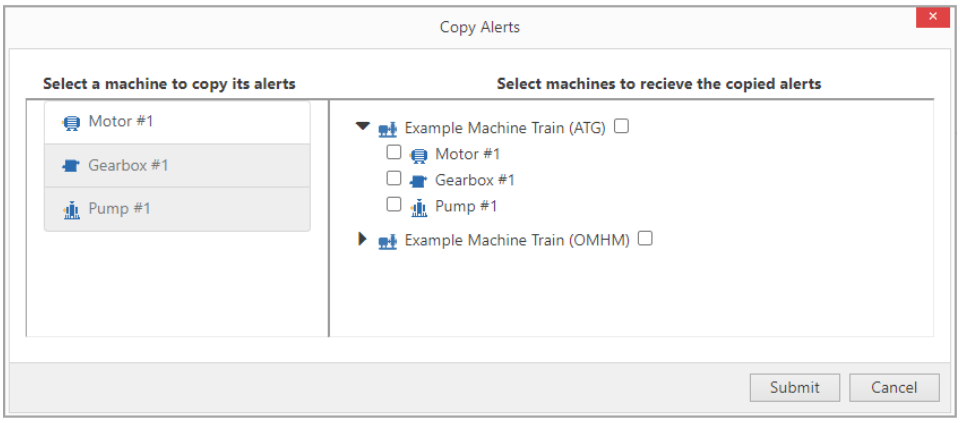
The dialog closes and returns to the Machine Configuration Summary page. The machines you created are now visible in the Locations tab of Asset Explorer and other applications that show the Locations hierarchy.

3. To copy the alerts, from the **Summary** in Machine Configuration, click **Copy Alerts**.

   The Copy Alerts dialog appears.

4. In the **Copy Alerts** dialog, select the machine component that you want to copy the alerts from. On the right side of the dialog, select the machine train or component you want to receive the copied alerts. Click **Submit**.

Figure 4-4: Copy Alerts dialog



The dialog closes and returns to the Machine Configuration Summary page. The alerts you copied are now applied to the machines you selected.

5 AMS Asset Monitor

5.1 Adding an AMS Asset Monitor as an Asset Source

You can add the AMS Asset Monitor as an asset in AMS Machine Works. When added, it appears as an asset source in the Asset Explorer Network hierarchy.

Prerequisites

Note
For more detailed information about the prerequisite steps to adding an AMS Asset Monitor to AMS Machine Works, see **AMS Asset Monitor Operating Manual Chapter 3.2 - External Interfaces (MHM-97924-PBF)**.

- Check the configuration in the AMS Asset Monitor web interface for the correct IP addresses to enter in AMS Machine Works.
- Enable the **AMS Machine Works Interface** in the **AMS Asset Monitor Web Interface**. This requires logging in as Administrator or Operator.
- An **AMS Machine Works User** must be created in the **AMS Asset Monitor Web Interface**: on the left-side navigation bar go to the **Users**tab > **New User** and in the **Roles** section choose **AMS Machine Works User**. The user credentials created in this step will be used for adding AMS Asset Monitor as an asset source in AMS Machine Works.
- A data collection has to be created in the **AMS Asset Monitor Web Interface** with at least one asset source added to ensure Waveform / Spectra are stored: on the left-side navigation bar go to the **Data collections** tab, under **Basic** tick **Enabled**, then under **Schedule & Predicate** set up a schedule that corresponds to your needs and setup. Click on **+ Add Source** to add at least one Waveform source before moving to the next step.

  Note
  The minimal interval for data storage is 1 hour for a single AMS Asset Monitor and the maximum recommended interval for data storage is 1 month. A standard recommended interval for data storage is 1 week. For recommended schedule settings see Table 5-1

- A **Scalar Values publish rate** must be configured in the **AMS Asset Monitor Web Interface**: on the left-side navigation bar go to the **System**tab > **Configure** > **AMS Machine Works interface** and set up a **Scalar values publish rate**.

  ⚠ CAUTION

  The publish rate for scalar values will impact the performance of AMS Machine Works. Please refer to the table below for the recommended configuration settings.

Table 5-1: AMS Asset Monitor data storage and publish rates

Data Type	Short Term Historian (configured in AMS Asset Monitor)			Long Term Historian (configured in AMS Machine Works)		
	Min[1]	Default	Max	Min	Default	Max
Scalars	60 sec	1800 sec	3600 sec	30 min	1 hour	24 hours
Waveform / Spectrum	1 hour	1 week	1 month	N/A	N/A	N/A

1 *Minimum rates are only recommended for a single AMS Asset Monitor at a time*

Note
Unlike other Emerson Devices compatible with AMS Machine Works, which can be tasked by AMS Machine Works to send over their data, AMS Asset Monitor sends its data to AMS Machine Works on the basis of scalar value publish rate settings and data collection settings only, independently of any configuration made in AMS Machine Works. Likewise, asset configuration in the AMS Asset Monitor Web Interface is done independently of asset configuration in AMS Machine Works and is utilized for data analysis in AMS Asset Monitor only. For more details on asset configuration and the AMS Asset Monitor Web Interface, please refer to the**AMS Asset Monitor Operating Manual Chapter 6.5 - Assets (MHM-97924-PBF)**.

Adding an AMS Asset Monitor as an Asset Source

Procedure

1. In the Asset Explorer utility, select the **Network** tab, expand **AMS Machine Works** and select **Asset Monitor Interface**.
2. From the Home ribbon menu, select **Add Asset Source**.

   Note
   The **Add Asset Source** button is only displayed if the user has MANAGEASSETSOURCE permission.

   The **Add AMS Asset Monitor** dialog appears.
3. In the dialog, enter the following:

Field	Description
Name	The name for the AMS Asset Monitor.
Primary IP Address	The **Primary IP Address** is required.
Username	The username for a user with the AMS Machine Works User role created in the AMS Asset Monitor web interface.
Password	The password for a user with the AMS Machine Works User role created in the AMS Asset Monitor web interface.

4. Click **Add Device**.

A new node with the name provided appears below **AMS Asset Monitor Interface** in the Network navigator.

Postrequisites

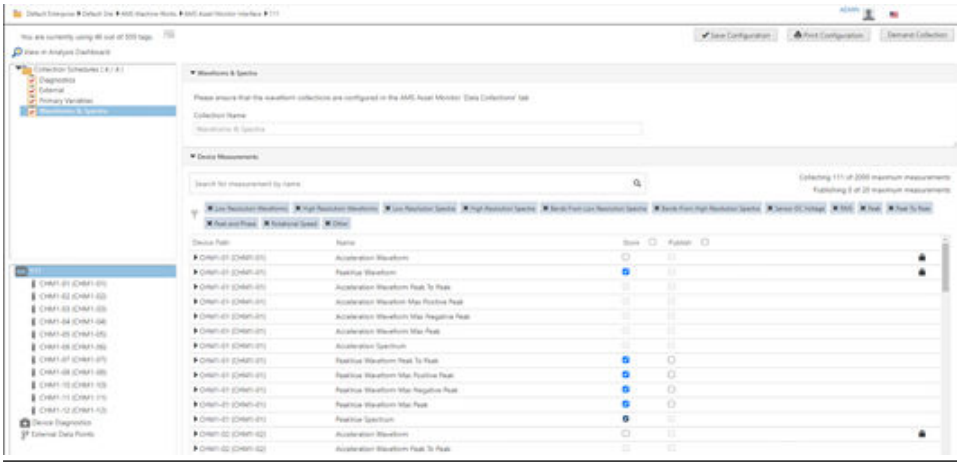
Select the new node and click **Configure Asset Monitor** from the Home ribbon menu to configure collection schedules and measurement parameters to add to AMS Machine Works.

5.2 Configure AMS Asset Monitor data collection for analysis

Procedure

1. From Asset Explorer, select the **NETWORK** tab.
2. Expand **AMS Machine Works → AMS Asset Monitor Interface** and and select a device from the list of devices.
3. Click **Configure Asset Monitor** in the ribbon menu.
   The Device Configuration application opens in a new browser window.

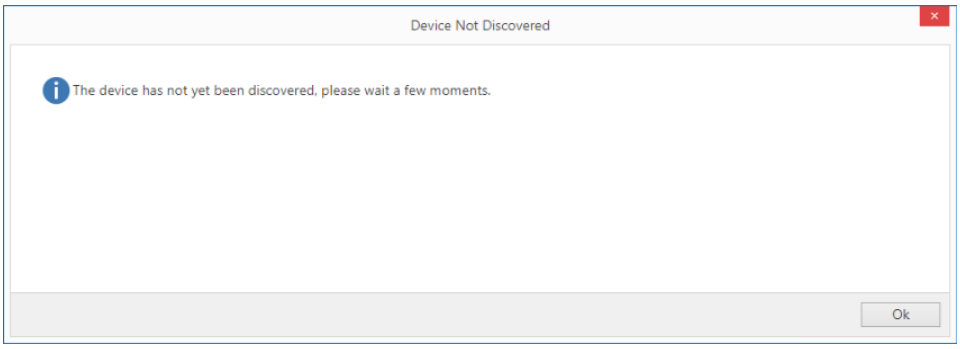
Figure 5-4: Device Configuration: AMS Asset Monitor



Note

The configuration should be available immediately. If the AMS Machine Works User credentials where input incorrectly, an AMS Asset Monitor is still added to AMS Machine Works but it will not deliver any data and the confgiration will not be available, displaying instead the following pop-up. In this case, remove the AMS Asset Monitor as an asset source and re-add it, ensuring the AMS Machine Works User credentials are input correctly.

Figure 5-5: Device not discovered error pop-up



The default Collections are displayed in the list of collections. These are grouped by the types of data available to collect:

- Device Diagnostics
- External Data Points
- Primary Variables
- Waveforms & Spectra

4. Select a collection in the list to view or change an existing collection.

   A limited number of collections can be created. The number of available collections displays in the Collections list.

5. In the **Collection Schedule** tab, for each **Collection Name** you can change the **Collection Interval Type**, and **Duration** (except for Waveforms & Spectra, which must be changed in the Asset Monitor Web Interface).
6. In the **Device Measurements** section, click the arrow beside one or more measurements to view the details of the added measurement.
7. 7. For each measurement, choose an option to **Store** and **Publish** the measurements.
   - Place a check mark in the Store column to store the measurement for later analysis.
   - Place a check mark in the Publish column to make the data available to Plantweb™ Optics or other applications via OPC UA.
8. Click **Save Configuration**.

After you save a collection, data will be collected according to schedule. You can also perform a demand collection to trigger the data collection immediately.

5.3 Perform a Demand Collection from an AMS Asset Monitor

You can perform a Demand Collection on all collections. This lets you start a data collection immediately instead of waiting until the next scheduled collection interval.

Prerequisites

Configure a collection task for the AMS Asset Monitor in AMS Machine Works. The collection must be saved first.

Procedure

1. From Asset Explorer, select the **NETWORK** tab.
2. Expand **AMS Machine Works** → **AMS Asset Monitor Interface** and click the name of the AMS Asset Monitor to select it.
3. Click **Configure AMS Asset Monitor**.
   The Device Configuration screen opens in a new browser window.
4. Click **Demand Collection**. This will affect all collections.
5. Close the configuration.

The data obtained by this collection is available to view in AMS Machine Works Vibration Analyzer.

Note
The more measurements there are in the collection, the more time it takes to complete a demand collection. When you have long waveforms in your collection, it may take several minutes to complete.

5.4 Tips for adding AMS Asset Monitor in AMS Machine Works

After adding an AMS Asset Monitor to AMS Machine Works, allow AMS Machine Works to completely discover the device, including CHARMs, channels, and configuration before further configuration in AMS Machine Works. This usually takes 5 to 15 minutes. AMS Machine Works may let you configure the AMS Asset Monitor using Device Configuration. However, the long waveform parameters may not have been fully discovered. Emerson recommends waiting at least 15 minutes before configuring the AMS Asset Monitor in AMS Machine Works Device Configuration.

Wait until the AMS Asset Monitor is completely discovered before configuring a machine train and mapping AMS Asset Monitor channels to the machine train's measurement locations. If you need to configure the machine train, in the Machine Configuration steps, skip the channel mappings and alert configuration until the AMS Asset Monitor is fully discovered.

While adding an AMS Asset Monitor to AMS Machine Works, if any of the connection information does not match the device, such as an incorrect IP address, username, or password, delete the AMS Asset Monitor from Asset Explorer and add the device again. The connection parameters cannot be edited after they are added. However, the

description of the device in the Properties tab in Asset Explorer can be edited after the AMS Asset Monitor is added.

5.5 Configure Store on Alert for AMS Asset Monitor

Unlike for other devices, configuring Store on Alert for AMS Asset Monitor is a single-step process done by configuring alert settings in Machine Configuration.

Prerequisites

This procedure assumes the device's other collections are configured and the machine train is already configured.

Procedure

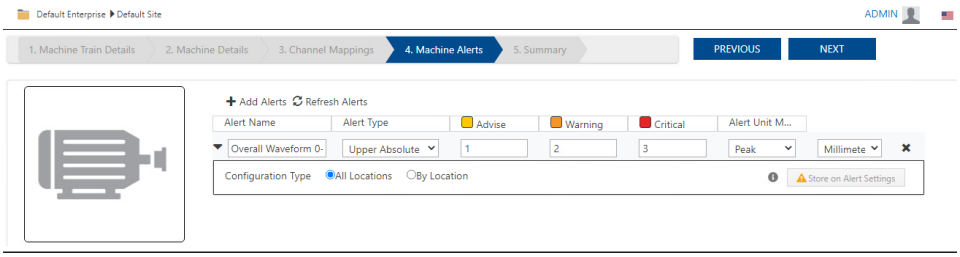
Configure the alert settings.

a) In the Asset Explorer utility, select a machine train in the Location navigator.

b) From the **Home** ribbon menu, click **Edit** → **Alarm Edit**.
The **Machine Configuration** user interface appears in a new browser window.

c) Click **Add Alerts**.

Figure 5-6: Machine Configuration

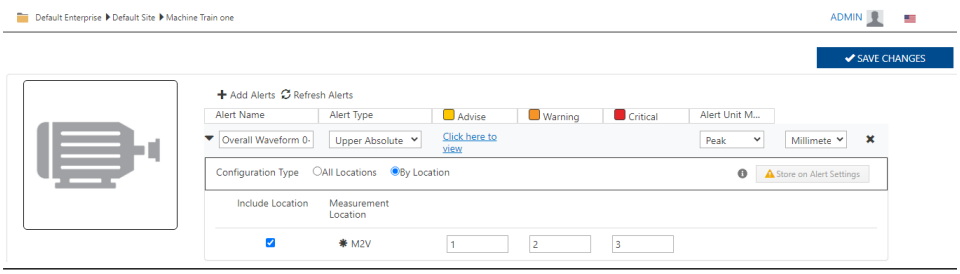


d) In the **Add Alerts** dialog, place a checkmark beside the measurement and adjust the settings for each alert level, if needed. Click **Add**.

e) For AMS Asset Monitor, Store on Alert settings are enabled by default for all alert levels. All the measurements selected in the device configuration are stored for any alert trigger.

f) Expand the measurement, select **All Locations** or **By Location**

Figure 5-7: Alerts



g) Click **Save Changes**.

h) Wait for the Machine Train saved successfully message, then click **OK** and close the Machine Configuration dialog.

View the measurements in the Dashboard by navigating to the Machine Details and viewing the available measurements and by viewing the collections in Vibration Analyzer.

6 AMS 6500 ATG

6.1 Add an AMS 6500 ATG as an Asset Source

You can add the AMS 6500 ATG as an asset in AMS Machine Works. When added, it appears as an asset source in the Asset Explorer Network hierarchy.

Prerequisites

- Check the configuration in AMS Machine Studio for the correct IP addresses and port number to enter in AMS Machine Works.
- Ensure the device already has collection tasks, collection triggers, and whitelists include the IP address of the server on which AMS Machine Works' AMS 6500 ATG Interface is installed.
- If the AMS 6500 ATG is connected to AMS Machinery Manager, it must be disconnected from AMS Machinery Manager before you connect it to AMS Machine Works. The device cannot be connected to both systems.

Procedure

1. In the Asset Explorer utility, select the **Network** tab, expand **AMS Machine Works** and select **AMS 6500 ATG Interface**.
2. From the Home ribbon menu, select **Add Asset Source**.

   Note
   The **Add Asset Source** button is only displayed if the user has MANAGEASSETSOURCE permission.

   The **Add AMS 6500 ATG** dialog appears.
3. In the dialog, enter the following:

Field	Description
Name	The name for the AMS 6500 ATG.
Primary IP Address	The **Primary IP Address** is required.
Secondary IP Address	The **Secondary IP Address** is required only if redundant communication is already configured for the device. Otherwise, leave the default setting of `0.0.0.0`.
Modbus Port Number	The port to receive MODBUS data from the device. Use `502` for the default port.
Configuration Port Number	The port for receiving configuration information from the device. Use `4841` for the default port.

4. Click **Add Device**.

A new node with the name provided appears below **AMS 6500 ATG Interface** in the Network navigator.

Note
Please wait for 10 to 15 minutes before proceeding to **Configure ATG** in order to allow it to discover all capabilities. Configuring the ATG to quickly could lead to configuration issues.

Postrequisites

Select the new node and click **Configure ATG** from the Home ribbon menu to configure collection schedules and measurement parameters to add to AMS Machine Works.

6.2 Configure AMS 6500 ATG data collection for analysis

The AMS 6500 ATG is configured in the AMS Machine Studio program. The configuration done by AMS Machine Works defines the information requested from the AMS 6500 ATG. The software does not attempt to write configuration data to the AMS 6500 ATG.

You must set up data collection in AMS Machine Works using Device Configuration to save the desired measurements for further analysis in Vibration Analyzer.

Prerequisites

The AMS 6500 ATG must already have a collection task defined in AMS Machine Studio.

Procedure

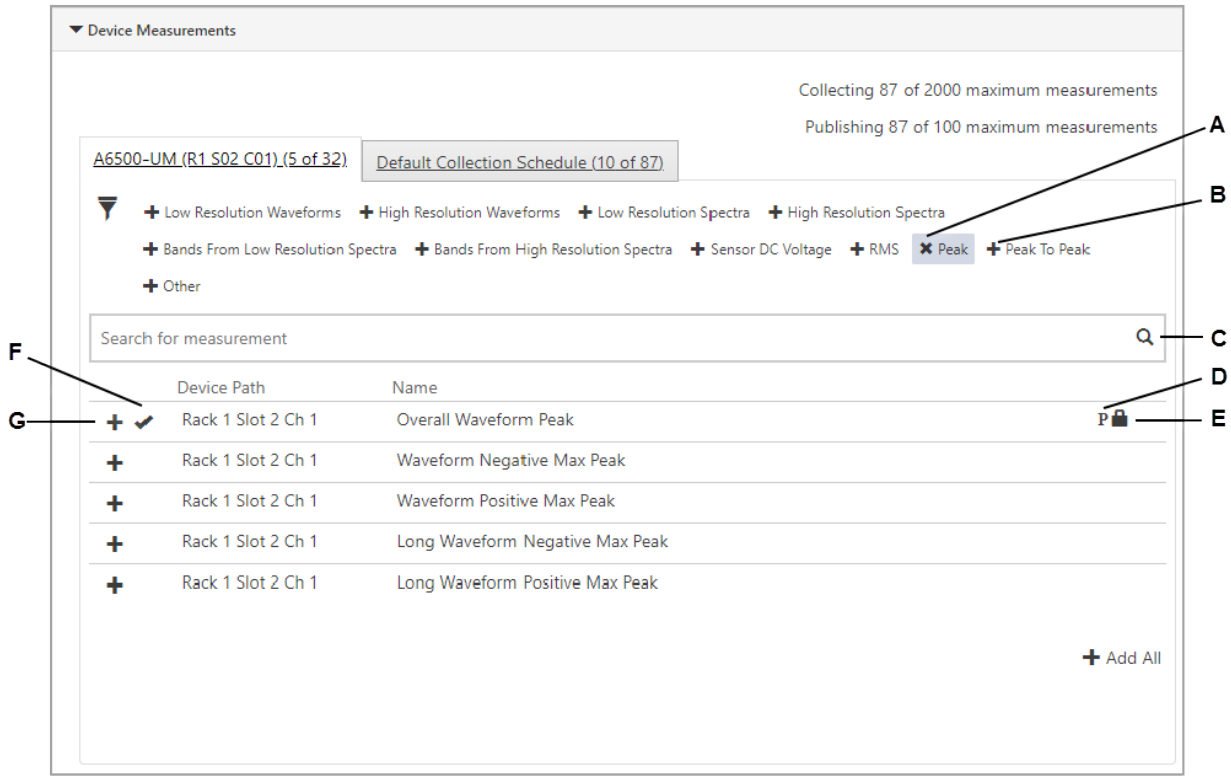
1. From Asset Explorer, select the **NETWORK** tab.
2. Expand **AMS Machine Works** → **AMS 6500 ATG Interface** and click the name of the AMS 6500 ATG to select it.
3. Click **Configure ATG** in the ribbon menu.
   The Device Configuration application opens in a new browser tab.
4. In the **Collection** list, click **Add Collection**.

   A limited number of collections can be created. The number of available collections displays in the Collections list.
5. In the **Collection Schedule** tab, enter a **Collection Name**, **Collection Interval Type**, and **Duration**.
6. In the left tab of **Device Measurements**, choose available measurements by using navigation in the device list and applying filters in the measurements list.

   The list displays measurements depending on the selection on the device list on the left side of the screen. Select the system rack level (top) to display measurements in the system. To display only the measurements per card, select the card.

   Use the filter toolbar to narrow your selection with filter buttons. Also, you can type a custom search filter and click 🔍 to show matching measurements. Click ➕ to add the filter or click the **X** to remove the filter.

Figure 6-1: Device Configuration: Available measurements tab



A. ***Filter not applied***—*Peak filter icon shown*
B. ***Filter applied***—*Peak to Peak filter icon shown*
C. ***Search***—*Find desired measurements by typing the measurement name*
D. ***P icon***—*Indicates a primary measurement*
E. ***Lock icon***—*Indicates measurement type that is calculated in the device (Measurements with no lock icon indicate calculations that are performed on the data after it is loaded into AMS Machine Works.)*
F. ***Check mark icon***—*Indicates that a measurement has been added to the collection*
G. ***Add icon***—*Click to add a measurement to the collection*

7. In the left tab in **Device Measurements**, click ✚ beside one or more measurements to add to the collection.

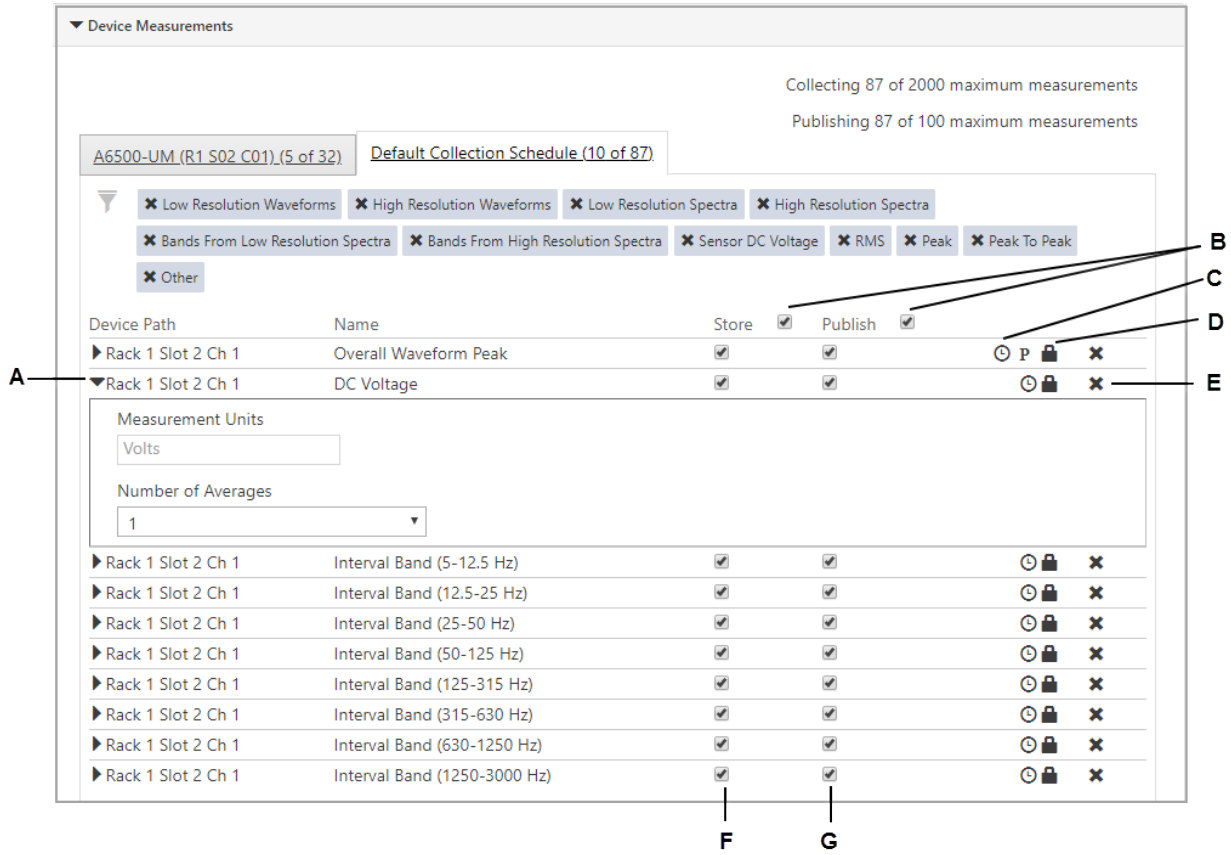
   Note
   After filtering the measurements, if you need to add all of the measurements shown, select **Add all** at the bottom right corner.

   The number of items in the **Collection Schedule** tab increments by the number of items added from the left tab.

8. Select the **Default Collection Schedule** tab to display the measurements added in the collection by using navigation in the device list and applying filters in the measurements list.

The list displays measurements depending on the selection on the device list on the left side of the screen. Select the system rack level (top) to display measurements in the system. To display only the measurements per card, select the card.

Figure 6-2: Device Configuration: Collection Schedule tab



A. ***Show details***—*View measurement details and make changes in enabled fields, if needed.*
B. ***Check boxes***—*Place a check mark or remove a check mark in all of the displayed rows.*
C. ***Clock icon***—*Indicates an amount of time required to collect the measurement. Hover the mouse over the icon to see the estimated time for collection.*
D. ***Lock icon***—*Indicates measurement type that is calculated in the device (Measurements with no lock icon indicate calculations that are performed on the data after it is loaded into AMS Machine Works.)*
E. ***Remove icon***—*Click to remove the measurement from the collection.*
F. ***Store***—*Place a check mark to store the data for use by Machine Works, for future use in applications such as Vibration Analyzer. Clearing the* ***Store*** *check box will prevent the data from storing to Historian. However, that data can still be published to other systems via OPC UA.*
G. ***Publish***—*Place a check mark to publish data to other systems via OPC UA.*

9. In the **Collection Schedule** tab, click the arrow beside one or more measurements to view the details of the added measurement.
10. Click **X** beside a measurement to remove it from the collection, if needed.

The number of items in the **Collection Schedule** tab decreases by the number of items removed from the right tab.

11. For each measurement, choose an option to **Store** and **Publish** the measurements.
    - Place a check mark in the **Store** column to store the measurement for trending over time such as in Vibration Analysis.
    - Place a check mark in the **Publish** column to publish data to Latest Values tab.
12. Click **Save Configuration**.

    If you make changes you do not want to save, click **Reload Configuration** to start over with the already saved configuration. The **Restore Default** option is also available which resets the configuration to the default from the device before being added to AMS Machine Works.

After you save a collection, data begins to collect on schedule. You can also perform a demand collection on the selected collection to trigger the data collection immediately.

6.3 Perform a Demand Collection from an AMS 6500 ATG

You can perform a Demand Collection on selected collections. This lets you start a data collection immediately instead of waiting until the next scheduled collection interval.

Prerequisites

Configure a collection task for the AMS 6500 ATG in AMS Machine Works. The collection must be saved first.

Procedure

1. From Asset Explorer, select the **NETWORK** tab.
2. Expand **AMS Machine Works** → **AMS 6500 ATG Interface** and click the name of the AMS 6500 ATG to select it.
3. Click **Configure ATG**.
   The Device Configuration screen opens in a new browser tab.
4. Select the collection task you want to collect now.
5. Select the **Demand Collection** tab.

   The Demand Collection tab shows the status as a line with checkpoints of the data collection process.
6. Click **Demand Collection**.

   Tip
   If the **Demand Collection** is inactive, try saving the collection first.
7. Close the configuration.

The data obtained by this collection is available to view in AMS Machine Works Vibration Analyzer.

Note
The more measurements there are in the collection, the more time it takes to complete a demand collection. When you have long waveforms in your collection, it may take several minutes to complete.

6.4 Tips for adding AMS 6500 ATG in AMS Machine Works

After adding an AMS 6500 ATG to AMS Machine Works, allow AMS Machine Works to completely discover the device, including cards, channels, and configuration before further configuration in AMS Machine Works. This usually takes 5 to 15 minutes. AMS Machine Works may let you configure the AMS 6500 ATG using Device Configuration. However, the long waveform parameters may not have been fully discovered. Emerson recommends waiting at least 15 minutes before configuring the AMS 6500 ATG in AMS Machine Works Device Configuration.

Wait until the AMS 6500 ATG is completely discovered before configuring a machine train and mapping AMS 6500 ATG channels to the machine train's measurement locations. If you need to configure the machine train, in the Device Configuration steps, skip the channel mappings and alert configuration until the AMS 6500 ATG is fully discovered

Ensure the AMS 6500 ATG firmware is updated before adding the device to AMS Machine Works. If the AMS 6500 ATG health displays as zero, and data does not appear in AMS Machine Works, review the steps for preparing the AMS 6500 ATG for AMS Machine Works to see if any configuration settings do not match. Also, in AMS Machine Works review error messages in the Event Viewer logs.

While adding an AMS 6500 ATG, if any of the connection information does not match the device, such as an incorrect IP address, Modbus TCP port number, or ATG service port number, delete the AMS 6500 ATG from Asset Explorer and add the device again. The connection parameters cannot be edited after they are added. However, the description of the device in the Properties tab in Asset Explorer can be edited after the AMS 6500 ATG is added.

6.5 Configure Store on Alert for AMS 6500 ATG

Configuring Store on Alert is a two-step process. First, in Device Configuration, create a collection with an interval type of Store on Alert. Second, configure the alert settings in Machine Configuration.

Prerequisites

This procedure assumes the device's other collections are configured and the machine train is already configured.

Procedure

1. Create the Store on Alert collection in Machine Configuration.
    a) From Asset Explorer, in the **NETWORK** tab, expand **AMS Machine Works** → **AMS 6500 ATG Interface** and click the name of the AMS 6500 ATG to select it.

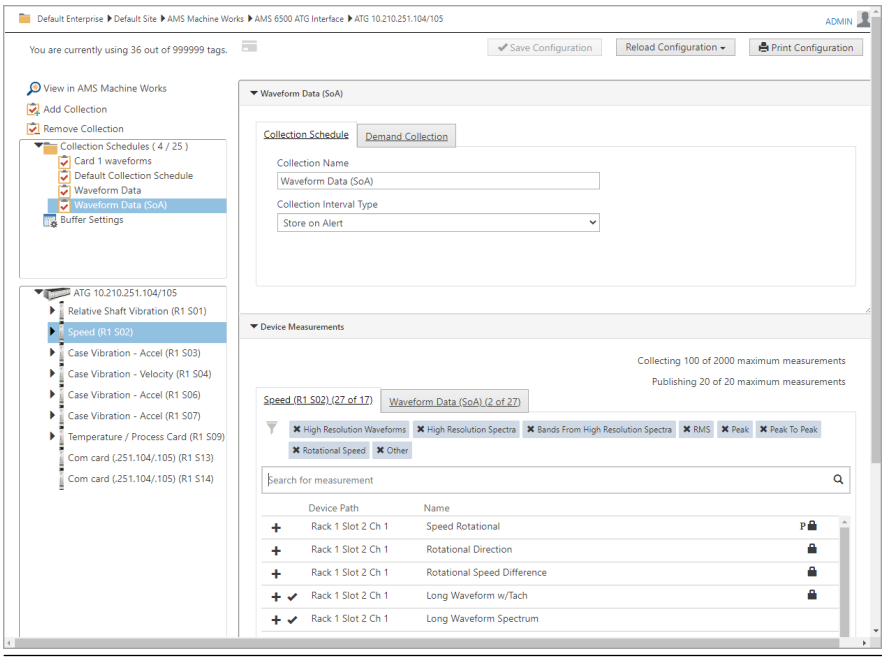
b) Click **Configure ATG** in the ribbon menu.
The Device Configuration application opens in a new browser tab.

c) In the **Collection** list, click **Add Collection**.

d) In the **Collection Schedule** tab, enter a **Collection Name** and for **Collection Interval Type**, select **Store On Alert**.

Note
Emerson recommends adding "Store on Alert" or "(SoA)" to the name of the collection to help you identify the collection later when configuring the alert settings.

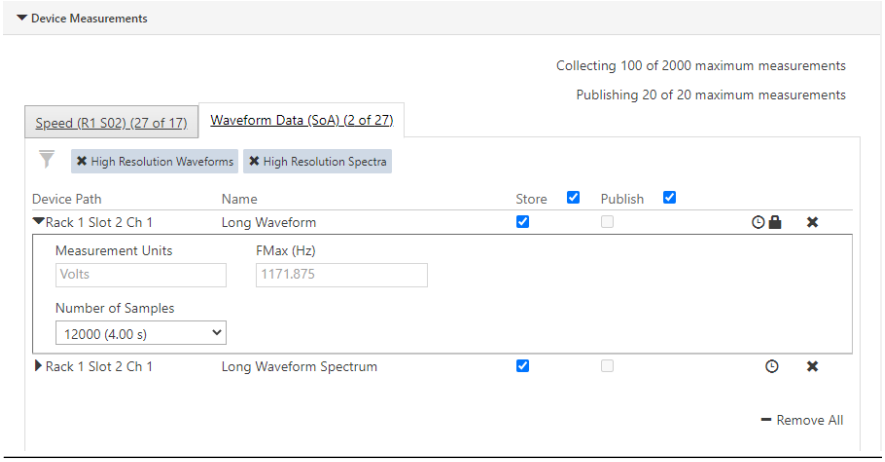
Figure 6-3: Configure Store on Alert for AMS 6500 ATG



e) In **Device Measurements**, in the left tab, click ➕ beside one or more measurements to add to the collection.

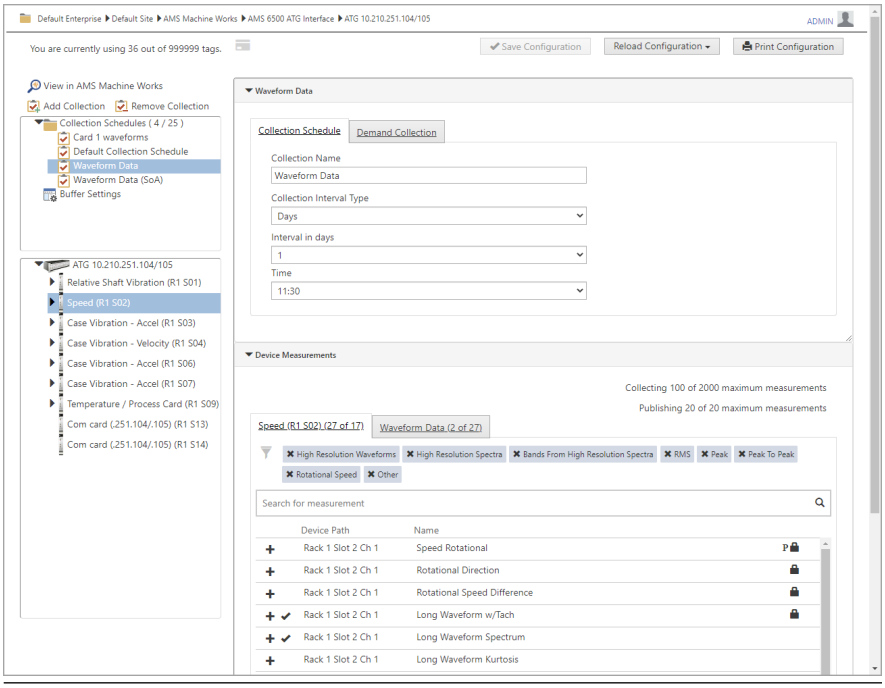
f) In the right tab, place a check mark in the **Store** column for each measurement in the Store on Alert collection.

Figure 6-4: Configure Store on Alert for AMS 6500 ATG



g) If you want to collect this measurement normally, and not only when in alert, be sure the measurements are also in a separate collection schedule with **Collection Interval Type** set to a time.

Figure 6-5: Configure Store on Alert for AMS 6500 ATG



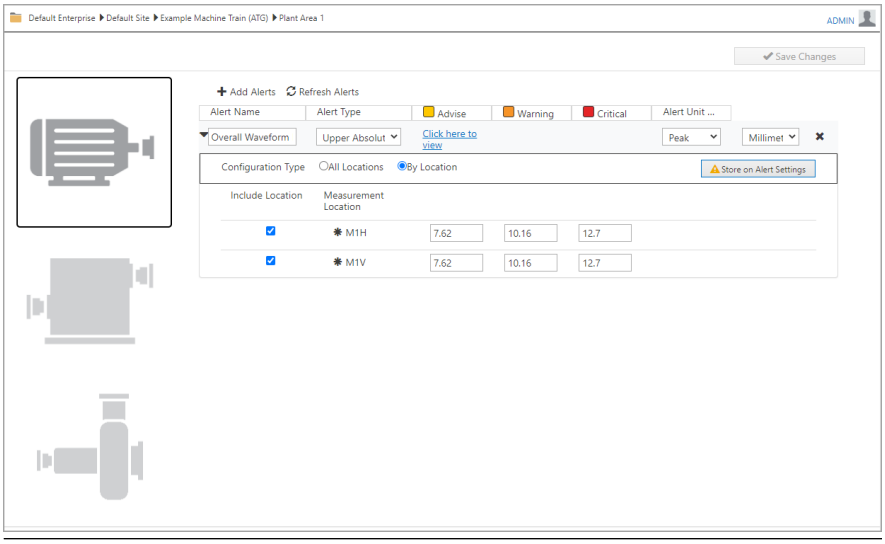
h) Click **Save Configuration**.

2. Configure the alert settings.
   a) In the Asset Explorer utility, select a machine train in the Location navigator.
   b) From the **Home** ribbon menu, click **Edit** → **Alarm Edit**.

The **Machine Configuration** user interface appears in a new browser window.

c) Click **Add Alerts**.

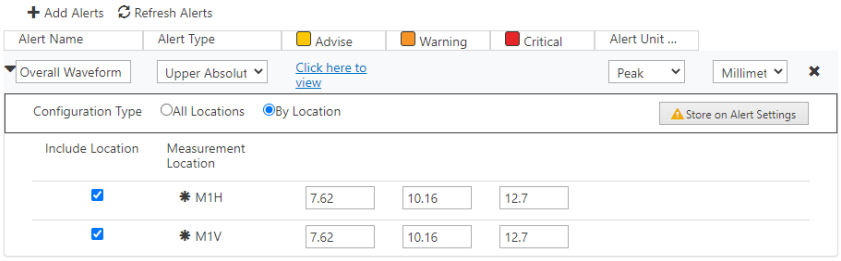
Figure 6-6: Machine Configuration



d) In the **Add Alerts** dialog, place a checkmark beside the measurement and adjust the settings for each alert level, if needed. Click **Add**.

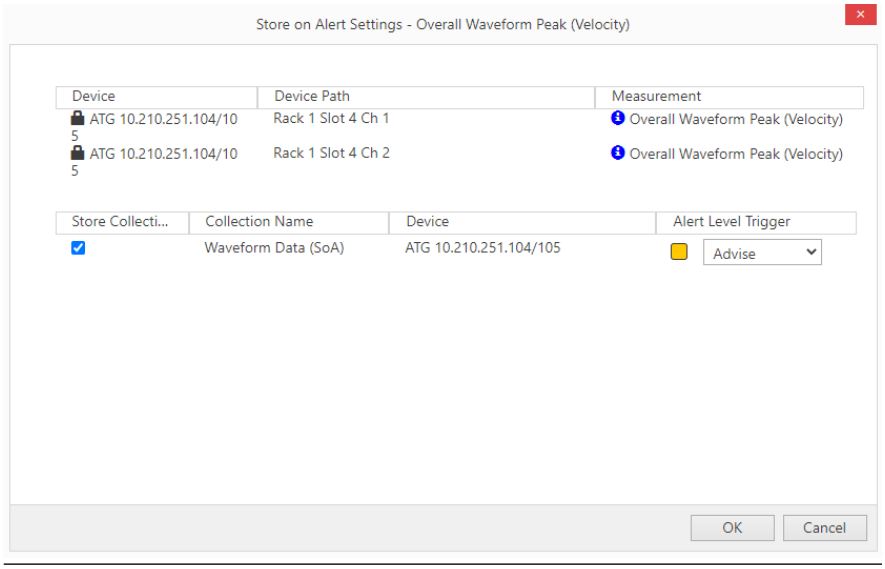
e) Expand the measurement, select **All Locations** or **By Location** and select **Store on Alert Settings**.

Figure 6-7: Alerts



f) In the **Store on Alert** dialog, place a checkmark in the box beside the measurement and select the alert level from the menu. Click **OK**.

Figure 6-8: Store on Alert Settings



g) Click **Save Changes**.

h) Wait for the Machine Train saved successfully message, then click **OK** and close the Machine Configuration dialog.

View the measurements in the Dashboard by navigating to the Machine Details and viewing the available measurements and by viewing the collections in Vibration Analyzer.

Related information

Device configuration and store on alert

7 Emerson Wireless Gateway

The AMS Machine Works Wireless Interface allows you to bring data from an Emerson Wireless Gateway and connected devices into AMS Machine Works. Once installed, you can do the following from AMS Machine Works:

- Add an Emerson Wireless Gateway
- Remove the Emerson Wireless Gateway
- Configure AMS 9420 data collection and storage
- Map AMS 9420 sensor channels to machine measurement points
- Configure AMS Wireless Vibration Monitor devices.
- Map AMS Wireless Vibration Monitor sensor channels to machine measurement points

Note
In Asset Explorer, the Latest Values tab does not populate any values for the Gateway. Click on the devices under the Gateway to show data in the Latest Values tab.

7.1 Add an Emerson Wireless Gateway to AMS Machine Works

When you connect an Emerson Wireless Gateway to AMS Machine Works you can set up your system quickly by mapping the devices in your site. If you do not have a gateway connected, you can set up your site with locations, assets, and machines and add devices later.

Prerequisites

- The Emerson Smart Wireless Gateway is already configured with the devices you intend to join in AMS Machine Works.
- Port 5094 is open on the network and enabled in the Emerson Smart Wireless Gateway.

Procedure

1. In the Asset Explorer utility, select the **Network** tab, expand **AMS Machine Works → Wireless Interface**.
2. From the Home ribbon, select **Add Asset Source**. The **Add Asset Source** button is only displayed if the user has MANAGEASSETSOURCE permission.
3. In the dialog, enter the following:

Table 7-1: Device Configuration: Add Emerson Wireless Gateway

Field	Description
Name	The name for the Gateway. This is a name you supply. It does not have to match a setting on the gateway.
IP Address	The Gateway IP address.

Table 7-1: Device Configuration: Add Emerson Wireless Gateway *(continued)*

Field	Description
Port Number	Use 5094 for an unsecured HART connection. **Note** The above values are default port numbers. Check the Gateway web interface to ensure you enter the correct port number.
Enable Secure Protocol	Confirm the IP address is entered, and then check the box to enable the use of security protocols. If after checking the box the IP dissapears, uncheck the box, enter your IP adress and then check the box again. **Note** Before connecting with this option, you must first perform the following steps: • Install the Emerson Wireless Gateway 1420 Security Setup Utility. • Enable secure communication for the Gateway. **⚠ CAUTION** Enabling secure protocol is not recommended as this can lead to potential connection issues.

⚠ CAUTION

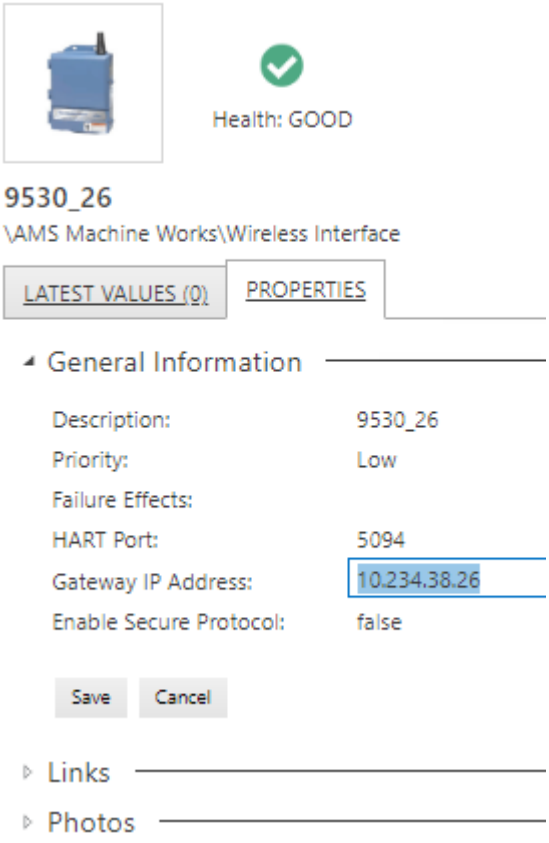
Ensure that all entered information (Name, IP address, port number) is correct. Inputting any of these incorrectly may lead the EWGService.exe process to cause performance issues. If this happens, remove the device from Machine Works completely.

4. Click **Add Wireless Gateway**.

The Emerson Wireless Gateway appears in the Network navigator. You can now configure data collection from each device and map channels from the devices to measurement locations on machines.

Note
You can easily connect to a different Emerson Wireless Gateway by opening the **Properties** tab of the selected Emerson Wireless Gateway in the Asset Explorer and editing the **Gateway IP Address** parameter under **General Information**. Inputting the IP address of a different Emerson Wireless Gateway will result in that Gateway replacing the old one.

Figure 7-1: Changing the Gateway IP Address of an Emerson Wireless Gateway within Asset Explorer



Related information

Enable secure communication with an Emerson Wireless Gateway

7.2 Enable secure communication with an Emerson Wireless Gateway

If the gateway is configured to use secure communication, follow this procedure to enable connections to the gateway.

Perform these steps on the server hosting the Wireless Interface only after installing and setting up the proxy using the Emerson Wireless Gateway's Security Setup Utility.

Prerequisites

Install the latest version of Security Setup Utility (v1.5.7 or later) for the Emerson Wireless 1420 Gateway on the server where the Wireless Interface is installed.

Use the Security Setup Utility to set up the proxy and exchange the security certificate with the gateway, following setup instructions provided in the Emerson Wireless Gateway Reference Manual. After this configuration is complete, you need to know the Local Port

number to use for the connection in AMS Machine Works. Please refer to KBA NK-2000-0761 for more details on setting up a secure HART-IP proxy.

Procedure

1. Launch the **Rosemount Security Setup** application.
2. Select **Add HART-IP Proxy** from the drop-down menu.
3. Right-click on the icon that appears and select **Properties**.
4. Fill out the **Edit Properties** dialog that appears and click **OK**:
   - **Hostname:** Can be anything
   - **Address:** IP address of the 1420 Gateway
   - **Server Port:** 5095 for the Secure HART-IP port on the gateway
   - **Local Port:** PC port to be used with proxy. This will be entered into **AMS Machine Works Add Asset** dialogue in **Device Config**
5. Click **File** and select **Save**.
6. Fill out the **Certificate Information** dialogue that appears. This information will appear in the 1420 Gateway web interface once the certificate is exchanged.
7. Fill out the **Authenticate** dialogue that appears. **User** and **Password** are the ones used to sign in on the **1420 Gateway's web interface**

Once the certificate is exchanged with your 1420 Gateway, the **Status** property under **File>Properties** will change to **Good**. It is also possible to ensure that the certificate was exchanged properly within the 1420 Gateway web interface.

7.3 Troubleshooting - Emerson Wireless Gateway

Emerson Wireless Gateway process is using 100% of CPU.

Device does not exist

The wireless gateway does not exist, or you may have entered incorrect information.

- Ensure that all entered information of the gateway (Name, IP Address, port number) is correct. Inputting any of these incorrectly may cause the EWGService.exe process to cause performance issues.
- Restart the service, and then delete the gateway that has incorrect information.

8 AMS Wireless Vibration Monitor

8.1 Configure AMS Wireless Vibration Monitor data collection for analysis

The AMS Wireless Vibration Monitor is configured in the AMS Device Manager or Field Communicator such as AMS TREX. The configuration accomplished by AMS Machine Works defines the information requested from the device. The software does not attempt to write configuration data to the device.

You must set up data collection in AMS Machine Works using Device Configuration to save the required measurements for further analysis in Vibration Analyzer.

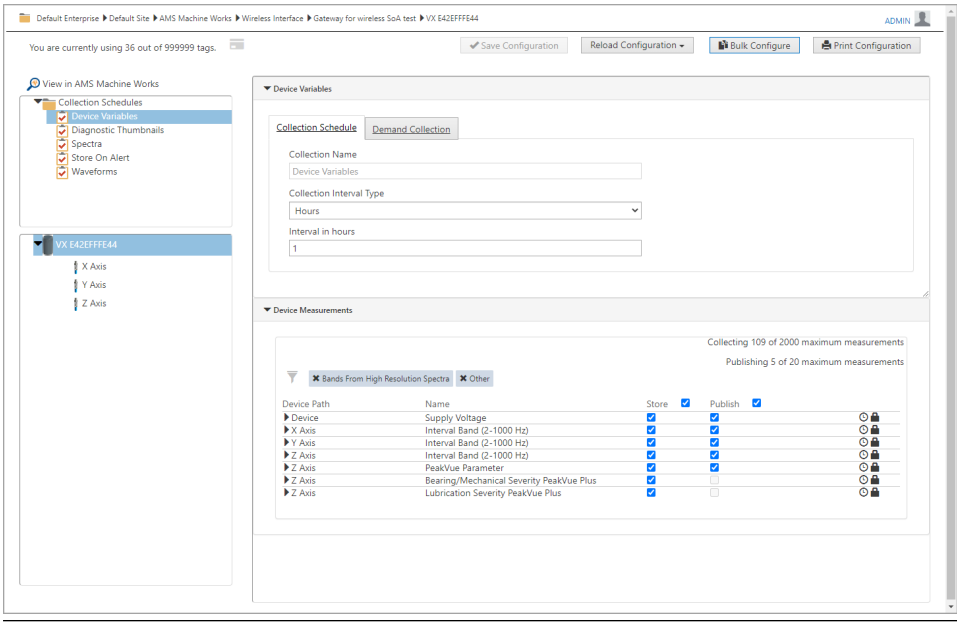
Prerequisites

- The device must already be configured and joined to an Emerson Wireless Gateway.
- Add the Emerson Wireless Gateway to AMS Machine Works.

Procedure

1. From Asset Explorer, select the **NETWORK** tab.
2. Expand **AMS Machine Works** → **Wireless Interface**, select the Emerson Wireless Gateway, and select the device from the list of devices.
3. Click **Configure Device** in the ribbon menu.
   The Device Configuration application opens in a new browser tab.

Figure 8-1: Device Configuration: AMS Wireless Vibration Monitor



The default Collections are displayed in the list of collections. These are grouped by the types of data available to collect:

- Device Variables
- Diagnostic Thumbnails
- Spectra
- Store On Alert
- Waveforms

4. Select a collection in the list to view or change an existing collection.
5. In the **Collection Schedule** tab, for each **Collection Name**, you can change the **Collection Interval Type** and **Duration**.
6. In the **Device Measurements** section, click the arrow beside one or more measurements to view the details of the added measurement.
7. For each measurement, choose an option to **Store** and **Publish** the measurements.
   - Place a check mark in the **Store** column to store the measurement for later analysis.
   - Place a check mark in the **Publish** column to make the data available to Plantweb™ Optics or other applications via OPC UA.
8. Click **Save Configuration**.

   If you make changes you do not want to save, click **Reload Configuration** to start over with the already saved configuration. The **Restore Default** option is also available which resets the configuration to the default from the device before being added to AMS Machine Works.

After you save a collection, data begins to collect on schedule. You can also perform a demand collection to trigger the data collection immediately.

8.2 Configure Store on Alert for AMS Wireless Vibration Monitor

Configuring Store on Alert is a two-step process. First, in Device Configuration, add measurements to the collection named Store on Alert. Second, configure the alert settings in Machine Configuration.

Prerequisites

This procedure assumes the device's other collections are configured and the machine train is already configured.

Procedure

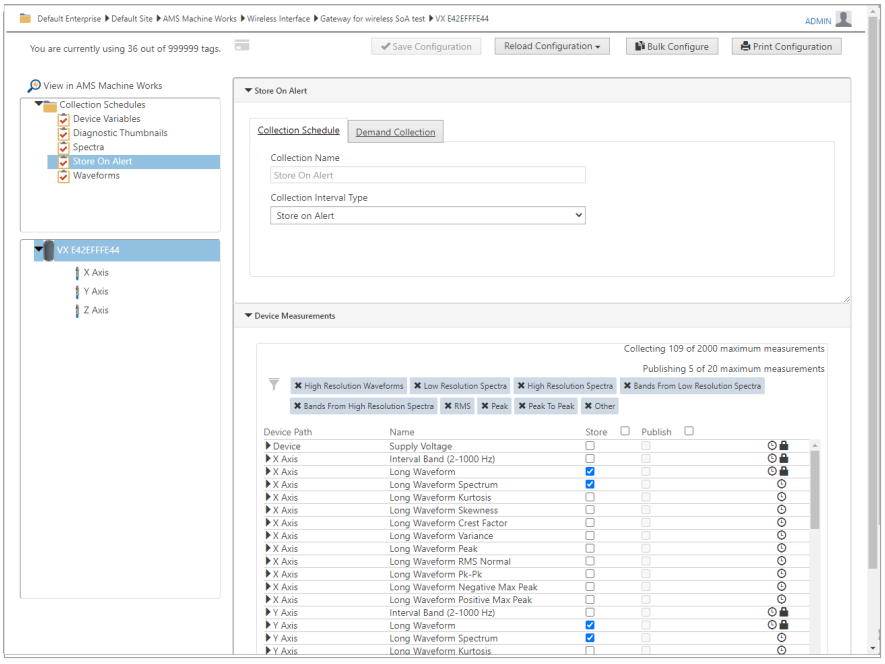
1. Add measurements to the Store on Alert collection in Machine Configuration.
   a) From Asset Explorer, in the **NETWORK** tab, expand **AMS Machine Works** → **Wireless Interface**, expand a gateway, and click an AMS Wireless Vibration Monitor to select it.

b) Click **Configure Device** in the ribbon menu.
The Device Configuration application opens in a new browser window.

c) In the **Collection** list, click **Store on Alert**.

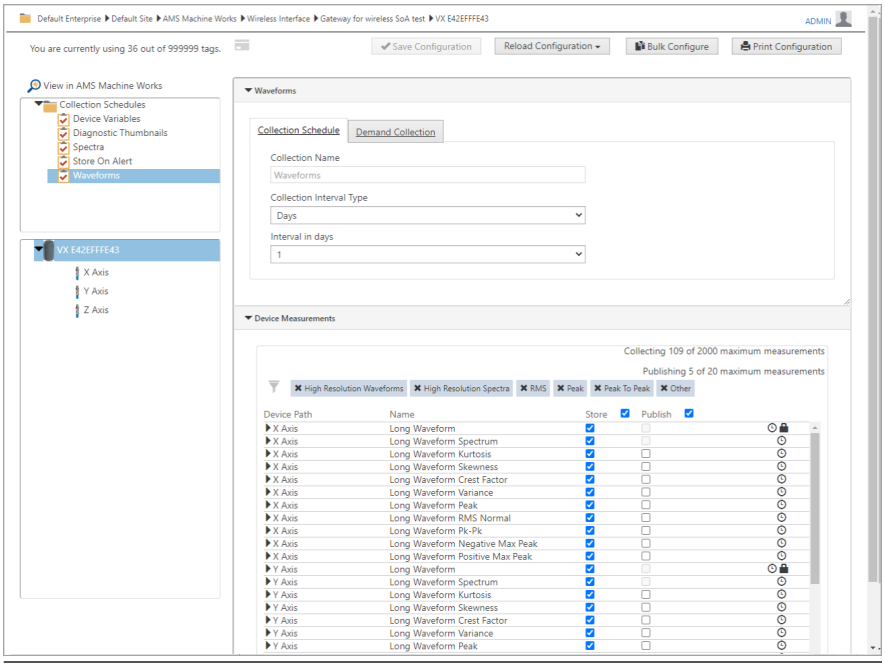
d) In **Device Measurements**, place a check mark in the **Store** column for each measurement to add in the Store on Alert collection.

Figure 8-2: Configure Store on Alert for AMS Wireless Vibration Monitor



e) If you want to collect this measurement normally, and not only when in alert, be sure the measurements are also in one of the other default collection schedules.

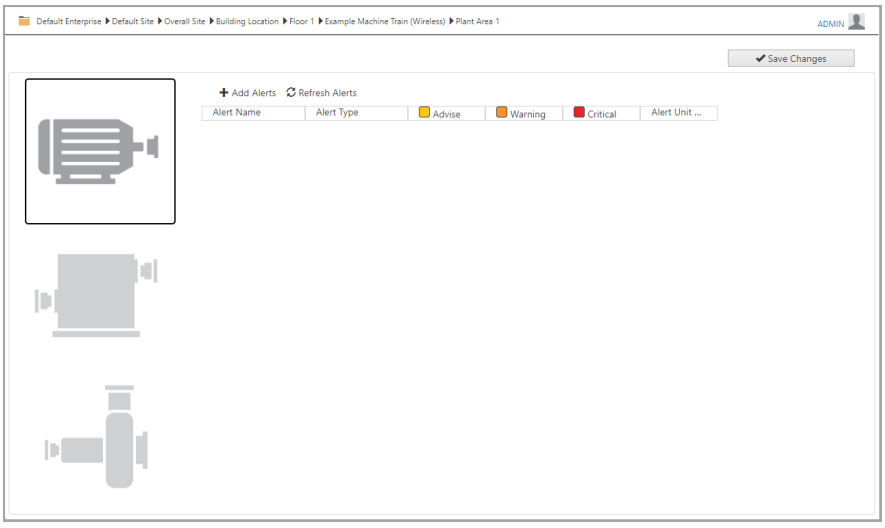
Figure 8-3: Configure Store on Alert for AMS Wireless Vibration Monitor



f) Click **Save Configuration**.

2. Configure the alert settings.
   a) In the Asset Explorer utility, select a machine train in the Location navigator.
   b) From the **Home** ribbon menu, click **Edit** → **Alarm Edit**.
   The **Machine Configuration** user interface appears in a new browser window.
   c) Click **Add Alerts**.

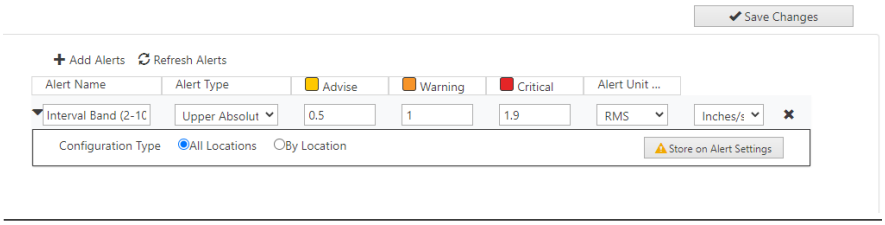
Figure 8-4: Machine Configuration



d) In the **Add Alerts** dialog, place a checkmark beside the measurement and adjust the settings for each alert level, if needed. Click **Add**.

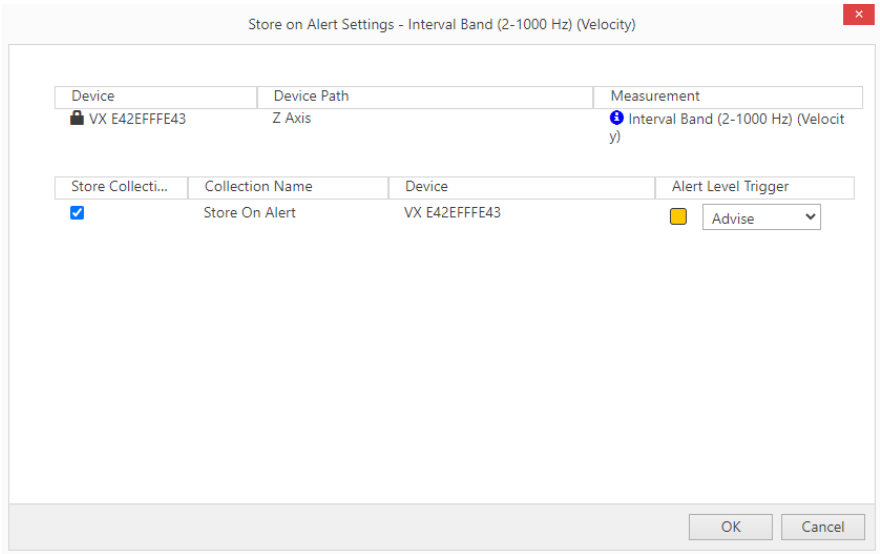
e) Expand the measurement, select **All Locations** or **By Location** and select **Store on Alert Settings**.

Figure 8-5: Alerts



f) In the **Store on Alert** dialog, place a checkmark in the box beside the measurement and select the alert level from the menu. Click **OK**.

Figure 8-6: Store on Alert Settings



g) Click **Save Changes**.

h) Wait for the Machine Train saved successfully message, then click **OK** and close the Machine Configuration dialog.

View the measurements in the Dashboard by navigating to the Machine Details and viewing the available measurements and by viewing the collections in Vibration Analyzer.

Related information

Device configuration and store on alert

9 AMS 9420

9.1 Configure AMS 9420 data collection for analysis

The AMS 9420 Wireless Vibration Transmitter is configured in the AMS Device Manager or Field Communicator such as AMS TREX. The configuration done by AMS Machine Works defines the information requested from the AMS 9420. The software does not attempt to write configuration data to the AMS 9420.

You must set up data collection in AMS Machine Works using Device Configuration to save the required measurements for later analysis in Vibration Analyzer.

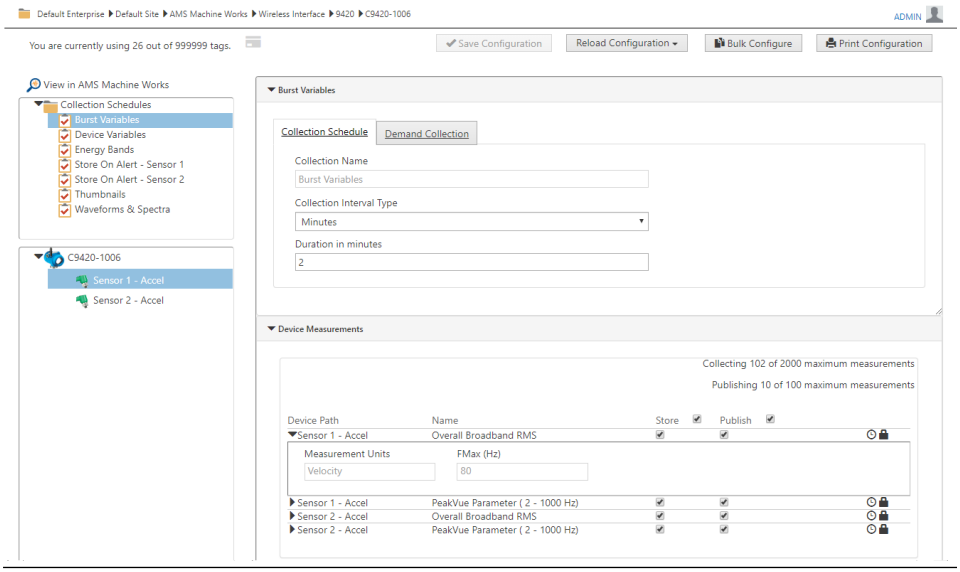
Prerequisites

- The AMS 9420 must already be configured and joined to an Emerson Wireless Gateway.
- Add the Emerson Wireless Gateway to AMS Machine Works.

Procedure

1. From Asset Explorer, select the **NETWORK** tab.
2. Expand **AMS Machine Works** → **Wireless Interface**, select the Emerson Wireless Gateway, and select the AMS 9420 from the list of devices.
3. Click **Configure Device** in the ribbon menu.
   The Device Configuration application opens in a new browser window.

Figure 9-1: Device Configuration: AMS 9420



The default collection types are displayed in the list of collections. These are arranged by groups of variables to be collected by type:

- Burst Variables
- Device Variables
- Energy Bands
- Store On Alert
- Thumbnails
- Waveforms & Spectra

4. Select a collection in the list to view or change an existing collection.
5. In the **Collection Schedule** tab, for each **Collection Name** you can set the **Collection Interval Type** and **Duration**.
6. In the **Device Measurements** section, display the measurements in the collection by using navigation in the device list.

   The list displays measurements depending on the selection on the device list on the left side of the screen. Select the device level (top) to display measurements in the device. To display only the measurements per sensor, select the sensor.
7. In the **Device Measurements** tab, click the arrow beside one or more measurements to view the details of the added measurement.
8. For each measurement, choose an option to **Store** and **Publish** the measurements.
   - Place a check mark in the **Store** column to store the measurement for later analysis.
   - Place a check mark in the **Publish** column to make the data available to Plantweb™ Optics or other applications via OPC UA.
9. Click **Save Configuration**.

   If you make changes you do not want to save, click **Reload Configuration** to start over with the already saved configuration. The **Restore Default** option is also available which resets the configuration to the default from the device before being added to AMS Machine Works.

After you save a collection, data begins to collect on schedule. You can also perform a demand collection to trigger the data collection immediately.

9.2 Configure Store on Alert for AMS 9420

Configuring Store on Alert is a two-step process. First, in Device Configuration, add measurements to the collection named Store on Alert. Second, configure the alert settings in Machine Configuration.

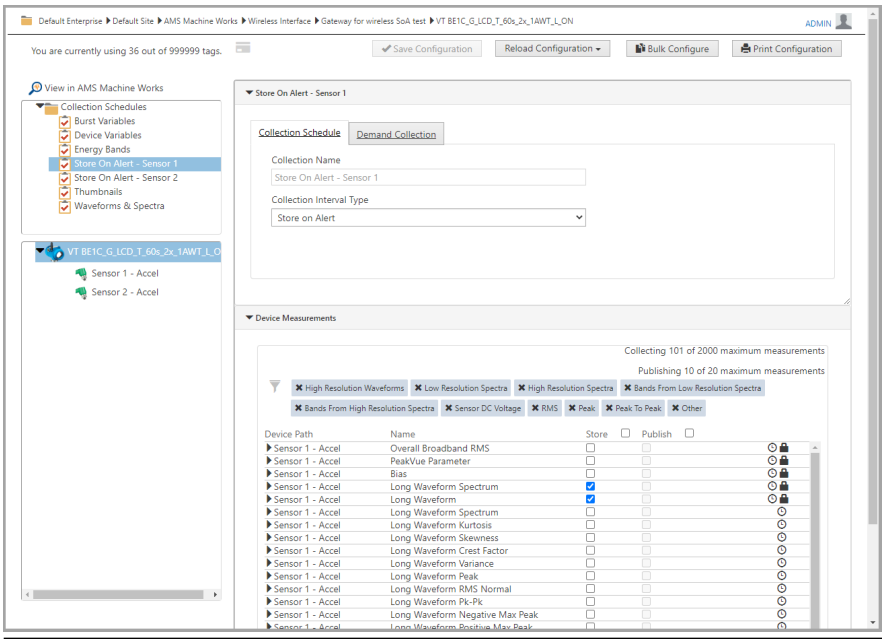
Prerequisites

This procedure assumes the device's other collections are configured and the machine train is already configured.

Procedure

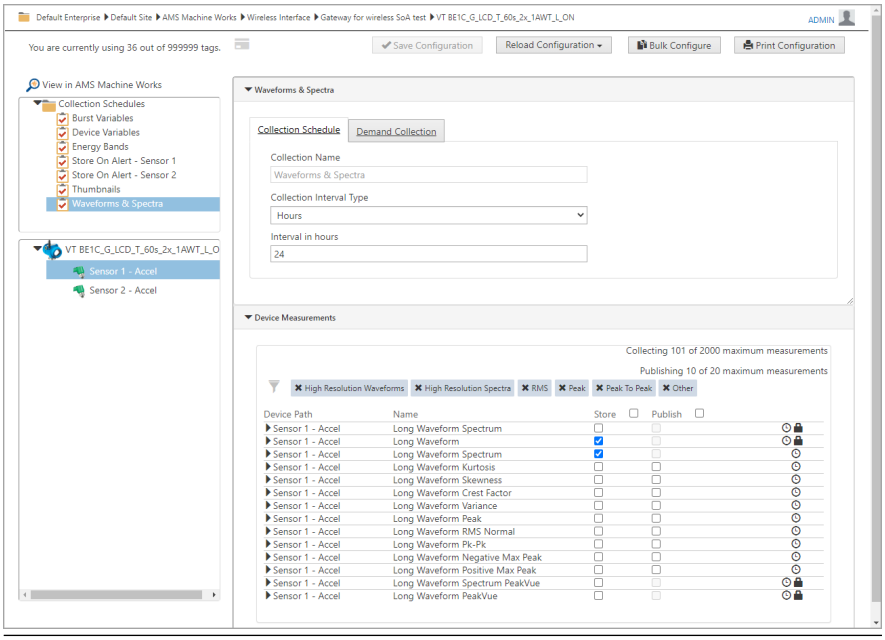
1. Add measurements to the Store on Alert collection in Machine Configuration.
   a) From Asset Explorer, in the **NETWORK** tab, expand **AMS Machine Works** → **Wireless Interface**, expand a gateway, and click an AMS 9420 to select it.
   b) Click **Configure Device** in the ribbon menu.
   The Device Configuration application opens in a new browser window.
   c) In the **Collection** list, click **Store on Alert Sensor 1** or **Store on Alert Sensor 2**.
   d) In **Device Measurements**, place a check mark in the **Store** column for each measurement to add in the Store on Alert collection.

Figure 9-2: AMS 9420 Device Configuration



   e) If you want to collect this measurement normally, and not only when in alert, be sure the measurements are also in one of the other default collection schedules.

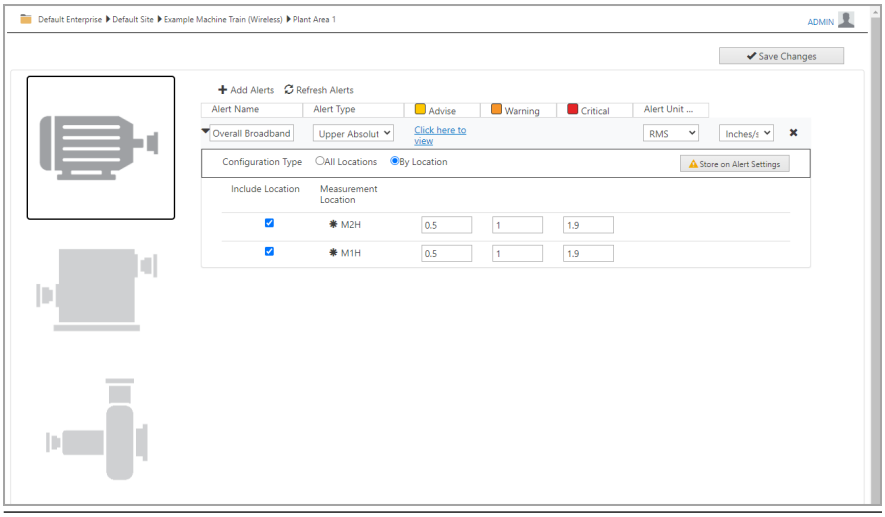
Figure 9-3: AMS 9420 Device Configuration



f) Click **Save Configuration**.

2. Configure the alert settings.
   a) In the Asset Explorer utility, select a machine train in the Location navigator.
   b) From the **Home** ribbon menu, click **Edit** → **Alarm Edit**.
   The **Machine Configuration** user interface appears in a new browser window.
   c) Click **Add Alerts**.

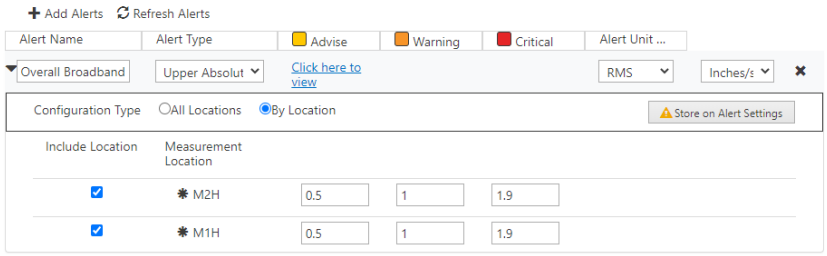
Figure 9-4: Machine Configuration



d) In the **Add Alerts** dialog, place a checkmark beside the measurement and adjust the settings for each alert level, if needed. Click **Add**.

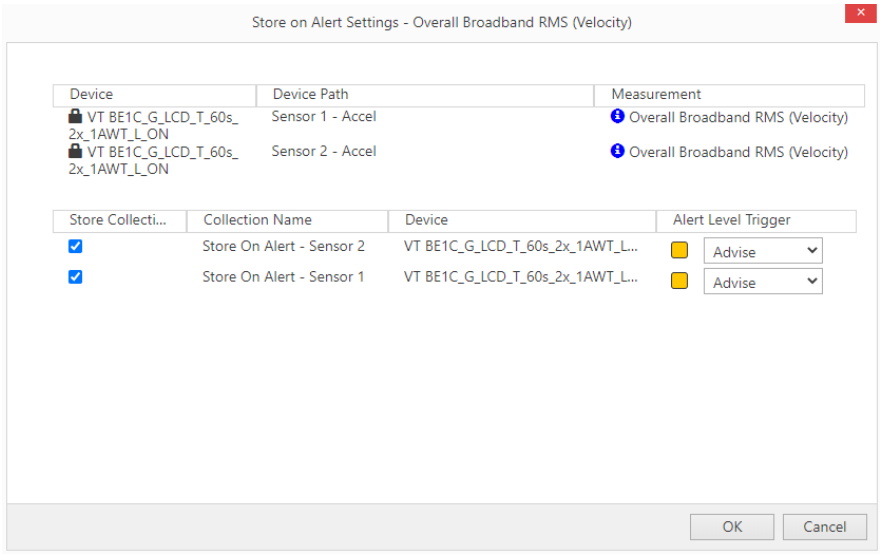
e) Expand the measurement, select **All Locations** or **By Location** and select **Store on Alert Settings**.

Figure 9-5: Alerts



f) In the **Store on Alert** dialog, place a checkmark in the box beside the measurement and selet the alert level from the menu. Click **OK**.

Figure 9-6: Store on Alert



g) Click **Save Changes**.

h) Wait for the Machine Train saved successfully message, then click **OK** and close the Machine Configuration dialog.

View the measurements in the Analysis Dashboard by navigating to the Machine Details and viewing the available measurements and by viewing the collections in Vibration Analyzer.

Related information

Device configuration and store on alert

10 Ovation Machinery Health Module

10.1 Prepare Ovation Machinery Health Waveform Recorder to connect to AMS Machine Works

Follow these tips to prepare your Ovation Machinery Health Waveform Recorder to connect to AMS Machine Works. Always refer to the Ovation Developer Studio documentation for procedures and more information.

Procedure

- Use Ovation Developer Studio software to configure Ovation Machinery Health Module channels.
- In Ovation Developer Studio, place a checkmark in the box **Collect Prediction Waveform Data**.
- Below **Collect Prediction Waveform Data**, set the FMax (Hz) for the prediction data to be collected by AMS Machine Works. Prediction data can be set to up to 12,800 lines of resolution. This is a different setting than the fixed 800 lines used for protection purposes. AMS Machine Works uses high resolution data for calculation of analysis results and visual presentation.

10.2 Add an Ovation Machinery Health Waveform Recorder as an Asset Source

You can add an Ovation Machinery Health Waveform Recorder as an asset source for AMS Machine Works. AMS Machine Works connects to the Ovation Machinery Health Waveform Recorder, which then allows data to be collected from the Ovation Machinery Health Modules registered with the Machinery Health Waveform Recorder. Each connected Machinery Health Waveform Recorder appears as an asset source in the Asset Explorer Network hierarchy.

Prerequisites

Note
Ensure the Ovation Machinery Health Module is configured, and the Machinery Health Waveform Recorder is operating.

Procedure

1. In the Asset Explorer utility, select the **Network** tab, expand **AMS Machine Works** and select **Ovation Interface**.
2. From the Home ribbon menu, select **Add Asset Source**.
   The **Add Ovation Machinery Health Monitor** dialog appears.
3. In the dialog, enter the following:

Field	Description
Name	The name for the Machinery Health Waveform Recorder.
IP Address	The **IP Address** is required.
Port Number	The port for receiving configuration information and data from the device. For default ports, see the Ovation Ports & Services document, available upon request.

4. Click **Add Machinery Health Waveform Recorder**.

A new node with the name provided appears below **Ovation Interface** in the Network navigator. Expand the Machinery Health Waveform Recorder icon to see the connected modules.

Postrequisites

Select the new node and click **Configure Module** from the **Home** ribbon to configure measurement parameters to add to AMS Machine Works.

10.3 Configure Ovation Machinery Health Monitor data collection for analysis

The Ovation Machinery Health Monitor module is configured in Ovation Developer Studio. The configuration done by AMS Machine Works defines the information requested from the Machinery Health Waveform Recorder. The software does not attempt to write configuration data to the device.

You must set up data collection in AMS Machine Works using Device Configuration to save the desired measurements for further analysis in Vibration Analyzer.

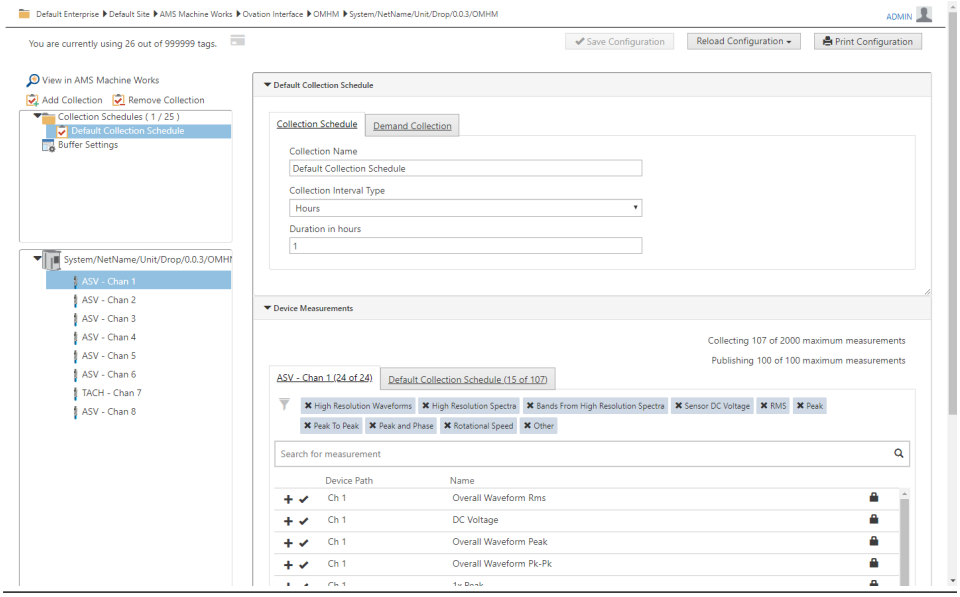
Prerequisites

The module must already have the prediction waveform enabled for the associated Ovation Machinery Health Module channel and FMax defined in Ovation Developer Studio.

Procedure

1. From Asset Explorer, select the **NETWORK** tab.
2. Expand **AMS Machine Works** → **Ovation Interface** and click the name of the Ovation module to select it.
3. Click **Configure Module** in the ribbon menu.
   The Device Configuration application opens in a new browser window.

Figure 10-1: Device Configuration: Ovation Machinery Health Monitor



4. To create a new collection, click **Add Collection** above the **Collection Schedules** list.

   A limited number of collections can be created. The number of available collections displays in the Collections list.

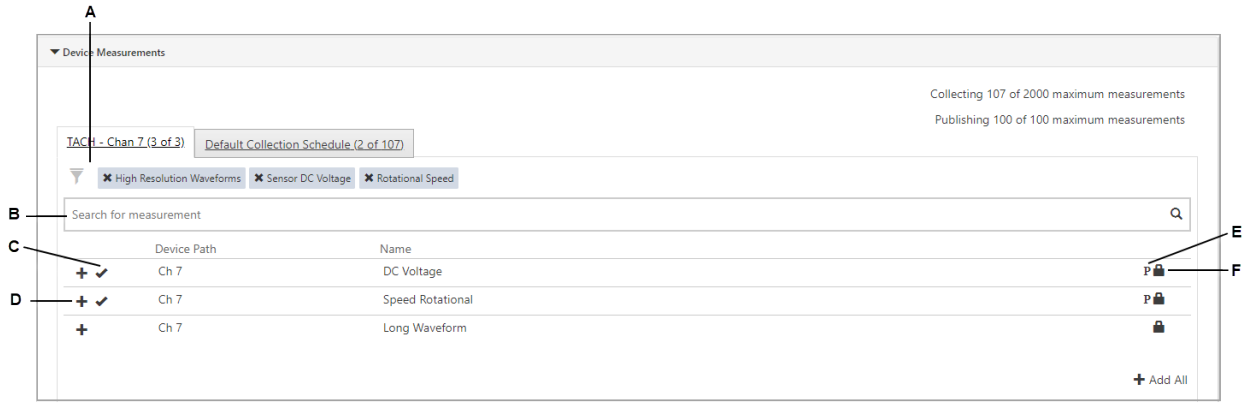
5. In **Default Collection Schedule**, in the **Collection Schedule** tab, enter a **Collection Name**, **Collection Interval Type**, and **Duration**.

6. In the left tab of **Device Measurements**, choose available measurements by using navigation in the device list and applying filters in the measurements list.

   The list displays measurements depending on the selection on the device list on the left side of the screen. Select the module (top) to display measurements from the channels. To display only the measurements per channel, select the channel.

   Use the filter toolbar to narrow your selection with filter buttons. Also, you can type a custom search filter and click 🔍 to show matching measurements. Click **+** to add the filter or click **x** to remove the filter.

Figure 10-2: Device Configuration: Available measurements tab



A. ***Filter applied*** *— High Resolution Waveform filter icon shown*
B. ***Search*** *— Find desired measurements by typing the measurement name*
C. ***Checkmark icon*** *— Shows measurement added to the collection*
D. ***Add icon*** *— Click to add measurement to the collection*
E. ***P icon*** *— Indicates a primary measurement. Primary measurements may be collected more frequently than other measurements.*
F. ***Lock icon*** *— Indicates measurement type that is calculated in the device (Measurements with no lock icon indicate calculations that are performed on the data after it is loaded into AMS Machine Works.)*

7. In the left tab in **Device Measurements**, click ✚ beside one or more measurements to add to the collection.

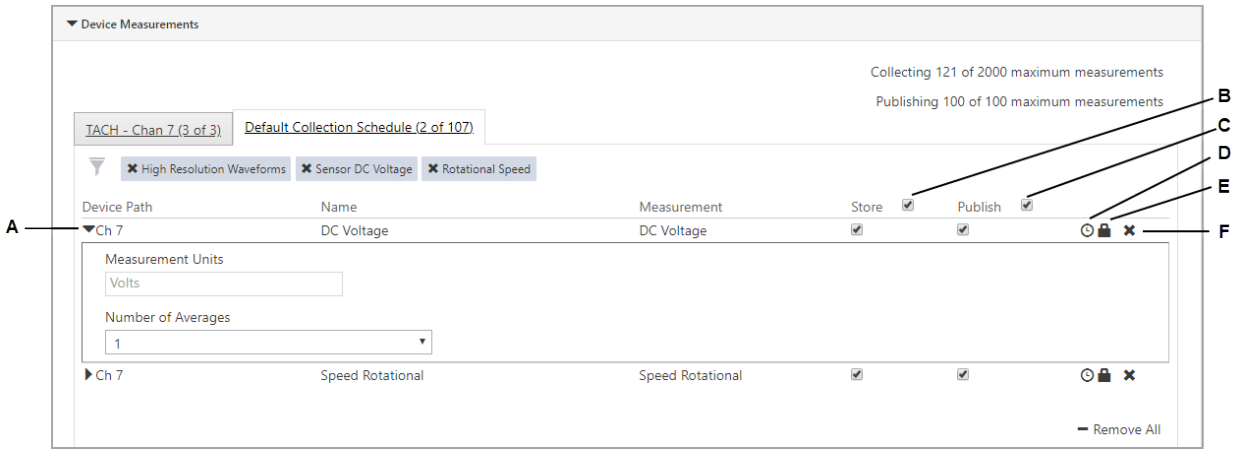
   Note
   After filtering the measurements, if you need to add all of the measurements shown, select **Add all** at the bottom right corner.

   The number of items in the **Collection Schedule** tab increments by the number of items added from the left tab.

8. Select the **Collection Schedule** tab to display the measurements added in the collection by using navigation in the device list and applying filters in the measurements list.

   The list displays measurements depending on the selection on the device list on the left side of the screen. Select the module level (top) to display all available measurements across the entire module. To display only the measurements per channel, select the channel of interest.

Figure 10-3: Device Configuration: Collection Schedule tab



A. ***Show details*** — *View measurement details and make changes in enabled fields, if needed.*
B. ***Store*** — *Place a checkmark in each row to store the measurement for future use by applications such as in Vibration Analyzer. Place a checkmark in the column to select all visible rows. Clearing the Store checkbox will prevent the data from storing to Historian. However, that data can still be published to other systems via OPC UA.*
C. ***Publish*** — *Place a checkmark in each row to publish data to other systems via OPC UA. Place a checkmark in the column to select all visible rows.*
D. ***Clock icon*** — *Indicates an amount of time required to collect the measurement. Hover the mouse over the icon to see the estimated time for collection.*
E. ***Lock icon*** — *Indicates measurement type that is collected in the device (Items with no lock icon indicates a calculation is performed on the data after it is loaded into AMS Machine Works.)*
F. ***Remove icon*** — *Click to remove the measurement from the collection.*

9. In the **Collection Schedule** tab, click the arrow beside one or more measurements to view the details of the added measurement.
10. Click **x** beside a measurement to remove it from the collection, if needed.
    The number of items in the **Collection Schedule** tab decreases by the number of items removed from the right tab.
11. For each measurement, choose an option to **Store** and **Publish** the measurements.
12. Click **Save Configuration**.

    If you make changes you do not want to save, click **Reload Configuration** to start over with the already saved configuration. The **Restore Default** option is also available which resets the configuration to the default from the device before being added to AMS Machine Works.

After you save a collection, data begins to collect on schedule. You can also perform a demand collection on the selected collection to trigger the data collection immediately.

10.4 Configure Store on Alert for Ovation Machinery Health Module

Configuring Store on Alert is a two-step process. First, in Device Configuration, create a collection with an interval type of Store on Alert. Second, configure the alert settings in Machine Configuration.

Prerequisites

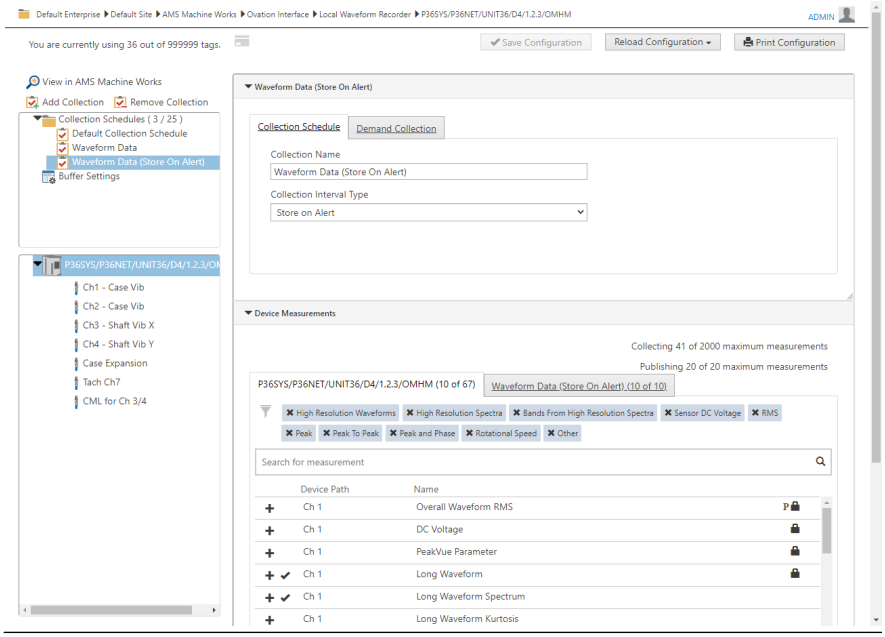
This procedure assumes the device's other collections are configured and the machine train is already configured.

Procedure

1. Create the Store on Alert collection in Machine Configuration.
    a) From Asset Explorer, in the **NETWORK** tab, expand **AMS Machine Works** → **Ovation Interface** and click the name of the Ovation Machinery Health Module to select it.
    b) Click **Configure ATG** in the ribbon menu.
    The Device Configuration application opens in a new browser window.
    c) In the **Collection** list, click **Add Collection**.
    d) In the **Collection Schedule** tab, enter a **Collection Name** and for **Collection Interval Type**, select **Store On Alert**.

    Note
    Emerson recommends adding "Store on Alert" or "(SoA)" to the name of the collection to help you identify the collection later when configuring the alert settings.

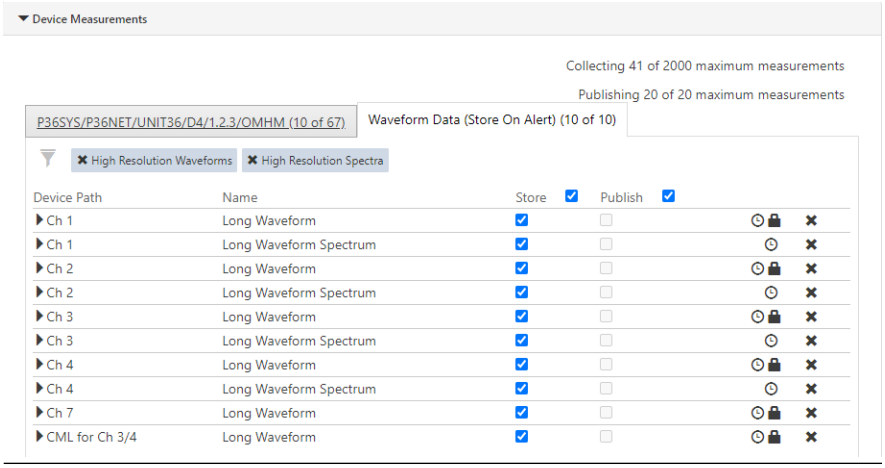
Figure 10-4: Device Configuration: Ovation Machinery Health Module



e) In **Device Measurements**, in the left tab, click ➕ beside one or more measurements to add to the collection.

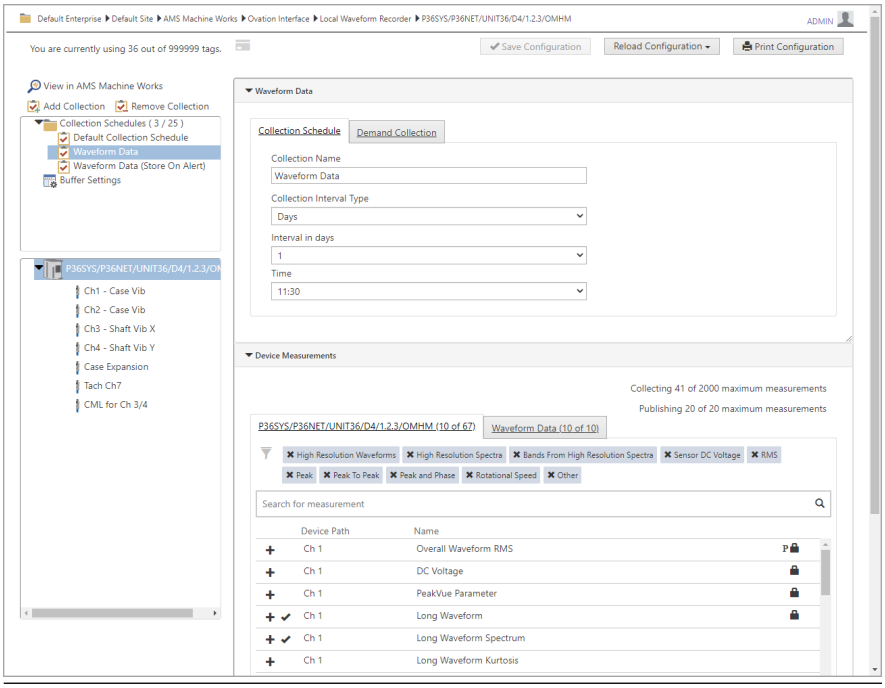
f) In the right tab, place a checkmark in the **Store** column for each measurement in the Store on Alert collection.

Figure 10-5: Device Measurements



g) If you want to collect this measurement normally, and not only when in alert, be sure the measurements are also in a separate collection schedule with **Collection Interval Type** set to a time.

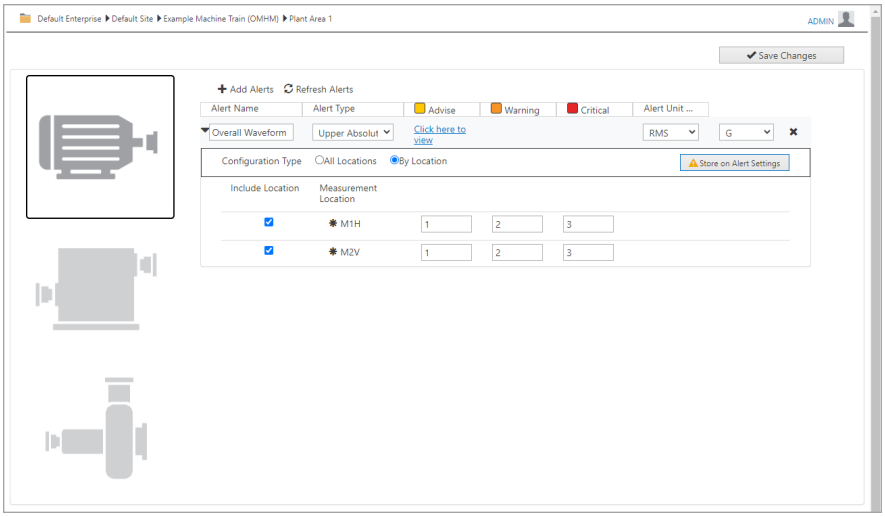
Figure 10-6: Device Configuration: Ovation Machinery Health Module



a) Click **Save Configuration**.

2. Configure the alert settings.
   a) In the Asset Explorer utility, select a machine train in the Location navigator.
   b) From the **Home** ribbon menu, click **Edit** → **Alarm Edit**.
   The **Machine Configuration** user interface appears in a new browser window.
   c) Click **Add Alerts**.

Figure 10-7: Machine Configuration



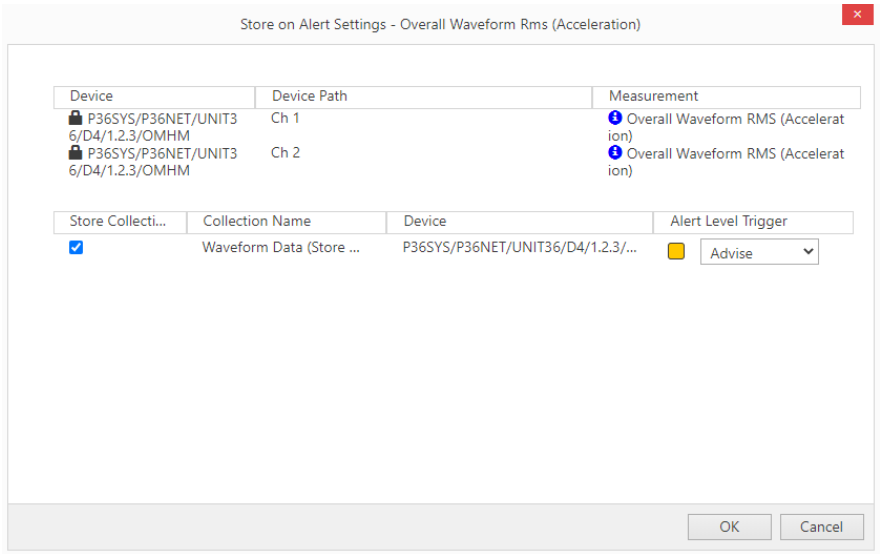
d) In the **Add Alerts** dialog, place a checkmark beside the measurement and adjust the settings for each alert level, if needed. Click **Add**.

e) Expand the measurement, select **All Locations** or **By Location** and select **Store on Alert Settings**.

Figure 10-8: Alerts

f) In the **Store on Alert** dialog, place a checkmark in the box beside the measurement and select the alert level from the menu. Click **OK**.

Figure 10-9: Store on Alert Settings



g) Click **Save Changes**.

h) Wait for the Machine Train saved successfully message, then click **OK** and close the Machine Configuration dialog.

View the measurements in the Dashboard by navigating to the Machine Details and viewing the available measurements and by viewing the collections in Vibration Analyzer.

Related information

Device configuration and store on alert

11 Analysis Dashboard

An intuitive graphical dashboard delivers clear visibility to overall machine, device, and system health at a glance. The information displayed is persona-based, ensuring team members receive only the data that is relevant to their position. Users can easily identify if there are any issues which require their attention and drill down for further analysis.

Note
Ensure a proper configuration of the machines and devices with alerts to get reliable information on the user interface.

11.1 Analysis Dashboard colors and icons

Standardized elements such as a color system, different alert levels, and icons help to distinguish the types of notifications.

Used colors

Buttons and status diagrams are colored depending on their functions and meanings.

Table 11-1: General color meaning

Color	Meaning
Blue	Information
Green	Good
Yellow	Advise
Orange	Warning
Red	Critical
Gray	Unknown

Icons

Icons are used to indicate the availability of important information.

Table 11-2: Icons

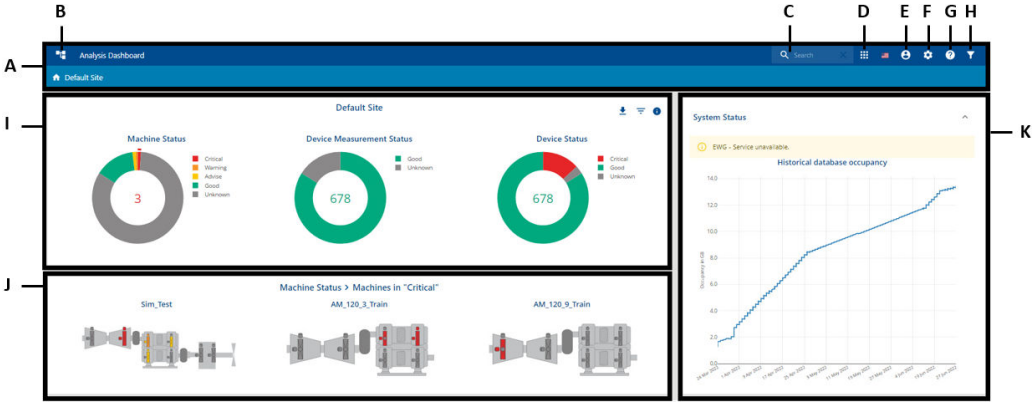
Icon	Meaning
	The exclamation mark within a red, solid circle marks information areas that requires the attention of the user.
	The number within a blue solid circle added to a button indicates the number of items selected from the menu that can be opened by the button.

11.2 Analysis Dashboard user interface

The System View displays the overall health status for different elements within the AMS Machine Works database. It shows the three Key Performance Indicators (KPIs) – Machine Status, Device Measurement Status, and Device Status and provides a context sensitive list of applicable machines or devices depending on the selected KPI. A notification of system status is provided, with a trend of the historical database occupancy indicating the health of the system. In addition, applicable messages from the Machine Journal application are displayed.

The System View is the starting point for opening further diagnostic views to get more details about a particular status.

Figure 11-1: System View



A. *Menu bar and Navigation Bar — Select options available from all pages of the Analysis Dashboard and Breadcrumbs that visualize navigation.*
B. *Navigation Tree — Navigate through the plant hierarchy of machines and devices.*
C. *Search bar — Search for machine trains or devices.*
D. *App switcher — Open other applications.*
E. *User — View user information and open the log in and log out dialog.*
F. *System Settings — Change the Alert Hysteresis Percentage and Wireless Noise Threshold (RMS).*
G. *Help — Open the online help.*
H. *Filter — Filter the displayed machines or devices.*
I. *Key Performance Indicator (KPI) — Overall health status information.*
J. *List of machines or devices — See items shown based on the KPI selection.*
K. *System details — Access quick performance details about AMS Machine Works.*

The arrangement of the view depends on the browser window settings and Microsoft Windows display settings.

11.2.1 Navigation Tree

The Navigation Tree is visible on all pages of the Analysis Dashboard and contains the following elements:

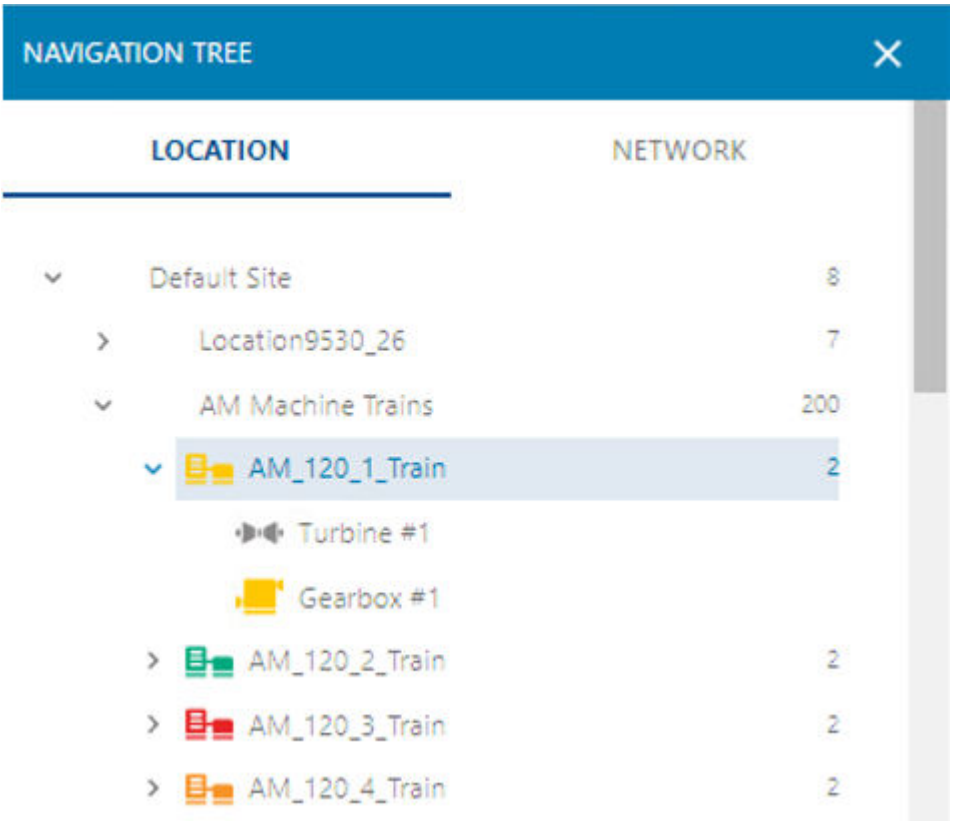
Navigation Tree Icon

Click the Navigation Tree icon to open the location or source overview.

Figure 11-2: Navigation Tree Icon

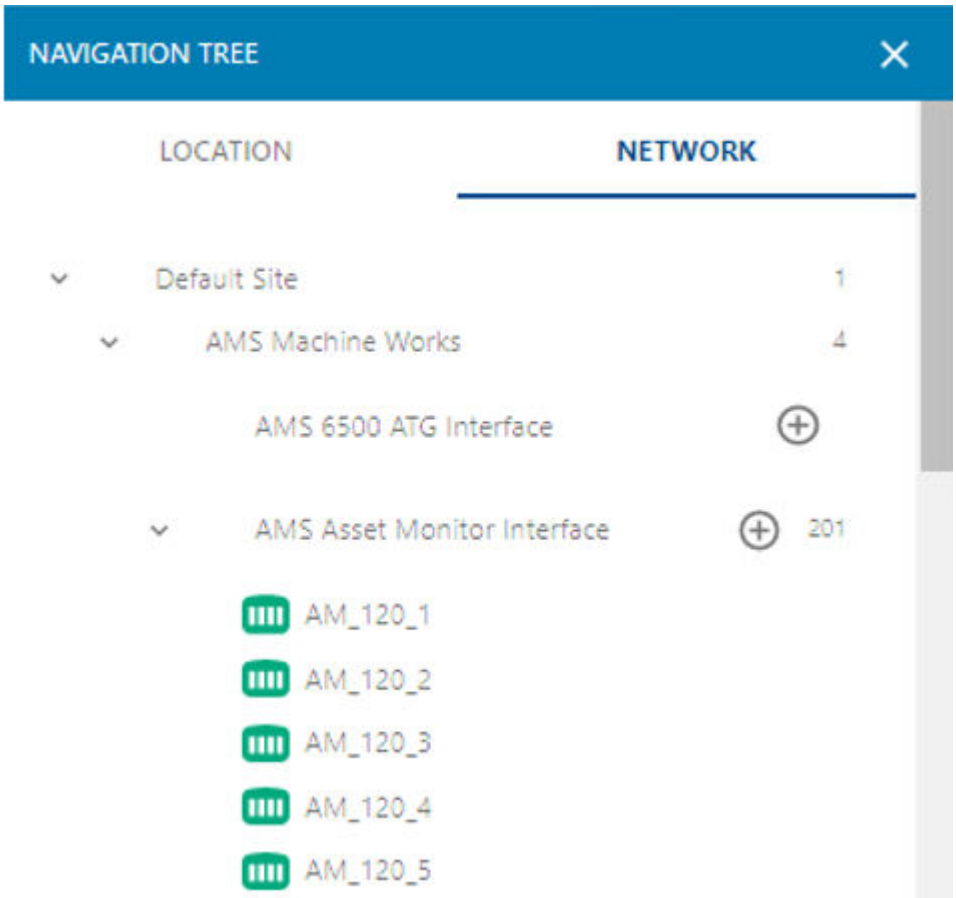
Select **Location** to open a hierarchy of all available locations and the machines configured under each location. The hierarchy is organized from site to location to machine.

Figure 11-3: Location hierarchy



Select **Network** to open a hierarchy of all available data sources. The hierarchy is organized by the device types such as AMS 6500 ATG Asset Source or AMS Wireless Vibration Monitor Asset Source.

Figure 11-4: Network hierarchy



Select a machine or device from the hierarchy to get more detailed information. A diagnostic view of the Analysis Dashboard opens with a detailed analysis view of the selected machine or device, presenting plots for trends, waveforms, spectra, and other measurements. See Analysis View for more details. A colored status bar to the left of the machine or device indicates the status of the machine or device (see Analysis Dashboard colors and icons).

You can also add new devices as asset sources by clicking the corresponding ⊕ icon.

Click the Navigation Tree icon again to close the hierarchy.

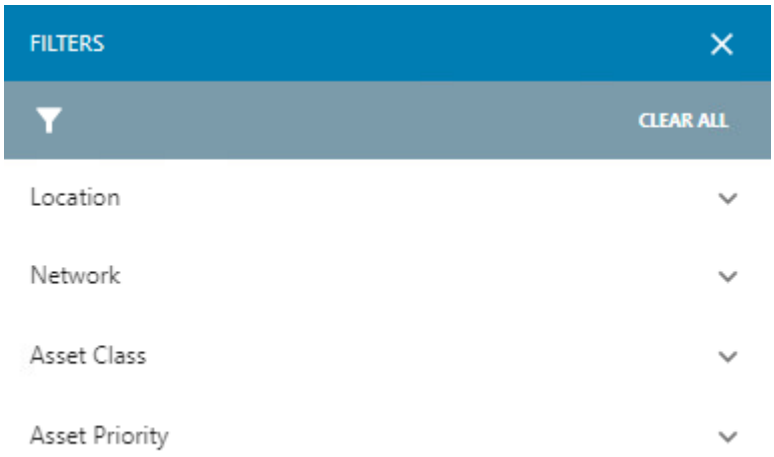
Filter

Click the filter icon to open the Filter panel.

Figure 11-5: Filter Icon

Filter the list of machines or devices using the available filter categories such as by **Location**, **Network**, **Asset Class**, and **Asset Priority**.

Figure 11-6: Filter panel



The filter is applied immediately. An applied filter is indicated by the number of selected filter categories added to the filter icon. Click on the **CLEAR ALL** button to deactivate the filter and to reset the filter settings.

Figure 11-7: Filter icon with indication of number of selected categories

Click the **X** to close the filter panel.

Search bar

Enter text to search for machines or devices.

Figure 11-8: Search

The search starts while entering the search criteria. The search result with a list of machines or devices is displayed. Going back to the dashboard cancels the search.

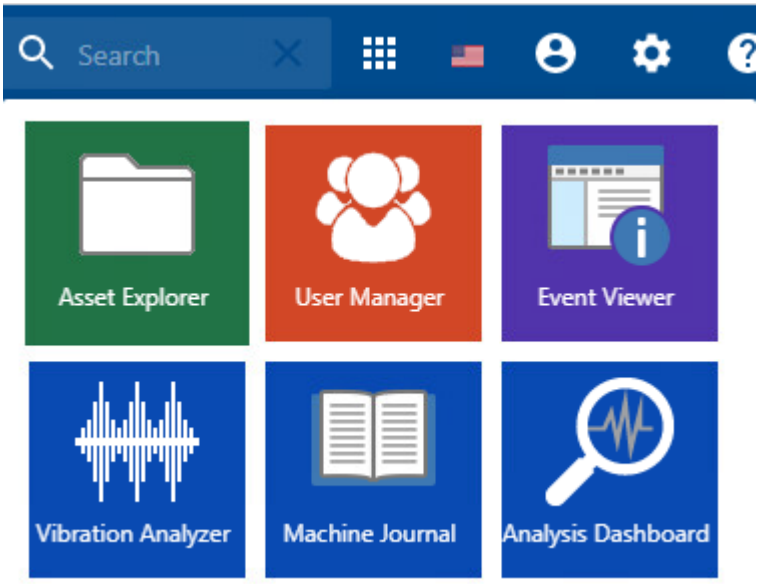
App switcher

Click the app switcher icon to open a menu of available apps.

Figure 11-9: App switcher icon

Click an icon to open the application.

Figure 11-10: App switcher menu



Click the app switcher icon again to close the menu.

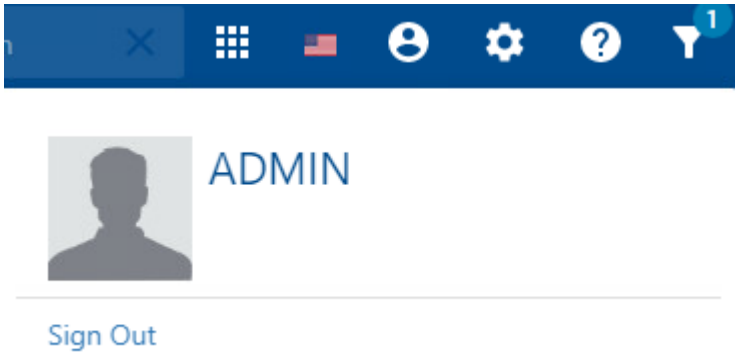
User

Click the user icon to open the user menu with information about the currently logged in user and the log out dialog.

Figure 11-11: User icon

Click **Sign out** to exit AMS Machine Works, or to log in with a different user and password.

Figure 11-12: User menu



Click the user icon again to close the menu.

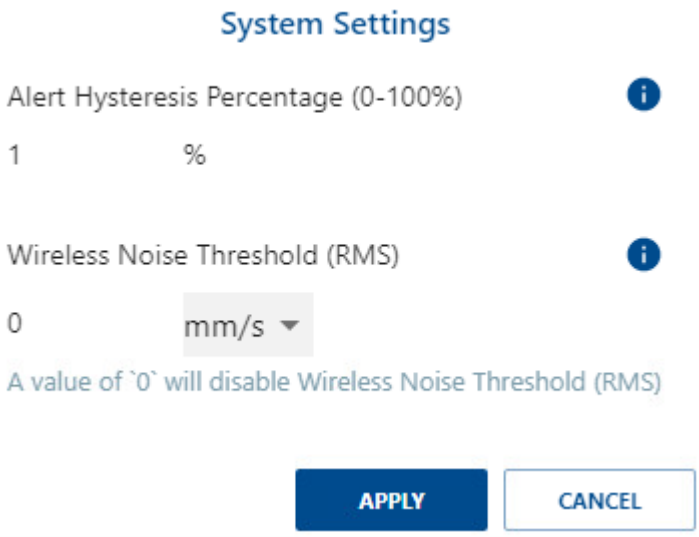
System Settings

Click the settings icon to open the system settings menu.

Figure 11-13: System Settings icon

The system settings menu contain configuration for **Alert Hysteresis** and **Wireless Noise Threshold**.

Figure 11-14: System Settings window



Help

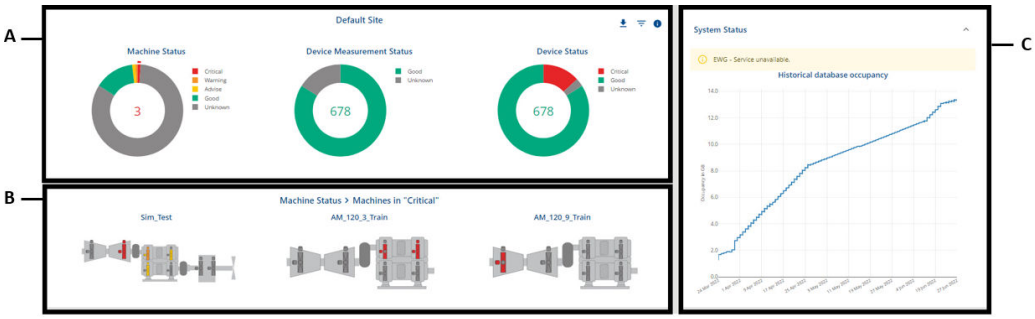
Click the help icon to open the online help.

Figure 11-15: Help icon

11.2.2 Status summary

This view displays the status summary and is the starting point for opening further diagnostic views to get more details about a particular status. To help the user to focus on the Key Performance Indicators (KPIs) for machines or devices and their measurements in alert (advise, warning, or critical), there are options to select or deselect items to be displayed.

Figure 11-16: Overview



A. Key Performance Indicator (KPI)
B. List of machines or devices based on the KPI selection
C. System Status

Key Performance Indicator (KPI)

Key Performance Indicator (KPI) diagrams are used to display the status of machines and devices. A KPI consists of a doughnut chart and a trend diagram showing the alert status for the last 30 days. The 30 days is an estimate and is subject to data available in the short-term historian if there is sufficient disk space. There are three KPIs over which you can hover your cursor to display a description:

Machine Status — Status of all alerts that are configured in AMS Machine Works for a particular machine train

Device Measurement Status — Status of all measurements for a particular device based on alerts that are configured in the device. The device measurements alerts are channel, card, or CHARM-specific alerts including asset status (if applicable)

Device Status — Status of all device level alerts for a particular device. The device alerts can indicate device malfunction, supply voltage high/low, device temperature high, etc.

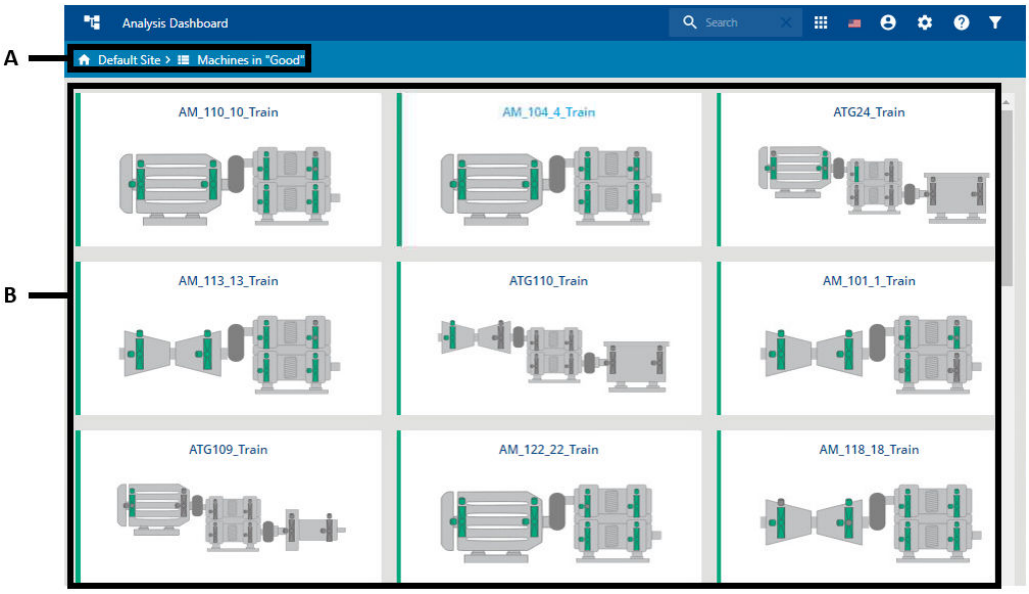
The status is divided into the five status levels **Unknown**, **Good**, **Advise**, **Warning**, and **Critical**.

Click a colored section of the doughnut chart or an alert level in the legend to select all machines or devices in this alert level. The number within the doughnut chart indicates the number of machines or devices that are in the selected alert level. The selected section of the doughnut chart is marked by an additional line. The machines or devices in the selected alert level are listed in the area below the KPIs. If there are more machines or devices than can be displayed on this view, an icon shows the number of additional machines or devices that are displayed on a subsequent page.

List of machines or devices

This area shows machines or devices in the same alert level selected on the corresponding KPI. If there are more machines or devices than can be displayed on this view, an icon shows the number of additional machines or devices that are displayed on a subsequent page. Click a machine or a device to get more details – the view changes to the diagnostic view of the user interface.

Figure 11-17: List of machines or devices



A. Navigation bread crumbs
B. List of machines or devices

Navigation bread crumbs	Use the bread crumbs to navigate back to system view.
List of machines or devices	This area contains a panel for each machine or device in the selected alert level, or that matches the Search criteria. A panel has a status bar on the left colored in accordance to the alert level. Machine details such as bearings and measurement locations or device details such as card and channel statuses are colored in accordance with the alert corresponding levels. Click on a panel to open a more detailed view of the machine or device. Click a machine or device detail to open the diagnostic view in context.

System Status

This area contains information about the performance of AMS Machine Works.

System Status	The available space for the historical databases is displayed. The Historian database is maintained automatically.

System Details

Related to You	List of the latest system events specifically related to the logged in user.
Latest in the System	List of the latest system events to which the user has access.

11.3 Analysis View

Overview

The Analysis View provides a detailed analysis view of the selected machine or device with trends, waveform, spectrum and other measurements of interest for the selected measurement point.

Figure 11-19: Analysis View – Overview

A. Machine or device status panel with measurement locations or channels
B. Trend panel
C. Machine or device information panel
D. Waveform and spectrum panel

Click the arrow icon in the upper right corner to enlarge a panel. Click it again to reset the view.

Analysis View - Sub-header

Figure 11-20: Sub-Header - Navigation Bread Crumbs

The subheader contains the navigation bread crumbs, which can be used to navigate back to either system view, list view, or analysis view depending on the current location. When viewing specific machines/devices the bread crumbs can be used to navigate to the next/ previous asset or display a drop-down menu of available assets.

Figure 11-21: Sub-header - shortcuts

The sub-header also contains following shortcuts:

Hotkeys

Figure 11-22: Sub-header - Hotkeys shortcut

Clicking on the Hotkeys icon displays the available hotkeys functions which are:

A - Associated data (both waveform & spectrum)

W - Waveform

S - Spectrum

R - Reload associated data points

View in Vibration Analyzer

Figure 11-23: Sub-header - View in Vib App shortcut

Opens the Vibration Analyzer and displays the selected measurements

Machine Configuration

Figure 11-24: Sub-header - Machine Config shortcut

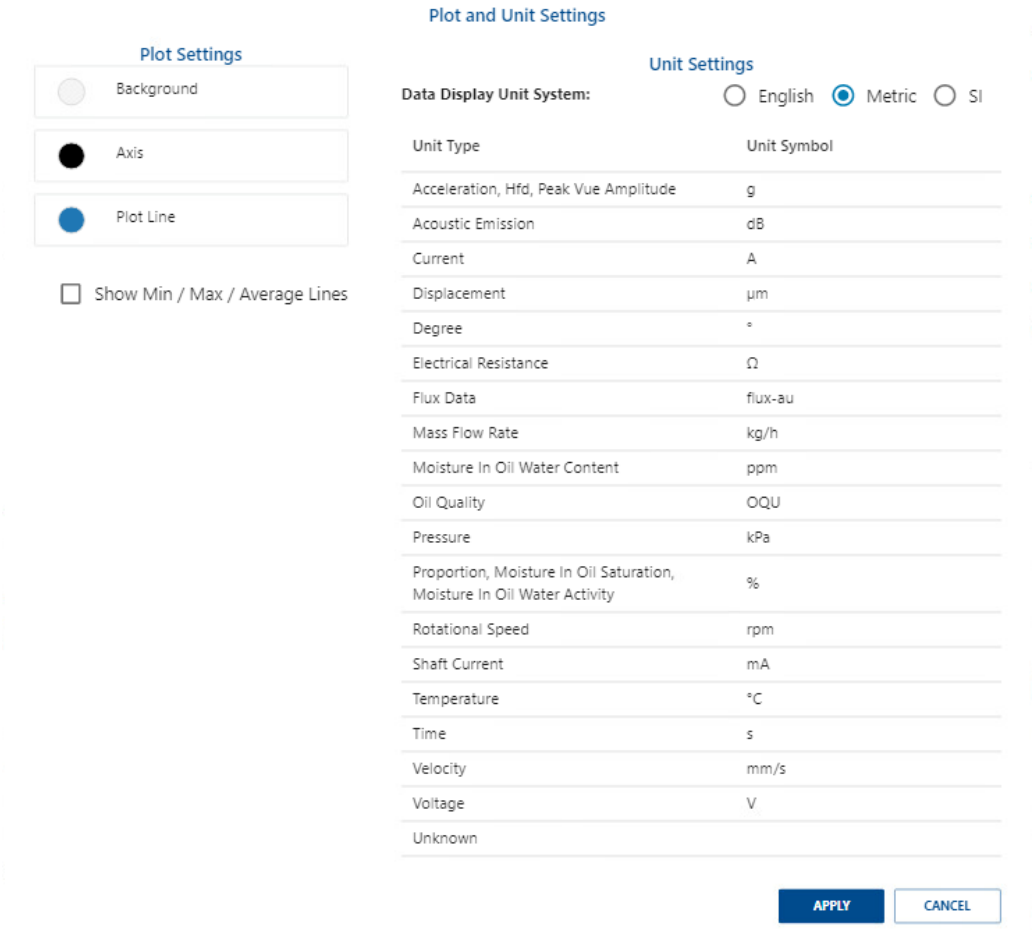
View or change the selected machine or device configuration

Plot Settings

Figure 11-25: Sub-header - Plot Settings shortcut

Opens the Plot and Unit Settings window

Figure 11-26: Plot and Unit settings window



Background	Click the colored button to open the dialog for the color selection. Select a color for the plot background. The button color changes to the selected color. Click the button again to close the dialog.
Axis	Click the colored button to open the dialog for the color selection. Select a color for the axis. The button color changes to the selected color. Click the button again to close the dialog.
Plot Line	Click the colored button to open the dialog for the color selection. Select a color for the line. The button color changes to the selected color. Click the button again to close the dialog.
Show Min / Max / Average Lines	Place a checkmark in the box to show minimum and maximum lines on trend plots in addition to the average value line. **Note** Averaged values are shown when there are more trend values present than can be shown given the current screen resolution. When

averaged values are shown, you may zoom in until actual values are displayed.

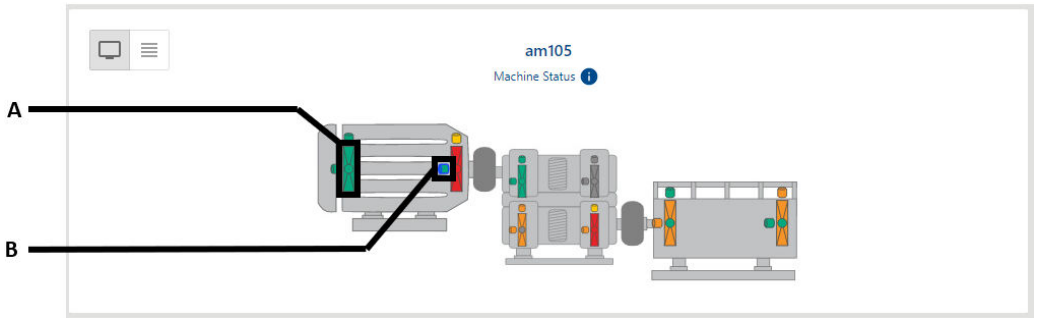
Unit Settings Allows selecting **English**, **Metric**, or **SI** unit systems for display. The units used for displaying various types of data are listed below the unit system options.

11.3.1 Machine or device status panel

This area shows a diagram of the selected machine train or device. Data sources such as measuring locations, and machine bearings, or device channels are colored accordingly to the alert levels. Use the previous and next arrows to navigate through the available machines or devices.

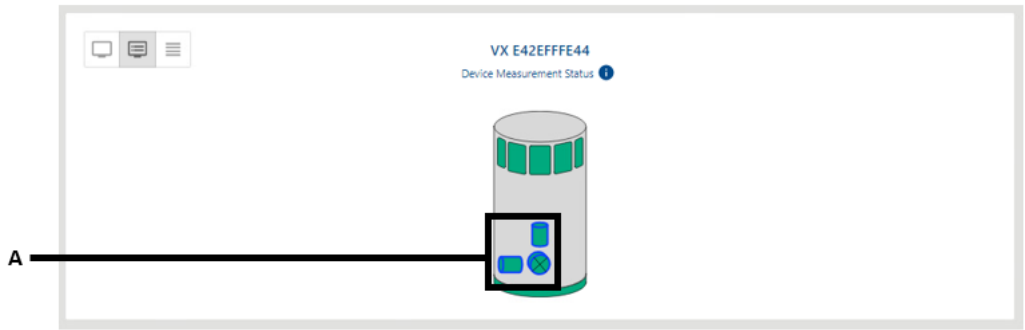
The available machines or devices depends on how you arrived at the diagnostic view. When arriving from a KPI, the available machines or devices will be those that match the selected KPI. When arriving from a Search, the available machines or devices will be those that match the search criteria.

Figure 11-28: Machine train diagram



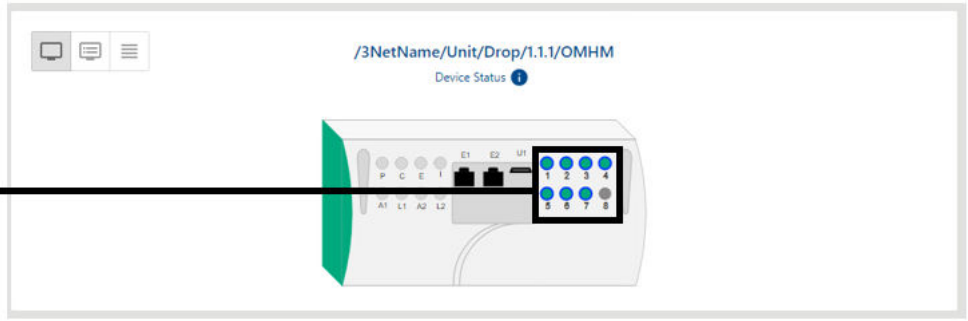
A. Bearing Indicator
B. Measurement location indicator (sensor placement)

Figure 11-29: Device diagram – AMS Wireless Vibration Monitor



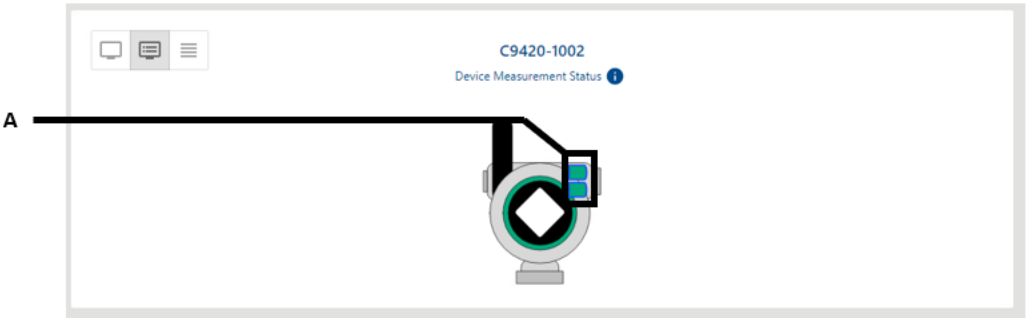
A. Channels

Figure 11-30: Device diagram – Ovation MHM



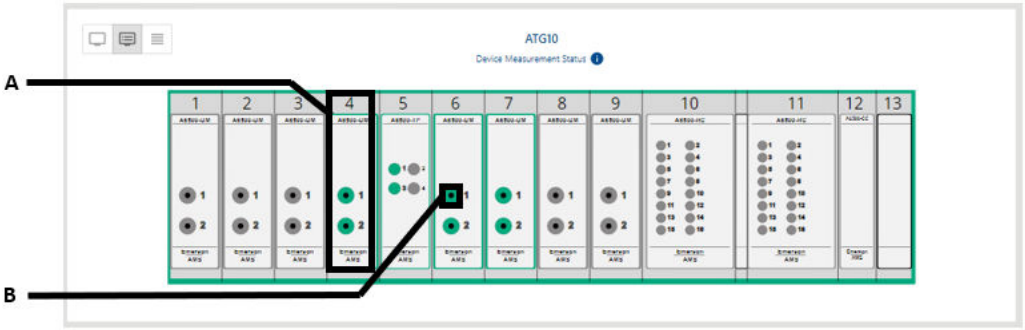
A. Channels

Figure 11-31: Device diagram – AMS 9420



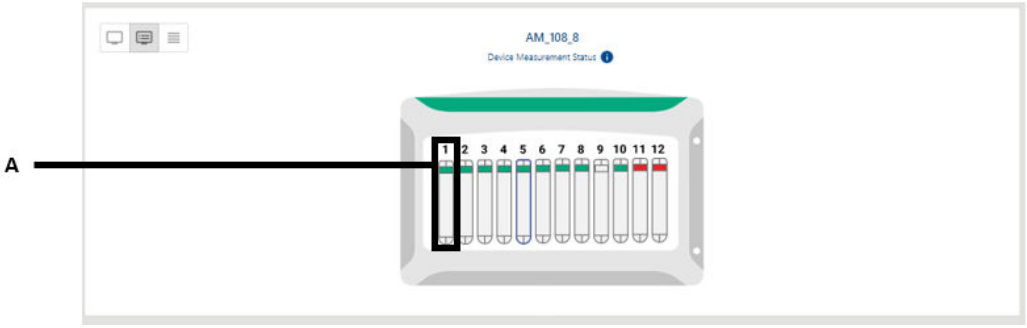
A. Channels

Figure 11-32: Device diagram – AMS 6500 ATG



A. Channel – all channels of a card are selected
B. Channel – single channel

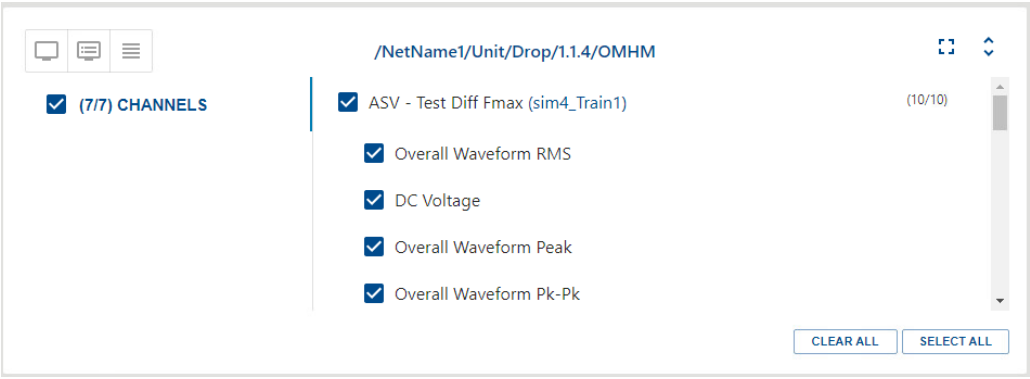
Figure 11-33: Device Diagram – AMS Asset Monitor



A. Charm

Click a data source (bearing, measurement location, channel) to display the assigned trend data. A selected element is marked with a blinking blue border. Or click the text view icon in the upper left corner to open the channel selection menu. Elements selected in the menu are marked accordingly.

Figure 11-34: Channel selection



Plots for the selected channels will be shown in the other panels. The number of selected channels is indicated in a blue solid circle on the menu icon. The available measurement locations or channels depends on the selected machine or device.

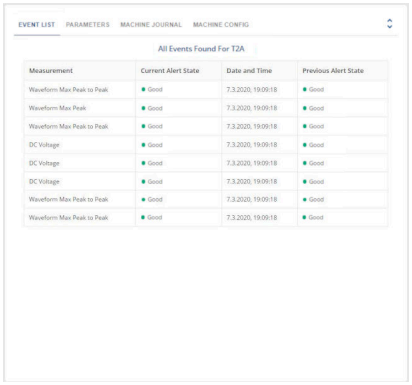
Selecting a data source synchronizes, within the same time frame, all the panels such as trend plots, parameter views, waveforms and spectra, and status indicators.

11.3.2 Machine or device information panel

Several tabs provide information about the selected machine or device.

Event list

Figure 11-35: Event list

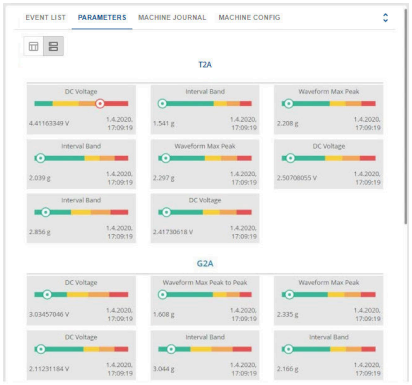


Events associated with the data source selected on the machine or device status panel.

Parameters (default view)

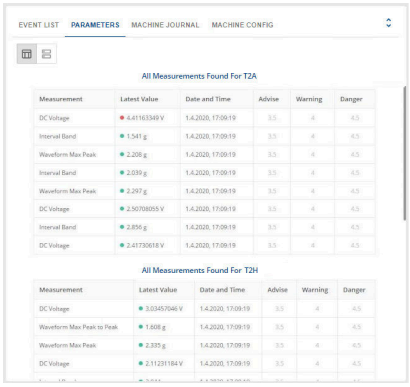
Parameters of the data source selected on the machine or device panel. Select the **Bars Icon** to display the values as bar graphs. Select the **Table Icon** to display the information in tabular form.

Figure 11-36: Parameters – bars



The parameter bars are grouped by measurement location and sorted by alert severity.

Figure 11-37: Parameters – table

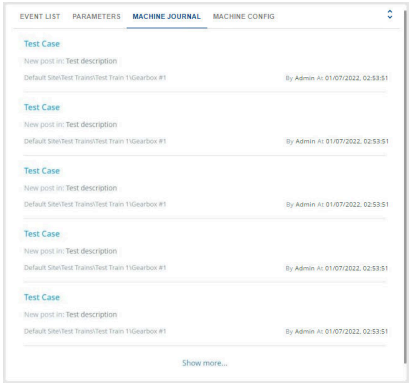


The parameters are grouped by measurement locations and ordered by alert severity.

Machine Journal

If a machine is selected, all journal entries for the selected machine train and its component machines are listed.

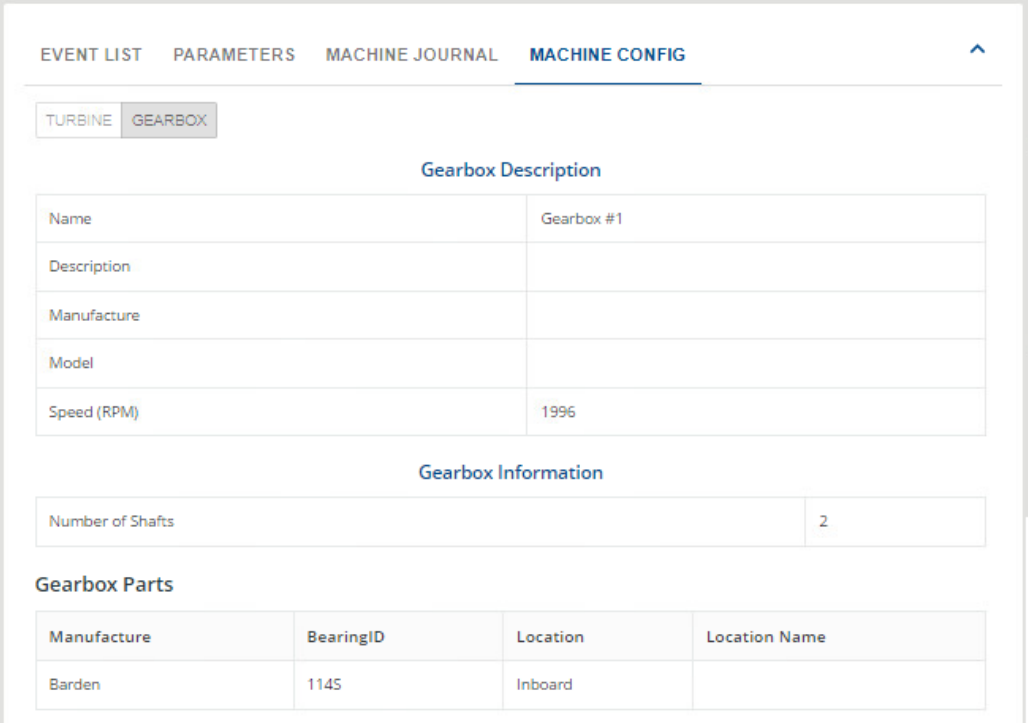
Figure 11-38: Machine Journal



Machine Config

If a machine is selected, you can view details about the machine and the parts it comprises of.

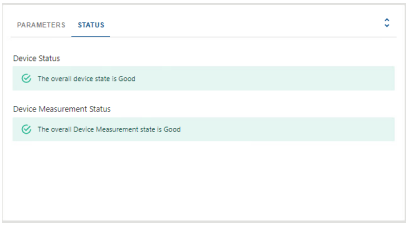
Figure 11-39: Machine Config



Device Status

If a device is selected, Device Status can be verified.

Figure 11-40: Device Status



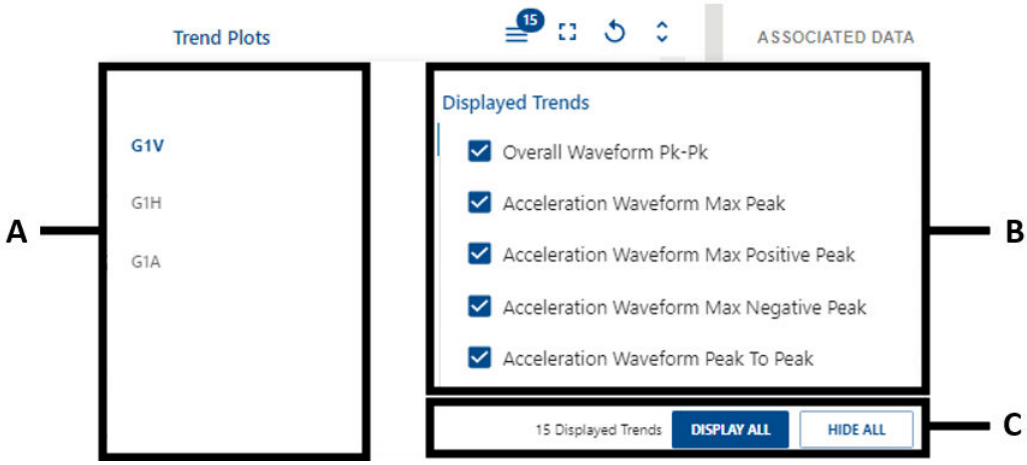
Status information of the device is listed. Each entry has a vertical status bar on the left colored in accordance with the alert level.

11.3.3 Trend Plots panel

The trend of the data source (measuring location, bearing, or channel) selected on the machine or device diagram of the last 30 days are displayed. The number of trends depends on the selected data source. One data source can provide several trends. The trends are grouped by measurement locations such as all measurements of a selected bearing. All displayed trends are synchronized within the same time frame.

Click the menu icon in the upper right corner to open the trend selection menu.

Figure 11-41: Trend selection



A. Measurement locations (or signal source for Devices)
B. Trends selection / list
C. All-selection buttons

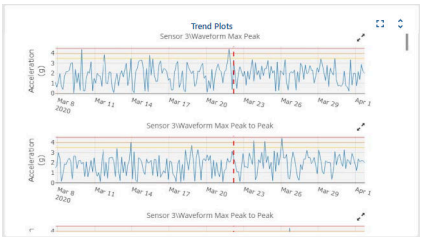
The available trends are grouped by measuring locations or channels. Place a checkmark in the box of the trend to be displayed to select it. Remove the checkmark to hide the trend. Click the menu icon again to close the trend selection menu.

The trend plots contain several functions to adapt the view to your needs:

Enlarge trend Click the outward pointing arrows to enlarge a trend diagram. To reset the view change, click the inward pointing arrows .

Trend cursor Move the cursor over the trend to display date, time, and average amplitude of a particular point of the trend. Click to select a point. The selection is marked with a red dotted line. The same point in time is also marked on all trends shown on this panel. Waveform and spectrum of the selected data block are displayed on the waveform and spectrum panel.

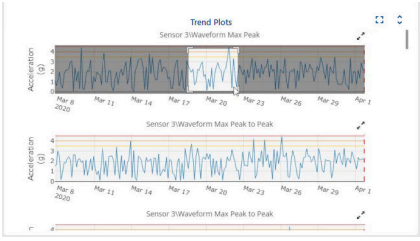
Figure 11-42: Trend with selected value



Region zoom Enlarge an interesting part of the trend. Place the mouse cursor close to the area of interest, left-click and hold. Move the mouse to frame the area of interest. Release the mouse button to enlarge the selected area.

Double left-click on the trend to reset the view.

Figure 11-43: Region zoom



11.3.4 Associated Data panel

The Associated Data panel consists of the two tabs **Associated data** and **History**.

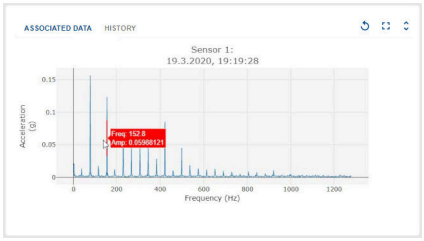
The waveform and spectrum plots under Associated data contain several functions to adapt the view to your needs:

Cursor Move the cursor over the waveform or spectrum to display data of a particular point of the plot.

- With a waveform, time and amplitude are displayed.
- With a spectrum, frequency and amplitude are displayed.

Left-click to select that point. The selection is marked with a red solid line.

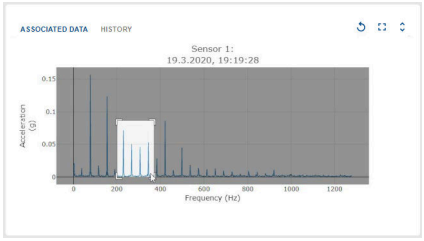
Figure 11-44: Spectrum with selected data point



Region zoom Enlarge an interesting part of the spectrum. Place the mouse cursor close to the area of interest, click and hold. Move the mouse to frame the area of interest. Release the mouse button to enlarge the selected area.

Double left-click on the plot to reset the view.

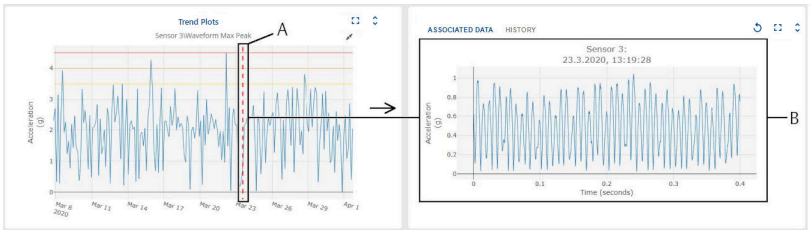
Figure 11-45: Region zoom



Waveform

Selection of the data block (point) on the trend plot results in displaying the waveform of the signal contained in this block.

Figure 11-46: Waveform

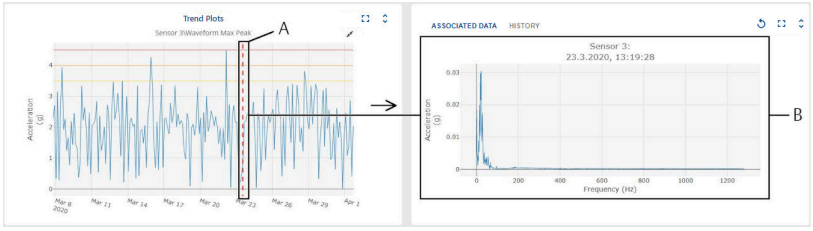


A. Data block selected on the waveform plots panel
B. Corresponding waveform is displayed

Spectrum

On the spectrum plots panel, the spectrum of the signal contained in the data block, selected in Trend Plot, is displayed.

Figure 11-47: Spectrum

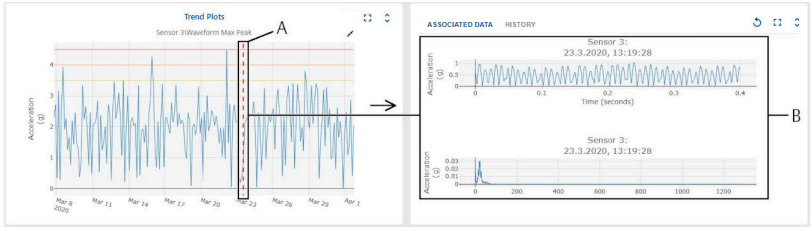


A. Data block selected on the spectrum plots panel
B. Corresponding spectrum is displayed

Waveform and Spectrum

Both waveform and spectrum of the selected data block are displayed.

Figure 11-48: Waveform and spectrum



A. Data block selected on the waveform and spectrum panel
B. Corresponding waveform and spectrum are displayed

12 Machine Journal

12.1 Machine Journal Introduction

The Machine Journal is a web application in AMS Machine Works. Machine Journal enables Analysts to track problems developing in machines. It allows you to track work orders for your machines and add notes and observations with supporting images and data. It provides a flexible way of searching and filtering cases and supports complex analysis and gathering statistics. It also helps create case reports to support work orders.

Machine Journal is also accessible from a menu in the Vibration Analyzer application.

Terms

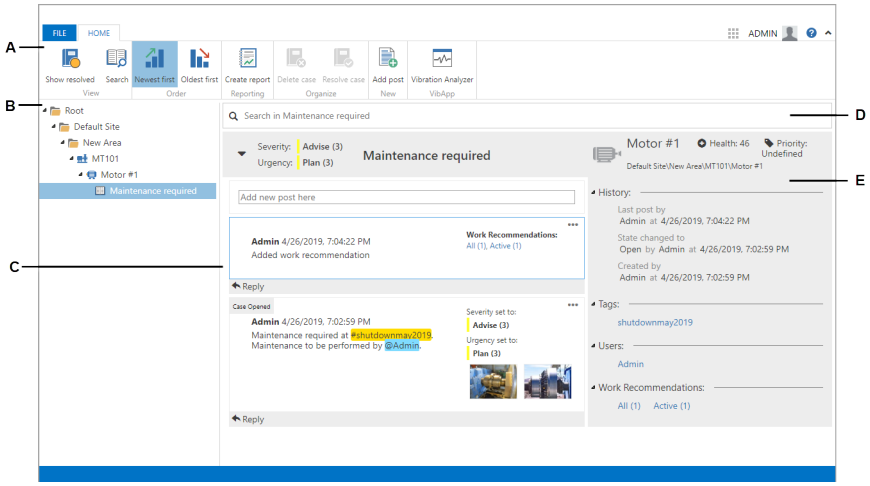
The following terms are used to describe the Machine Journal functionality.

Case	A case is related to a machine asset. It has a title, creation date, severity, urgency, open or resolved status, and a list of posts.
User Mention	A user mention is used to associate a user with a post, which is different from a Tag. A tag is used to categorize a post by, for example, fault type. User mentions are prefixed by the @ sign.
Post	A post is a note, data link, or image that is associated with a case.
Tag	A tag is a word or phrase used to identify or categorize a post. Tags are prefixed by a # sign.
Urgency	Urgency is a property you can assign to a case to indicate how quickly the problem needs to be fixed. Urgency has a number, caption, and corresponding color. You can select urgency from a list of values and create custom values. You can manage the list of values for urgency. The urgency you set applies only to Machine Journal cases and does not contribute to the health value of a machine.
Severity	Severity is a property you can assign to a case to indicate how much impact this problem has on your plant or operations. Severity has a number, caption, and corresponding color. You can select severity from a list of default values and create custom values. You can manage the list of values for severity. Use severity to indicate the significance of the problem or the impact to your plant operations. The severity you set applies only to Machine Journal cases and does not contribute to the health value of a machine.
Work Recommendation	The request for action to be tracked and executed on particular machine asset.

12.1.1 Machine Journal user interface

The Machine Journal Posts News Feed is the main view from which you navigate the site and select machines to add or modify cases.

Figure 12-1: Machine Journal user interface



A. ***Home ribbon menu***—*options for case creation, search and sort cases, and to create a report*
B. ***Navigation tree***—*list of machines that may have cases added to the components under each machine*
C. ***Posts news feed***—*list of cases based on the selection in the navigation tree*
D. ***Search bar***—*list in which you can add or remove search parameters*
E. ***Case history details***—*a summary of machine information, history, tags, users, and work recommendations*

The information displayed in the navigation tree depends on the responsibilities assigned to your user. The responsibilities are configured in the user settings, available from the **File → User Settings** menu in Asset Explorer or User Manager.

The home ribbon displays different options depending on what is selected. Options display in the ribbon menu based on your context in the tree. These options are also available from a context menu. Right-click a node in the tree to see the available options.

Table 12-1: Home ribbon menu default options

Option	Description
Show resolved	Show cases that are resolved.
Search	Open the search ribbon menu to refine the results displayed in the cases in the Posts News feed.
Newest First	Display newest cases first.
Oldest First	Display oldest cases first.
Create Report	Open the News Feed view in print preview mode.

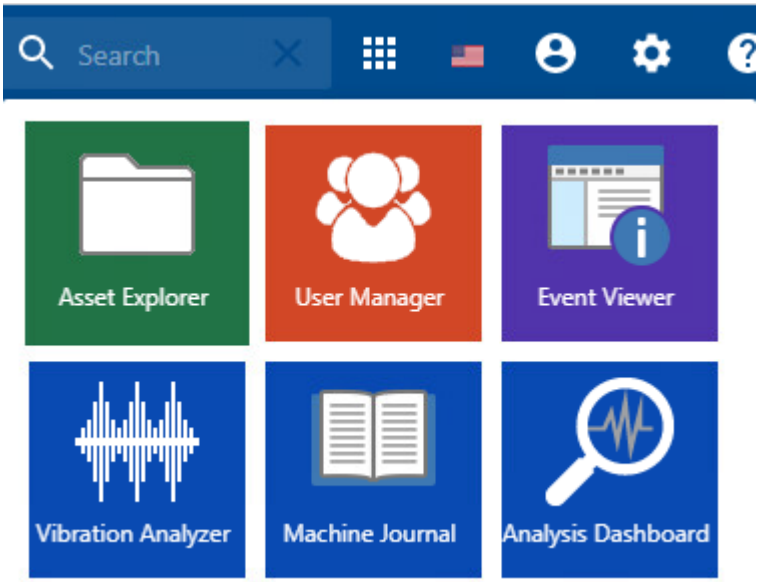
Related information

View the Posts News feed

12.1.2 Launch Machine Journal from the App Switcher

Launch Machine Journal with the App Switcher from any of the utilities such as the Analysis Dashboard.

Figure 12-2: Machine Journal shown in the App Switcher of the Analysis Dashboard.



12.2 Machine Journal settings

12.2.1 Severity and Urgency

Severity and Urgency are properties of a case that help you describe the impact of a problem and how quickly the problem needs to be fixed. These categories are used only within the Machine Journal application and do not contribute to the health value of a machine.

12.2.2 Customize severity and urgency

You can customize the text, value, and color for the Severity and Urgency categories.

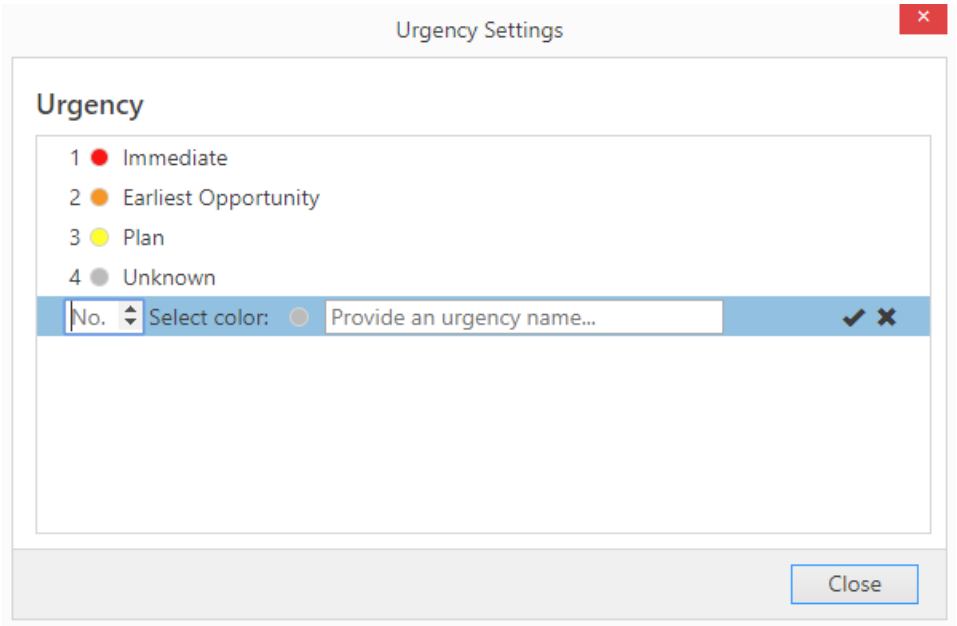
You can add new items to the categories or edit and delete existing items. The default values can only be deleted if they have not yet been used in the system.

Procedure

1. Select **File** → **Urgency Settings** or **File** → **Severity Settings**.

2. Hover over a category.
   The row becomes light blue and displays a pencil icon and a trash icon.
3. To add a new category, click **Add new**.
   A new row appears for the category in edit mode.

Figure 12-3: Urgency Settings: Add a new category



4. Edit the number, select a color, and add a text label for the category.
5. To edit an existing category, click the pencil icon or double click the category.
   You can change the number, color, or text of an existing item. Each entry must be unique. Do not select the same color, text, or number used by another category.
6. To delete an existing item, click the item, then click the trash icon.
   You can delete an existing category if it is not used in the system. Hovering over the trash icon displays a message that the category is used in the system. If the category is not used in the system, the trash icon is dark gray, indicating it is active. If the category is used in the system, the trash icon is light gray, indicating it is inactive.

12.2.3 Show or hide resolved cases in the navigation tree

You can show or hide resolved cases. By default, resolved cases are hidden. Resolved cases must be displayed before you can reopen a resolved case.

Procedure

Click **Show Resolved** in the **Home** ribbon to show the resolved cases in the navigation tree.

The navigation tree shows all resolved cases.

12.2.4 Show or hide deleted posts in case information

When you select to show deleted posts in the case information, all cases will show all the deleted posts. Emerson recommends using the default setting, which hides the deleted posts. You can temporarily show deleted posts to perform an audit of the cases.

Procedure

1. Select **File** → **Settings** → **Preferences**.
2. Place a check mark in **Show deleted posts in the case information**.

12.3 Procedures

12.3.1 View the Posts News Feed

The Posts News Feed shows all the information below your selection in the navigation tree, according to your settings. You can modify your view of the Posts News Feed by date and time order. By default, the news feed shows newest posts first.

Procedure

- In the navigation tree, select the root node to display all open cases.
- Select a machine to display only the cases and posts for the machine.
- Change the sort order by selecting either **Oldest first** or **Newest first** in the ribbon.

12.3.2 Set news feed sort and filter options

From the **Search** ribbon, you can select options for customizing your news feed and posts.

As you select options to customize your search results, the search results are automatically updated.

Procedure

1. Click **Search** on the ribbon or place the cursor in the search bar.

   A **Search Tools** ribbon appears.
2. Select any node in the tree to narrow the results to the items below the selected node. For example, select a folder to display the cases of machines in that area.
3. Reorder the search results by selecting **Ascending Order** or **Descending Order** from the home tab of the ribbon.
4. Type text in the search parameters bar.
   The search phrase is compared against case title and post descriptions.
5. In the **Search Tools** ribbon, select from the filter options to limit the results.

Option	Description
State	Show cases by state: open, resolved, or deleted. All states are included by default. This search setting is independent from the

Option	Description
	preferences setting to show resolved cases or deleted posts. If you have **Hide Resolved** selected in the ribbon, you can still see resolved cases when you select resolved as a search property.
Urgency	Show cases with the urgency selected.
Severity	Show cases with a selected severity.
Tag	Tags are specified in notes field prefixed by the # symbol.
User	Users are specified in notes field prefixed by the @ symbol. List of users is provided from the User Manager utility.
Asset Type	Asset type shown in Asset Explorer.
Date Range	Show only results within range defined by the dates. Select only a start date to show results newer than the specified date and newer. Select only an end date to show results older than the specified date. When you choose the date, it appears on the search parameters bar. If you need to change the date, click the **x** beside the date to clear the date.

The results view displays all matching posts.

The search options you select are shown as filters with an **x** in the search parameters bar.

6. Remove a search parameter by clicking **x**.

12.3.3 Create a new case

When creating a new case, some basic information is required such as: title and description. The title and description are required. Values indicating severity and urgency are required and set to the highest level by default. You can update the case later, for example, by adding: images or a post to the case, or by changing the urgency or severity of the case.

Procedure

1. In the Posts News feed, select a machine from the navigation tree.

   Existing cases display in the main pane. If the machine has no cases, the main pane is empty.

2. Click **Add case** in the ribbon.

   An entry named ***New case** appears beneath the selected machine. The asterisk (*) means the case is not saved.

   The **Create Case** view appears with placeholders for you to fill in.

3. Provide a name for the case. Use a name that helps identify the symptom being diagnosed.
4. Add notes in the description field.

In the description, you can add tags by entering a # before the word to be tagged. You can mention users by entering @ and selecting a user from the list.

5. Select a value for **Severity**. The default is **Impending Failure (1)**.
6. Select a value for **Urgency**. The default is **Critical (1)**.
7. Click **Publish**.

The new case name appears (without an asterisk) in the tree in the left panel.

An entry named **Case Opened** appears in the case. The entry includes the user's name, the current date and time, the severity and urgency settings, and the description.

Machine details, post history, and summary information display in the case details on the right side of the case information.

The case status is open.

Related information

Add a post to a case
Add a tag or mention a user to a post
Add a new post to a case from Vibration Analyzer

12.3.4 Add and remove notes and tags on a case

A case shows all the tags from underlying posts. When you add a post to a case, and the post contains a tag, the tag is associated with the case if the case did not already have the tag. A machine condition is a type of tag.

To remove a tag from a case, delete the post in the case that contains the tag you want to remove.

12.3.5 Add a post to a case

When you add a new post to a case, the post contains one note and may contain images, data links, attachments and work recommendations. You can also change the severity or urgency of the case. Changes you make to the case while editing the post will be included in the post. You can add multiple posts to a case. You can add a post to an open case but not to a resolved case. Once you create the post, you cannot edit the post, but you can update the case information by adding a reply to the post or creating a new post. For example, you cannot change the severity or urgency of the case in a post, but can in a reply.

Prerequisites

The machine has an open case.

Procedure

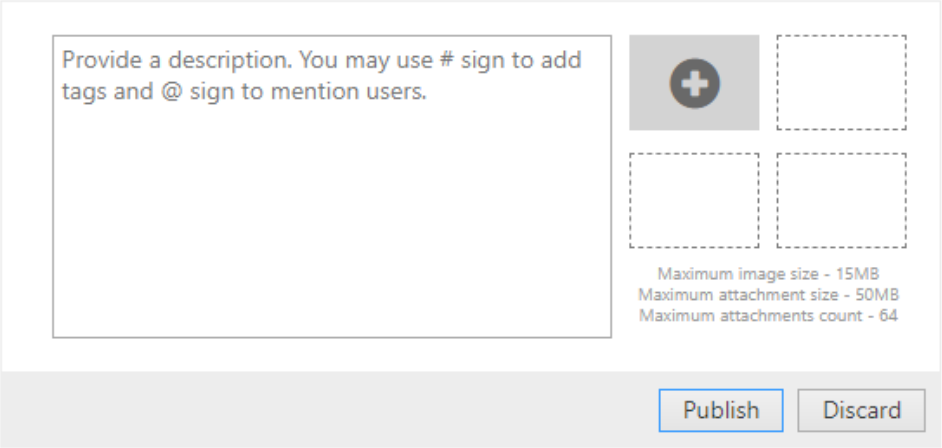
1. In the navigation tree, select the case you want to update.

   The case information displays the case details, posts, and replies.

2. Select **Add Post** from the ribbon.

   The **Add Post** form appears below the case title.

Figure 12-4: New post form



3. Add a note, images, or data links as a main part of the post.
4. Click **Publish**.

   The post is added to the case. The user name and current date and time are saved with the post.

Related information

Create a new case
Add images to a post
Add a tag or mention a user to a post

Add a tag or mention a user to a post

Tags and mentions help you flag any topic or user you want to associate with your case. You can tag any phrase or mention a user while typing in a post. When you mention a user, the post or case displays in that user's Machine Journal Dashboard. When using Search, select tags and users to limit the results.

Procedure

- To tag a phrase:
  a) While typing a note, create a tag by starting a phrase with the # symbol. Text you type after # is the tag.

     As you type the tag, any relevant matching tags appear in a list.

  b) Select the existing tag from the list, or continue typing to create a new tag.

     When you type a new tag for the first time and save the post, that tag will be available in future posts.

- To mention a user:
  a) While typing a note, mention a user by typing the @ symbol.
  b) Select a user from the list that appears by the @ symbol.

Related information

Add a post to a case
Add a reply to a post

Add images to a post

When adding a post, you can click the + icon beside the notes field to add an image. You can also drag and drop an image or attachment.

Procedure

1. Click the + icon beside the notes field and select **Add image**.
2. In the **Browse** dialog, locate the image to upload. Click **OK**.
   The image appears in the next available box after the + icon.
3. Add more images if desired.
4. To discard one of the uploaded images, click the image in the post.
   The **Gallery** dialog appears.

A. Selected image
B. Delete
C. Next image in gallery
D. Full screen view

5. Click to delete the selected image.
6. Close the **Gallery** dialog when finished.
7. Click **Publish**.

   The added images are saved when the post is saved. If the post is discarded, the added images are also discarded.

Add data from Vibration Analyzer to a post

When adding a post, you can click the + icon beside the notes field to add data from Vibration Analyzer. This lets you easily launch Vibration Analyzer to select the image to add. Images added from Vibration Analyzer are standard images in Machine Journal and are included in the attachments limit.

Procedure

1. To the right of the notes field, click the + icon to the right of the notes field and select **Add data from VibApp**.
2. Vibration Analyzer launches.
3. Finish editing the post and click **Publish**. The added data is saved when the post is saved. If the post is discarded, the added data is also discarded.

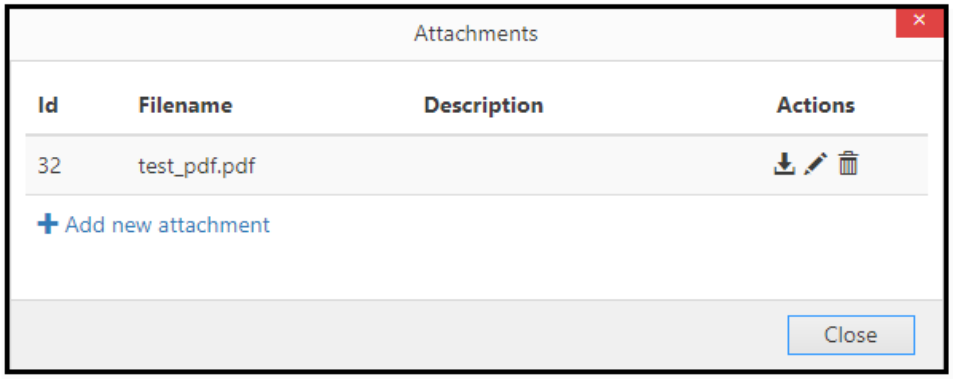
Add attachments to a post

When adding a post, simply drag and drop an image or document to your post. Or you can click the + icon beside the notes field to add attachments. The attachments list can contain up to 64 items (up to 50 MB per document and 15 MB per image). The images from Vibration Analyzer are standard images and also count in this total. If you add an image as an attachment, it appears in a documents list, and to see it, you must download the image first. If you prefer to see preview icons of your images, do not upload it as an attachment; add it as an image instead.

Procedure

1. To the right of the notes field, click the + icon and select **Add attachment**.
2. In the **Browse** dialog, locate the attachment to upload. Click **OK**.
   An **Attachment** link appears in the post below the image gallery. The number of attachments displays in parentheses.
3. To view, edit, or discard one of the attachments, click **Attachments**.
   The **Attachments** dialog displays a list of attachments and actions including download, edit the description, delete, or add a new attachment.

Figure 12-5: Attachments dialog



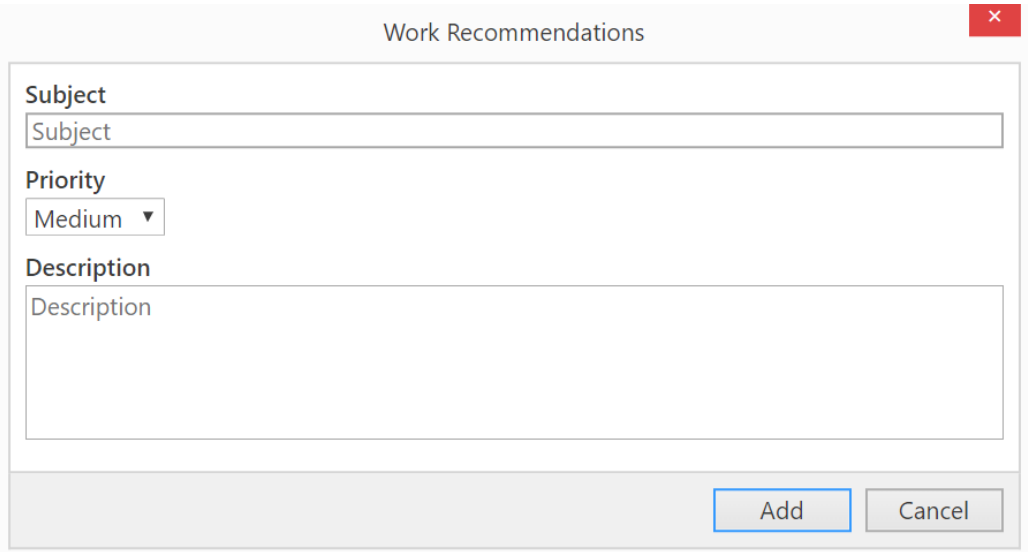
4. Click the pencil icon and type a description. Click **Save**.

   Adding a description helps provide other users with more information to identify the attachment without downloading and opening the attachment.
5. Click **Close**.
6. Finish editing the post and click **Publish**. The added attachments are saved when the post is saved. If the post is discarded, the added attachments are also discarded.

Add a work recommendation to a post

While adding a post, you can add a recommendation to a case. A work recommendation is a type of note that lets you categorize work or a suggestion to fix the problem. One way a work recommendation is helpful is that you can search for cases with work recommendations. It helps you track information about the work performed on a specific case as well. You can use the work recommendations like a ToDo list. A case can only be resolved when its work recommendations are resolved or rejected.

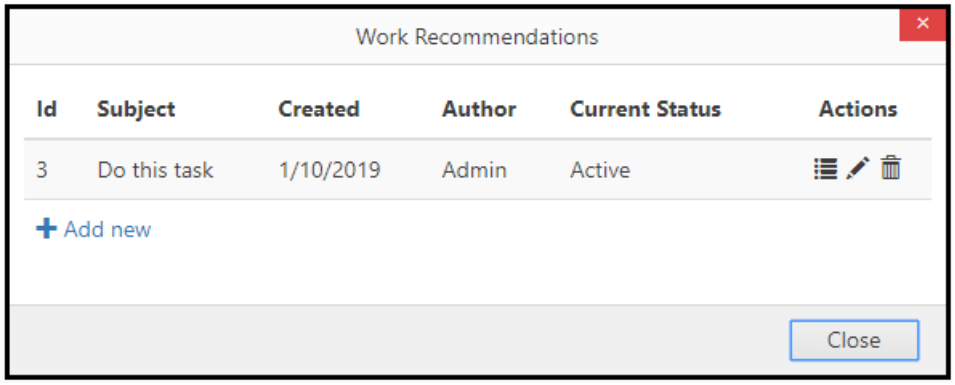
Figure 12-6: Work Recommendations dialog



Procedure

1. Click **Add recommendation** in the ribbon.
2. In the **Work Recommendations** dialog, enter a **Subject**, **Priority**, and a **Description** and click **Add**.
   A **Work Recommendations** link appears in the post below the image gallery. The number of recommendations displays in parentheses.
3. To view, edit, or discard one of the work recommendations, click **Work Recommendations**.
   The **Work Recommendations** dialog displays a list of work recommendations and actions including view details, edit, delete, and add.

Figure 12-7: Work Recommendations dialog



4. Click the pencil icon to edit the description, subject, and status. Click **Save**.
5. Click **Close**.
6. Finish editing the post and click **Publish**.

   The recommendation is saved when the post is saved. If the post is discarded, the recommendation is also discarded.

The work recommendation is created with an active status.

All work recommendations for a case must be resolved or rejected before the case can be resolved.

Add a reply to a post

A reply is a post that you can use to add more details to the case. You can add a reply to a post in an open case. For readability, all posts and replies are displayed at the same level of a case, not nested within posts. If you reply to a post, it appears as a post to the case. The posts are nested and collapsed by default.

Procedure

1. In the navigation tree, select the case you want to update.

   The case information displays the case information, posts, and replies.

2. Click **Reply** on a post that you want to update.

   A reply field appears where you can fill in notes or add images.

3. Click **Publish**.

The reply appears on the case information screen, under the original post.

12.3.6 Delete a post from a case

You can delete a post from an open case, one post at a time. Deleted posts are marked as deleted, and by default do not appear in the case information. You can change the settings to show deleted posts.

Procedure

1. In the navigation tree, select an open case.
   The case information shows posts and replies, if present.
2. Locate the post to delete.
3. In the upper right corner of the post, select **...** → **Delete post**.
4. At the prompt, select **OK**.

   The post no longer appears in the case information. You can select other posts to delete.

Related information

Show or hide deleted posts in case information

12.3.7 Update a work recommendation

All work recommendations for a case must be resolved before the case can be resolved. The status can be Completed or Rejected.

Procedure

1. In the Posts news feed, select a machine from the navigation tree.

   Existing cases display in the middle pane. If the case has work recommendations, the case details contain links to the **Work Recommendations** list.
2. Click **All** to see all of the work recommendations. Choose other links to see the items of that status (Active, Completed, or Rejected).
3. In the Work Recommendations list, click the checkmark to mark the work completed, or click **X** to reject the work recommendation.

12.3.8 Resolve a case

When you are finished working on a case, mark it resolved so it no longer appears in the list of cases.

Procedure

1. In the navigation tree, select an open case.
2. Click **Resolve case** in the ribbon bar.
3. A new post appears with a **Resolve case** button.
4. Fill in details about why the case is being resolved.
5. Click **Resolve Case**.

The case status is resolved. The case no longer appears in the navigation tree. You can show or hide the list of resolved cases by clicking **Show Resolved** from the **Home** ribbon.

Related information

Delete a resolved case
Reopen a resolved case

Show or hide resolved cases in the navigation tree

12.3.9 Delete a resolved case

Prerequisites

Resolve the case. A case status must be set to resolved before it can be deleted.

Deleting a resolved case causes it to become an archive. Once deleted, the case cannot be reopened. When resolved cases are visible in the navigation tree, you can delete or reopen a resolved case.

Procedure

1. Click **Show Resolved** in the **Home** ribbon to show the resolved cases in the navigation tree.
2. Select the case you want to delete.
3. Select **Delete case** from the ribbon.
4. At the prompt, select **OK**.

The case status is deleted.

By default, deleted cases do not appear in the navigation tree. The case appears in the navigation tree if **Show deleted cases, posts, and replies** is enabled in **Preferences**.

Related information

Show or hide resolved cases in the navigation tree
Show or hide deleted posts in case information

12.3.10 Reopen a resolved case

After a case is resolved, it may be necessary to open the case again. If more work needs to be done on the same issue, it is convenient to reopen a resolved case instead of creating a new case.

Procedure

1. Click **Show Resolved** in the **Home** ribbon to show the closed cases in the navigation tree.
2. In the navigation tree, select the case you want to reopen.
3. Select **Reopen case** from the ribbon.

   The **Reopen case post** view appears.

4. Write an explanation for reopening the case.
5. Click **Publish**.

The case status is open.

The case appears in the tree in the left panel.

Related information

Show or hide resolved cases in the navigation tree

12.3.11 Print a report of the Machine Journal screen

You can print the contents of your Machine Journal screen as a PDF report.

Prerequisites

Install a PDF generator as a printer on the computer if you want to save the report as a PDF. Contact your IT department if you do not have a PDF option in your list of printers.

Procedure

1. In the navigation tree, select a machine to display the cases and posts for the machine.
2. Select **Create Report** in the ribbon.

   A new window displays a print preview of the report.
3. Print the report.

12.4 Vibration Analyzer

12.4.1 Launch Vibration Analyzer from Machine Journal

You can launch Vibration Analyzer to show the machine you have selected in Machine Journal.

Prerequisites

Vibration Analysis must be installed on the PC where you are using Machine Journal.

Procedure

1. In the Machine Journal navigation tree, select a machine.
2. Click **Vibration Analyzer** in the ribbon.

Vibration Analyzer opens to this machine in the Location Navigator.

12.4.2 Create a new case from Vibration Analysis

In Vibration Analyzer you can see a list of existing cases for a machine in the **Machine Journal Browser** pane.

You can also create a new case while using Vibration Analyzer.

Procedure

1. In Vibration Analyzer, select a machine in the Location navigator.
2. Select the **Machine Journal Case Browser** tab.

   The tab displays a list of open cases for the selected machine.
3. Select **Add Case**.

Machine Journal opens to the new case for this machine.

4. In Machine Journal, fill in placeholders with new case information:
5. Type a title for the case.
   a) Select values for **Severity** and **Urgency**.
   b) Click **Publish**.

The new case appears in the tree in the left panel.

The user name and current date and time are saved with the new case.

The case status is open.

Related information

Create a new case

12.4.3 Add a new post to a case from Vibration Analyzer

In Vibration Analyzer you can see a list of existing cases for a machine.

You can update a case in Machine Journal by adding a new post while using Vibration Analyzer.

Procedure

1. In Vibration Analyzer, select a machine in the Location navigator.
2. Select the **Machine Journal Case Browser** tab.

   The tab displays a list of open cases for the selected machine.

3. Locate the case you want to edit and select + in the **Add Post** column.

   Machine Journal opens to a new post for this case.

Related information

Add a post to a case

13 Vibration Analyzer

AMS Machine Works Vibration Analyzer is a module of AMS Machine Works. You can use it to diagnose your machines by viewing plots to analyze vibration data collected from devices that are monitoring machines in your site. A wide variety of plots are available such as: Spectrum, Trend, Waveform; but also: Orbit, Shaft Centerline, Cascade, Bode/Nyquist and Full-Spectrum.

You can launch the Vibration Analyzer on the client or server computer where it is installed. You can do the following:

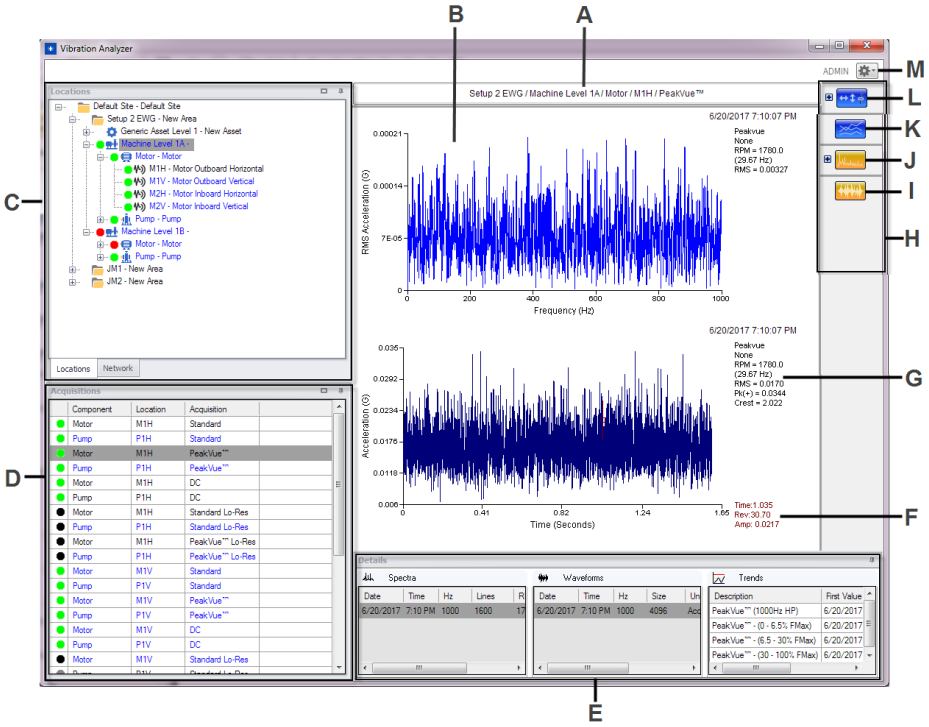
- Click **Start** → **AMS Machine Works** → **Vibration Analyzer**.
- Select a machine train or component in Asset Explorer and click the **Vibration Analyzer** button in the **Home** ribbon.
- Select the Vibration Analyzer icon from the App Switcher.

Related information

Home ribbon

13.1 Vibration Analyzer user interface

Figure 13-1: Vibration Analyzer user interface



The workspace lets you organize your screen to display only information that is relevant to you. It can contain any variation of the following:

A. ***Label for plotting workspace***—*identifies the data currently displayed in the plotting workspace.*
B. ***Plotting workspace***—*displays plots, plot legends, and information about each plot type.*
C. ***Primary navigator***—*displays the Location navigator or Network navigator.*
D. ***Secondary navigator***—*used to select data within the chosen active tree in Primary navigator.*
E. ***Details navigator***—*displays all available measurements for selections from the primary and secondary navigators.*
F. ***Cursor details***—*displays details about the cursor location on the plot.*
G. ***Plot information***—*information about the current plot.*
H. ***Function bar***—*functions and plot types for a given selection in the primary navigator.*
I. ***Waveform***—*functions available for waveform single plot being displayed ; click + or – to expand/collapse.*
J. ***Spectrum***—*functions for spectrum plots being displayed; click + or – to expand/collapse.*
K. ***Trend***—*functions for trend plots being displayed.*
L. ***Common options***—*functions available to all plots; click + or – to expand/collapse.*

M. ***Settings***—*Settings - used to configure selected settings and preferences (e.g. units, server connection and other).*

The Primary, Secondary, and Details navigators are movable windows. Click and drag the navigator title bar to a desired location; re-dock the navigator by dragging it to the default position. Use the pushpin icon to hide the navigator. When a navigator is hidden, a tab displays to the left or at the bottom of the main application window; click this tab to toggle the navigator's display. You can also click the Settings icon and select **Refresh Hierarchies** to return the navigators to their default positions.

Refresh Hierarchies is also used to update the Vibration Analyzer application when changes are made in Asset Explorer. The software prompts you to do this when changes are made. If the user wants to keep their custom Navigator locations, they should exit and re-open the Vibration Analyzer application after edits are made in Asset Explorer, instead of using **Refresh Hierarchies** as prompted.

13.1.1 Locations tab

Use the Locations tab in the primary navigator to select machines you want to analyze.

The Locations tab allows you to browse machines in your site, including measurement point locations. When you have added machines in the Asset Explorer utility, the structure is also reflected in the Locations tabs, including measurement point locations. When you click an item in the Locations tab, the sub-navigators and plots display measurements and functions according to the item selected.

Figure 13-2: Locations tab in primary navigator

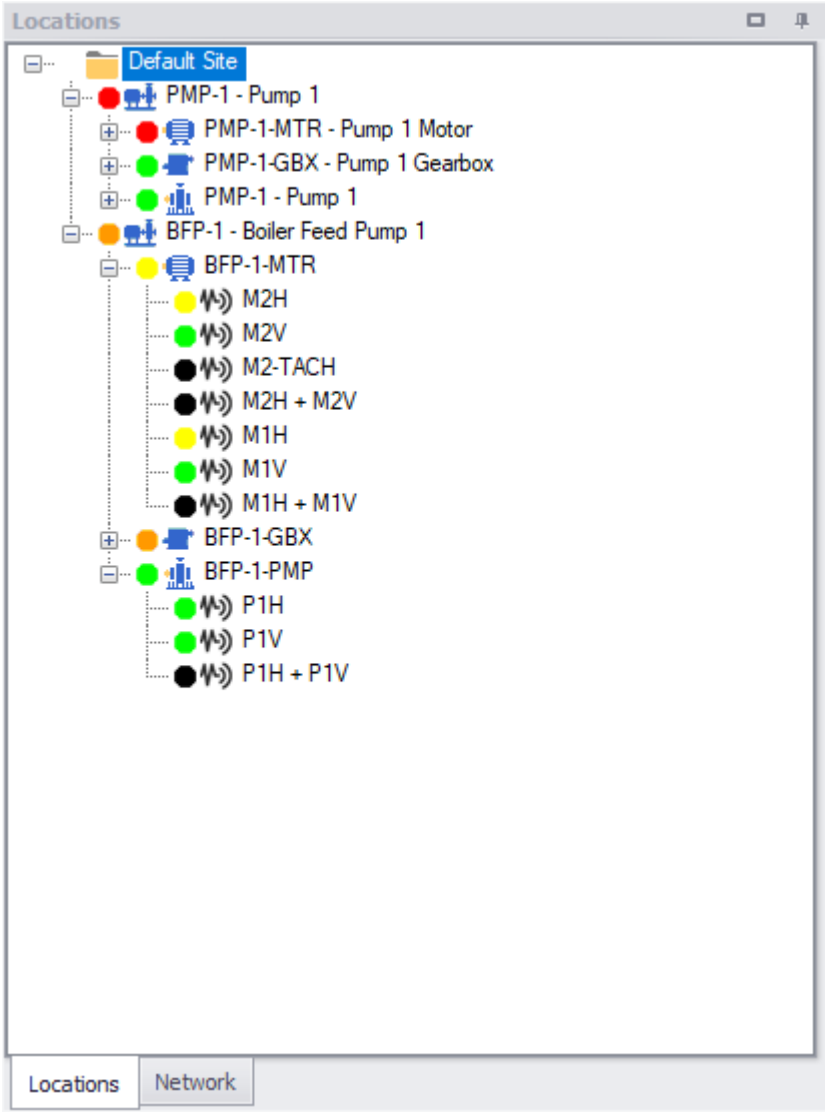


Table 13-1: Location tab bubble states for machine trains

Color	Meaning
Red	Critical Alert
Orange	Warning Alert
Yellow	Advise Alert
Green	Normal, No alert
Grey	Alert not applicable Alert not received

Table 13-1: Location tab bubble states for machine trains *(continued)*

Color	Meaning
Black	Alert Invalid No Data Alert Not Evaluated

Related information

The Location navigator

13.1.2 Network tab

The Network tab displays asset sources (gateways), devices, and the channels of the devices. Clicking on items in the Network tab displays the data acquired by monitoring devices (such as the AMS 9420) in the plotting workspace. Items can be selected within this tree, and based on the Selection Type Preferences settings, the appropriate data will be available for analysis. Select a device or channel in the tree to display the collections available for analysis. The collections are displayed in the Collection tab.

When you have added asset sources and devices in the Asset Explorer utility, the structure is also reflected in the Network tab, including the channels of the devices.

Figure 13-3: Network tab in the primary navigator

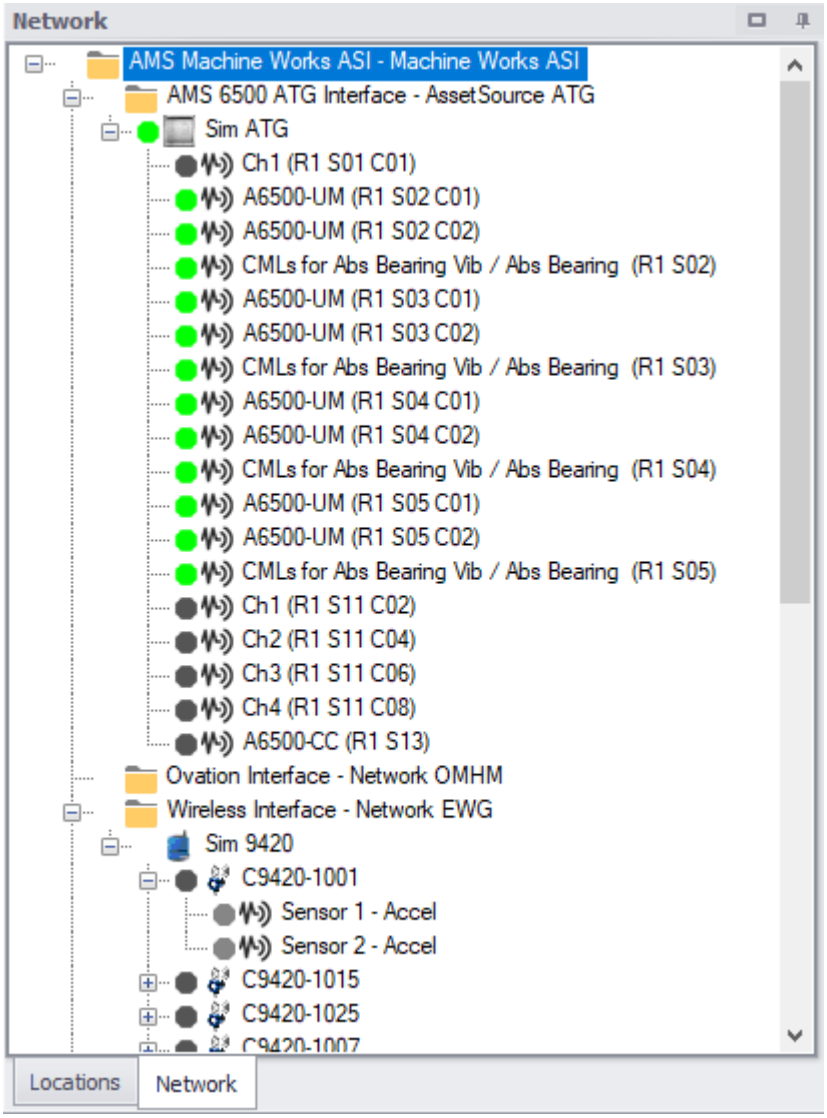


Table 13-2: Network tab bubble states for AMS 6500 ATGs and Ovation Machinery Health Module

Vibration Analyzer Network tab shows colors that indicate a Channel State provided by the AMS 6500 ATG Interface through Status Evaluator.

Color	Channel State
Red	Critical Alert (Called a “Danger Alarm” in AMS Machine Studio for AMS 6500 ATG)
Orange	Warning Alert (Called a “Alert Alarm” in Machine Studio for AMS 6500 ATG)
Yellow	Advise Alert (Not used by AMS 6500 ATG)

Table 13-2: Network tab bubble states for AMS 6500 ATGs and Ovation Machinery Health Module *(continued)*

Color	Channel State
Green	Alert OK (There is an alert defined/enabled and the channel is NOT in alert) Quality Alert (Not used by AMS 6500 ATG)
Grey	Alert not applicable Alert not received Gray is also used for Communications cards, channels with no alerts, or no status has ever been received in Vibration Analyzer from Status Evaluator.
Black	Alert Invalid No Data Alert Not Evaluated

Table 13-3: Network tab bubble states for AMS 9420s and AMS Wireless Vibration Monitors

Vibration Analyzer Network tab shows colors that indicate a Channel State provided by the AMS Machine Works Wireless Interface through Status Evaluator.

Color	Channel State
Red	Danger Alert
Orange	Warning Alert
Yellow	Advise Alert
Green	Normal No alert
Grey	Alert not applicable Alert not received

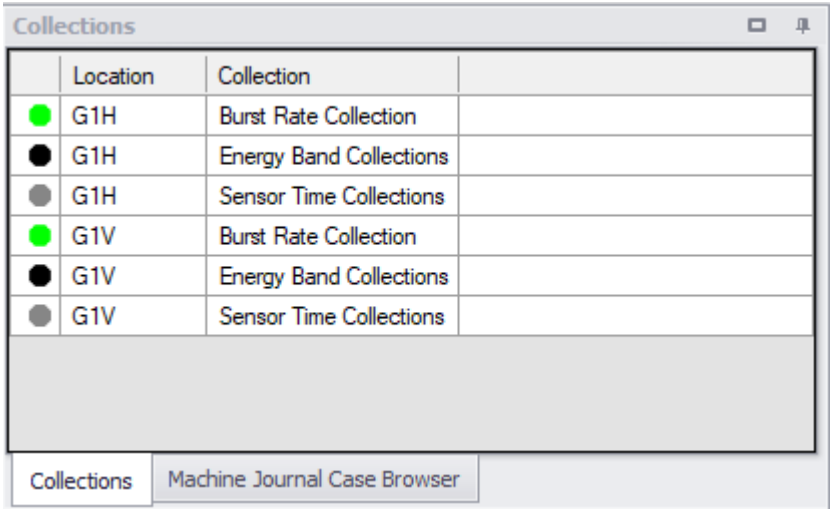
Related information

The Network navigator

13.1.3 Collections tab

When an asset, device, or channel is selected in the Network or Location tab, in the Secondary navigator, the Collections tab displays the multiple types of data collected from the same measurement locations.

Figure 13-4: Collections tab



Note
When multiple collections have been selected to display, the data is grouped by collection.

13.1.4 Function bar controls

Functions available to all plots. Click ⊞ to display all functions.

Button	Function	Description
	Setup Options	Change setup options for all the plots in the plotting workspace.
	Vertical Scale	Enable vertical scaling. Click the left icon (+) to increase the scale and the right icon (-) to decrease the scale.
	Horizontal Scale	Enable horizontal scaling. Click the left icon (+) to increase the scale and the right icon (-) to decrease the scale.
	Horizontal Pan	Enable horizontal panning. Click click the gray left / right arrow icons to pan left and right.
	Annotate Plot	Displays a list of plot annotation options.

Button	Function	Description
	Clear Plot	Clear the plotting workspace. Click the arrow to set the default option for the Clear Plot icon. Choose from Clear Active and Clear All.
	New Window	Launch active plots in a new window. Click one plot or shift-click additional plots to activate plots.
	Print/Print Options	Click the Print icon to print an Image Summary Report. Click the arrow to set the default option for the icon. Choose from Print All, Print Active, and Print Workspace.
	Print Preview	Preview the Image Summary Report in the Report Viewer. Click the arrow to set the default option for the icon. Choose from Print Preview All, Print Preview Active, and Print Preview Workspace.
	Save Image	Save a single plot or plotting workspace as an image. Click the arrow to set the default option for the icon.
	Hot Keys	Launch the Hot Keys list to see the key combinations for features available for the active plotting workspace. Hot Keys vary depending on the plots shown in the plotting workspace.

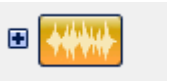
Trend

Functions available for Trend plots. Clicking on the Trend plot icon allows to display (yellow color) or hide (blue color) Trend plots in the plotting workspace. Click + to view all available functions.

Spectrum

Display or hide Spectrum plots in the plotting workspace.

Waveform



Display or hide Waveform plots in the plotting workspace.

13.2 Connect Vibration Analyzer to a different AMS Machine Works server

If you have more than one AMS Machine Works deployment, you can connect Vibration Analyzer to a different AMS Machine Works server. For example, a site might have different plants with AMS Machine Works setup independently on different networks, or service personnel may use the same laptop to connect to different AMS Machine Works servers as they visit plants and perform analysis on different AMS Machine Works servers.

Starting from version 1.6, when you have Vibration Analyzer installed, you can switch the AMS Machine Works server in Vibration Analyzer. This is a convenient option because AMS Machine Works Vibration Analyzer is a windows-based application. This feature allows a single installation of Vibration Analyzer to select from a list of AMS Machine Works servers to connect.

Note
The version of Vibration Analyzer Windows-client application must match the version of the AMS Machine Works server.

Prerequisites

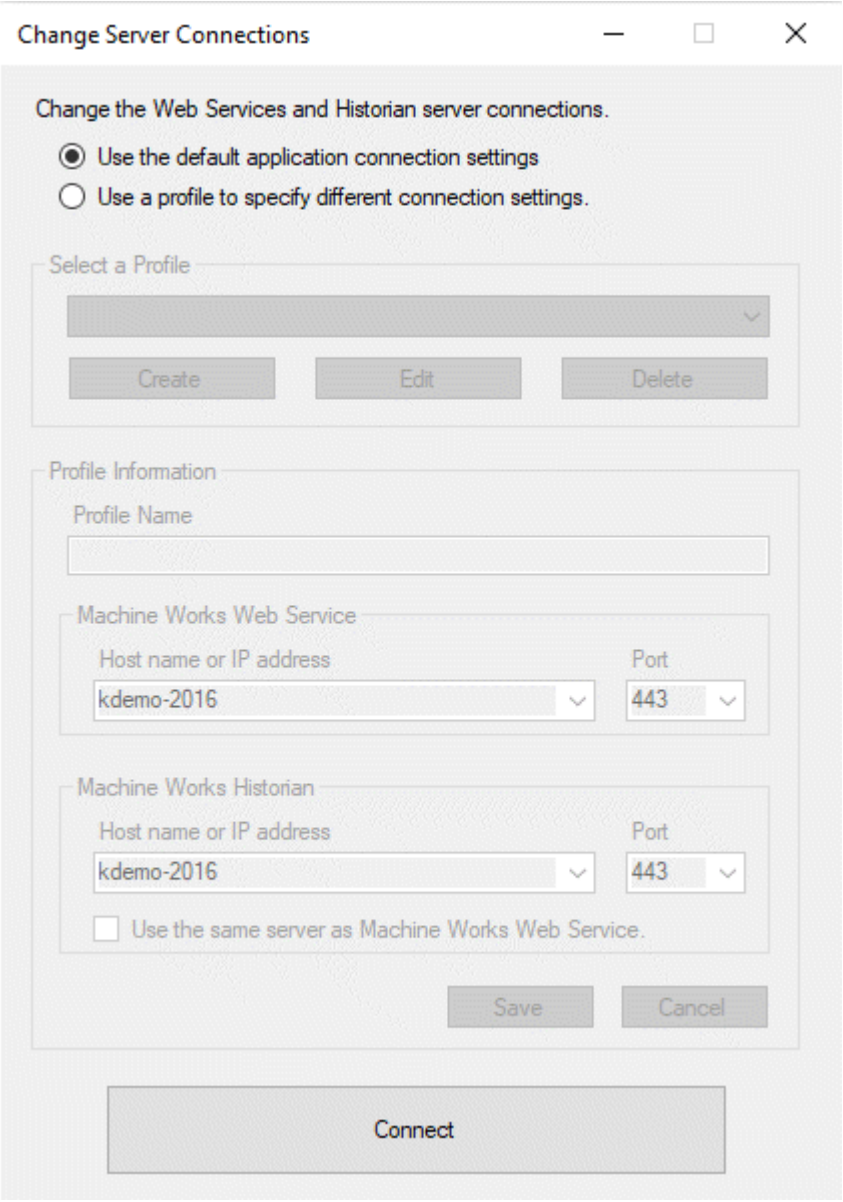
- Refer to your System Architecture drawings or other installation records for information about where AMS Machine Works Web Services and AMS Machine Works Historian are installed. They can be installed on the same server or different server. You need the server connection information before creating a profile for each AMS Machine Works server connection.
- Confirm the version of AMS Machine Works Vibration Analyzer you have installed is compatible with the AMS Machine Works server.
- Confirm the other AMS Machine Works server is available by using your browser to connect to one of the web-based utilities such as Asset Explorer.
- Install the certificate from the AMS Machine Works server on your PC.

Procedure

1. Click and select **Machine Works Server Setting**.

   The **Change Server Connections** dialog appears. By default, the option **Use the default application connection settings** is selected.

Figure 13-5: Change Server Connections dialog



2. To change the server, create a profile for the connection.
   a) Select **Use a profile to specify different connection settings**.
   b) Under **Select a Profile**, click **Create**.
   c) Under **Profile Information**, enter a name for the profile. Emerson recommends using the name of the AMS Machine Works server.
   d) For **AMS Machine Works Web Service**, enter the Host name and Port. The host information for **AMS Machine Works Historian** is automatically updated to the same information, by default.

Note
Only use an IP address if the AMS Machine Works was configured during installation with the **Use IP Address** option. Emerson recommends using a server name instead of an IP address for the setup.

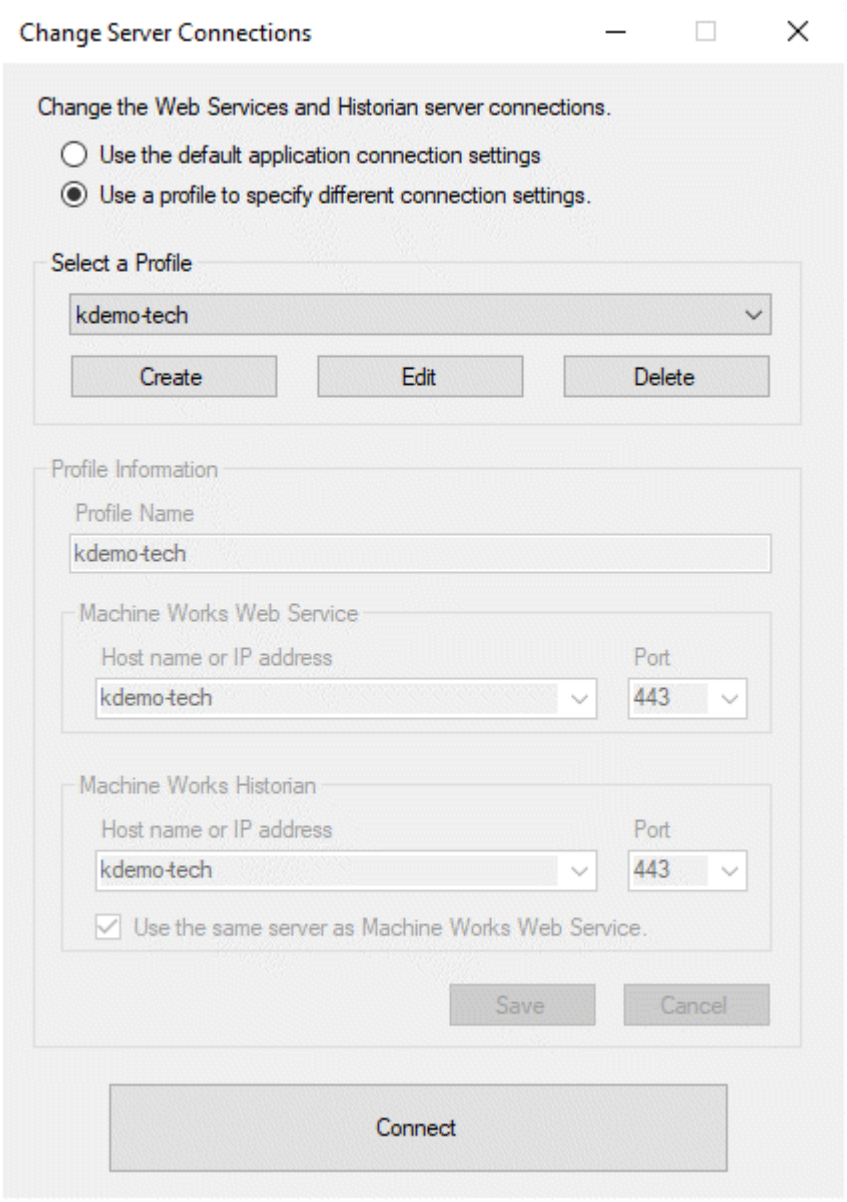
e) If the AMS Machine Works Historian is on a different server, clear the check box beside **Use the same server as AMS Machine Works Web Service**. Then, under **AMS Machine Works Historian**, enter the Host name and Port.

f) Click **Save**.

The profile name appears in the **Select a Profile** menu as the selected profile. You can edit this information later by clicking **Edit**. If you need to delete the profile, click **Delete**.

3. Under **Select a Profile** select the profile name from the menu.

Figure 13-6: Change Server Connections dialog



4. Click **Connect**.

   The **Connect** button is only active if a profile is selected.

Vibration Analyzer displays information from the different instance of AMS Machine Works. If there is a problem connecting to the server, an error message displays and prompts you to edit the configuration settings.

13.3 Active plots

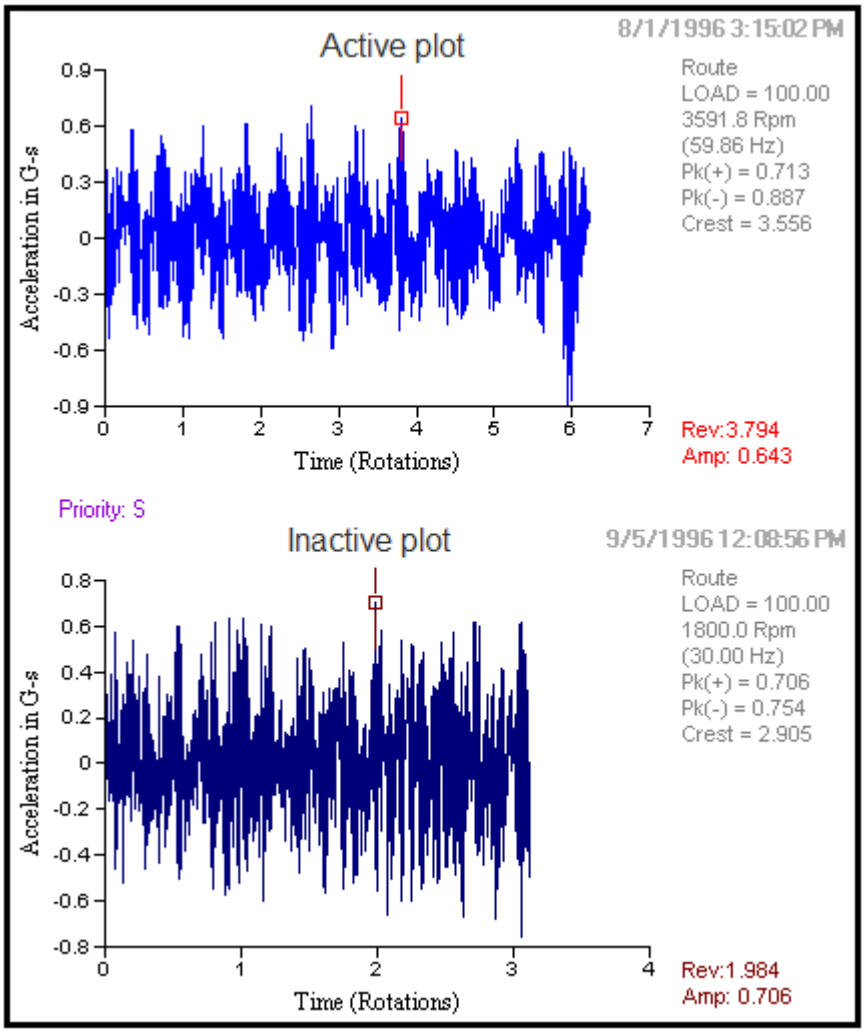
When you activate a plot, you can perform functions and view details about a specific point on the plot.

Click on a plot to make it an active plot. You can have more than one active plot by holding the **Shift** or **Ctrl** key and clicking on the plots you want to be active. You can make all plots in the plotting area active by pressing **Ctrl** + **A**.

Most function bar options and hot key commands only operate on an active plot. Some exceptions are **Clear Plot**, **Print**, and **Print Preview**, which can be set to work on either active or all plots. The color of the function bar icon is changing from blue to orange if you turn plot visibility to **ON** from **OFF**.

By default, active plots are bright blue and inactive plots are dark blue.

Figure 13-7: Active plot vs inactive plot



13.4 Cursor modes

The available cursor modes are: single, reference, difference, harmonic, and sideband. Depending on the plot, one or more cursor modes are available.

Cursor mode	Description
Single	A single cursor helps you identify a specific point on the plot. A square identifies a single cursor.
Reference	A reference cursor is used to calculate the delta (Dfrq) between the primary cursor and the point you select as the reference cursor. A triangle identifies a reference cursor.
Difference	Difference cursors are available on waveform plots. A circle identifies a difference cursor.
Harmonic	Harmonic cursors are available on spectrum and waveform plots. A circle identifies a harmonic cursor.
Sideband	Sideband cursors are only available for spectrum plots. A diamond identifies a sideband cursor.

13.4.1 Mark a single cursor

Procedure

Click on an active plot.
A cursor appears at the nearest data point. The exact cursor position displays in the lower right-hand corner of the plot legend and updates as the cursor moves.

Related information

Cursor modes

13.4.2 Move a cursor

There are four ways to move a cursor.

Procedure

- Press and hold **Ctrl** while using the left or right arrow key to move the cursor to a short distance (micro-cursor movement).
- Press the left or right arrow keys to move from peak to peak.
- Use your mouse by dragging and dropping the cursor or clicking on a different point on the plot to move the cursor.
- On your keyboard, Press **Home** to move the cursor to the start of the data, or press **End** to move the cursor to the end of the data.

Related information

Cursor modes

13.4.3 Mark cursors on a single spectrum plot

Procedure

1. Select a data point on the spectrum plot.
2. Right-click the plot and select **Mark Cursors** → **Add**.
   The cursor is marked by a unique symbol. The symbol type changes each time a new cursor is marked.

Note
To clear marked cursor symbols, right-click the plot and select **Mark Cursors** → **Clear**.

Related information

Cursor modes

13.4.4 Set a reference cursor

If you have a single cursor placed on a plot, you can set a reference cursor on trend, spectra, cascade, and waveform plots.

Procedure

1. Mark a single cursor by first clicking on an active plot. A cursor appears at the nearest data point. The exact cursor position displays in the lower right-hand corner of the plot legend and updates as the cursor moves.
2. Press **Alt** and click on the plot again.
   A second cursor, the reference cursor, appears at the nearest data point. The primary cursor remains and can be moved. The plot legend displays the position of the reference cursor, the primary cursor, and their delta in the X dimension.

3. You can also right-click the plot and select **Set Reference Cursor** to place the reference cursor exactly at the position of the primary cursor.
   This is useful when measuring the precise frequency difference between two peaks.

13.4.5 Display a harmonic cursor

Harmonic cursors are available on all spectrums and waveforms plots.

Procedure

1. Mark a single cursor by first clicking on an active plot.

A cursor appears at the nearest data point. The exact cursor position displays in the lower right-hand corner of the plot legend and updates as the cursor moves.

2. Right-click on the plot and select **Cursor Type** → **Harmonic**.

13.4.6 Display a sideband cursor

Sideband cursors are only available for spectrum plots.

Procedure

1. Set a reference cursor.
2. Right-click the plot and select **Cursor Type** → **Sideband**.

N sideband cursors are displayed at intervals of the delta of the reference and primary cursor. You can set the value for N in the Spectrum tab of the Setup Options Editor. See Related information for details.

Related information

Spectrum tab

13.4.7 Display difference cursors

Difference cursors apply only to waveform plots. On a plot, they are used for measuring time difference between selected points.

Procedure

1. Set a reference cursor.
2. Right-click the plot and select **Cursor Type** → **Difference**.

The primary cursor can be moved relative to the reference cursor, and cursor information is displayed for both cursors and delta spacing.

13.4.8 Use linked cursors

Linked cursors let you synchronize the movement of cursors on multiple active plots. Generally, only plots of the same type have linked cursors.

Procedure

1. Display multiple plots of the same type either together or separately.
2. Mark a cursor on one of the plots.
3. Press **Ctrl** and click the plots you want to activate.

When you move a cursor on one active plot, a cursor appears on all other active plots at the same location and moves simultaneously.

13.5 Zoom in or out on a plot

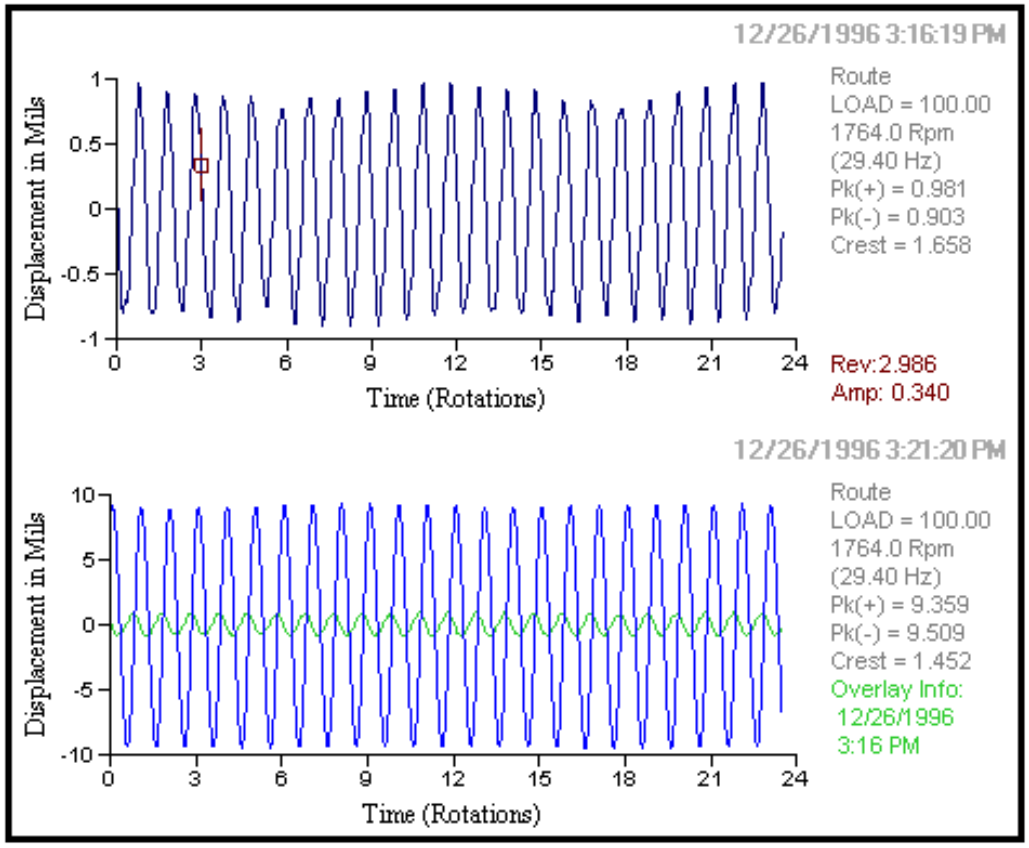
Procedure

1. To zoom in, right-click and hold on the plot, and select the area you want to zoom. A dotted box shows the selection area.
2. Release the right mouse button. The plot zooms in to display only the portion of the plot you selected.
3. To zoom out, right-click near the axis of a plot and select **Zoom Out**. The X and Y axis can be zoomed in and out separately. Zoom to the original view by clicking the green scale arrow icons.

13.6 Overlay

An overlay lets you compare two plots of the same type using similar units. You can generate an overlay by dragging and dropping one plot onto another plot. All plot types except for cascade plots support overlays.

The image below illustrates two waveform plots with the same amplitude units. The top waveform was dragged and dropped to the bottom waveform to create an overlay. The data from the top waveform is displayed in green. This color can be changed in the **Plot Options** tab of the **Setup Options Editor** dialog.



For all plot types except spectrum plots, a plot can only have one overlay at a time. If another plot is dragged to a plot that already has an overlay, the current overlay is replaced.

For spectrum plots, the default view of overlay data can be set in the **Spectrum** tab of the Setup Options Editor dialog. Multiple overlays can be displayed by pressing the **Ctrl** key and dragging and dropping multiple spectrum plots to a target spectrum plot.

The overlay function generally requires plots to have the same amplitude units. However, you can overlay spectrum, and waveform plots even if the amplitude units are different. Overlay units will be converted to the units of the target plot.

You can view information about the overlay by right-clicking the plot and selecting **Display Overlay Info**.

Related information

Plot Options tab
Spectrum tab

13.7 Annotate plot

Mark plots with annotations to point out specific areas of interest and make notes.

Procedure

1. Click on the **Common Controls** function bar, or right-click on a plot and select **Annotate Plot**.

   The **Adjust Annotations** dialog appears.

2. Click the icon for the type of annotation you want to add.

Icon	Option	Description
	New Line Annotation	Adds a new line to the plot.
	New Rectangle Annotation	Adds a new rectangle to the plot.
	New Ellipse Annotation	Add a new ellipse to the plot.
	New Text Annotation	Adds new text to the plot.
	Advanced Editing Tools	Lets you specify additional details for the annotation you selected.

3. Click on the annotation and adjust the size by dragging a sizing handle. You can also move the annotation by dragging it.

4. Click ✔.

   Click ✕ to delete a selected annotation or click to delete all annotations on the plot.

   Note
   Annotations are NOT saved. Save the plotting workspace as an image if you want to keep the annotations.

13.8 Configure the plotting workspace

Change the type of information to display automatically when you make a selection in the Navigator.

Procedure

1. Click and select **Selection Type Preferences**.
   The **Selection Type Preferences** dialog appears.
2. Expand a selection type and select an option to modify.
   Display settings appear on the right pane.
3. Modify your desired settings.

   Note
   Click **Defaults** to reset settings to default values.

4. Click **OK**.

13.8.1 Set the line frequency

Procedure

1. Click and select **General Settings**.
2. Enter a value and click **OK**.

13.8.2 Set unit preferences for the Vibration Analyzer

Procedure

1. Click and select **Units Preferences**.
2. Use the drop-down menu to configure unit modes and dB references for the following:
   - Acceleration
   - Velocity
   - Displacement
   - Sound Pressure

- General Dynamic
- HFD
- Motor Current
- Flux Data
- Shaft Voltage
- Shaft Current

3. For **Data Display Units**, select **English** or **Metric**.
4. Click **OK**.

13.9 Customize display for plots

Procedure

1. From the primary navigator, select a measurement point to display its plot.
2. Right-click on the plot and select **Setup Options**. You can also click from the **Common Controls** function bar.
   The **Setup Options Editor** dialog appears.
3. Select from these tabs and make your desired changes.
   - **Trend**—customize display for trend plots.
   - **Plot Options**—customize display for all plots.
   - **Spectrum**—customize display for spectrum plots.
   - **Waveform**—customize display for waveform plots.
   - **Composite Trend**—customize display for composite trend plots.
4. Click **OK**.

Related information

Plot Options tab
Trend tab
Spectrum tab
Waveform tab
Composite Trend tab

13.9.1 Plot Options tab

Right-click on the plot and select **Setup Options** → **Plot Options tab**. The Plot Options tab provides settings available for most plot types. The user can change: color settings, labeling preferences, fault frequencies display options, and image saving options.

Plot Color Setup

Select a color for different element types displayed on a plot. Click **Defaults** to reset the color settings to default values.

Miscellaneous

Miscellaneous portion of the Plot Options tab contains the options for Fault Frequencies and Saved Images.

Option	Description
Source	Fault frequencies can come from different sources. Select All, Configuration, or Measurement Location.
Format	Select either Lines or Lines and Values. Lines only display fault frequency lines on the plot while Lines and Values display fault frequency lines on the plot and the value on the plot legend.
Line Thickness	Specify the thickness of the line used to mark the fault frequency position on the data plot. Select either Thin or Thick.
Match Tolerance (%/Order)	Specify the percentage per order of tolerance to be applied to consider the frequency a match.
Specify Colors	Change plot colors for specific components of the plot.
Default Frequency Units	Set the default frequency units. Select either Hz or CPM.
Format for Speed Values	Set the unit for speed. Select either RPM or RPS.
Plot Font Size	Set the size of the text displayed in the plot. Select Small, Medium, Large, or Extra Large. More information is displayed if a smaller font is chosen.
Auto-hide Function Bar	Mark the box to automatically hide the Common Controls function bar when it is not used. Hiding the function bar increases the size of the plot area.

Saved Images

Each plot type can be saved as an image file. These settings are:

Option	Description
File Format	Set the default file format for images. Select: .bmp, .jpeg, .png, or .emf.
Manually Enter Filename	Mark the box to be prompted to enter a filename when saving an image.
Link Image to Machine Journal Entry	Select this option to link images to a Journal entry. **Note** Machine Journal is not supported in this release.
Save Image to File on Local Machine	Save images on your computer in the database system.
File Save Location	Location of a file on a Local Machine. The default location is `C:\temp`. Click **Browse** to select a different location.
Defaults	Resets all settings in this section to the default values.

13.9.2 Trend tab

Right-click on the plot and select **Setup Options** → **Trend tab**. The Trend tab displays options for trend plots.

Time Axis Options

Option	Description
Fixed Scale Enabled	Select the check box to limit the range of the Time axis to a specified starting and ending position.
Starting Date	If the Fixed Scale Enabled check box is selected, choose the starting date.
Ending Date	If the Fixed Scale Enabled check box is selected, choose the ending date.
Keep End Date Set to Current on Restart	Select the check box to match the end date with the current date.
Defaults	Resets all Time Axis options to default values.

Amplitude Axis Options

Option	Description
Independent Scaling	Allows each plot to scale independently to maximize data resolution.
Autoscale Across Plots	Scales similar data plots to the same amplitude axis scale to make amplitude differences more visually obvious.
Fixed Scale Enabled	Limits the Amplitude Axis range based on specified lower and upper amplitudes for selected units. Enter the lower scale and upper scale values. The lower scale sets the lower amplitude and the upper scale sets the upper amplitude.
Defaults	Resets Amplitude Axis options to default values.

Display Options

Option	Description
Display Grid Lines	Displays grid lines on plots.
Update Spectrum/ Waveform with Trend Cursor	Select the check box to allow the trend point where the cursor is positioned to simultaneously display the time-associated spectrum and waveform, if available.
Alarms	Select the check box beside each alarm level you want to display.
Defaults	Resets Display options to default values.

13.9.3 Spectrum tab

Right-click on the spectrum plot and select **Setup Options** → **Spectrum tab**. The Spectrum tab displays options for spectrum plots.

Frequency Axis Options

Option	Description
Units	Select Hz, CPM, or Orders as the unit used for the frequency axis.
Type	Select either Linear or Log as the scale.
Fixed Scale Enabled	Select the check box to limit the frequency axis range to a specified lower and upper frequency.
Lower Frequency	Set the lower frequency for the fixed scale.
Upper Frequency	Set the upper frequency for the fixed scale.
Defaults	Resets Frequency Axis options to default values.

Amplitude Axis Options

Option	Description
Units	Select Stored Units, Acceleration, Velocity, or Displacement as the unit used for the amplitude axis.
Type	Select either Linear or Log as the scale.
Independent Scaling	Allows each plot to scale independently to maximize data resolution.
Autoscale Across Plots	Scales similar data plots to the same amplitude axis scale to make amplitude differences more visually obvious.
Fixed Scale Enabled	Limits the Amplitude Axis range based on specified lower and upper amplitudes for selected units. Enter the lower scale and upper scale values. The lower scale sets the lower amplitude and the upper scale sets the upper amplitude.
Defaults	Resets Amplitude Axis options to default values.

Display Options

Option	Description
Harmonic Cursor Markers	Enter the number of harmonic cursors to display. The default value is 8.
Peaks to List	Enter the number of peaks to be listed when the peak list viewer is displayed. The default value is 24.

Option	Description
Sideband Cursor Markers	Enter the number of sideband cursor markets to display. The default value is 5.
Display Grid Lines	Displays grid lines on plots.
Automatic Overlay Type (Periodic and Online)	Lets you display an automatic overlay. Select None, Reference, or Previous.
Limit Type to Plot	Lets you display an alarm type on the plot. Select None, Warning, Alert, Fault, or Envelope.
Apply Runout Compensation When Available	If runout compensation is available (either stored in a particular archive or with the database), it allows the compensation to be applied to the display of the archive, live/replay data, or both.
Defaults	Resets Display options to default values.

Peak Label Options

Option	Description
Displayed Information	Choose the type of information to be displayed. Select Frequency, Amplitude, or Both.
Automatic Peak Labelling	Select the check box to automatically display peak levels.
Number of Peaks to Label	If Automatic Peak Labelling is selected, specify the number of peaks to label. The default value is 5.

Multiple Spectrum Options

Option	Description
Highlight Active Trace	Highlights the active spectrum in a multi-spectral plot.
Display Floor Cursor	Select the check box to display a floor-type cursor.
Display Plane Cursor	Select the check box to display a plane-type cursor.
Opacity	If Display Plane Cursor is selected, enter the opacity of the plane cursor.
Z-Axis Angle	Enter the Z-axis angle of spectral data in multi-spectral plots.
Overlap Percentage	Enter the overlap percentage of spectral plots displayed in multi-spectral plots.
Plot Sequence	Lets you choose the direction of time for spectral data displayed in multi-spectral plots. Select either Top Down or Bottom Up.
Defaults	Resets Multiple Spectrum options to default values.

13.9.4 Waveform tab

Right-click on the waveform plot and select **Setup Options → Waveform tab**. The Waveform tab displays options for waveform plots.

Time Axis Options

Option	Description
Units	Select either time or revolutions as the unit used for the time axis. Revolutions do not apply to live waveforms.
Independent Scaling	Allows each plot to scale independently to maximize data resolution.
Autoscale Across Plots	Scales similar data plots to the same time axis scale to make time differences more visually obvious.
Fixed Scale Enabled	Limits the range of Time or Revolution to a specified lower and upper value.
Starting Position	Set the starting position for the fixed scale.
Ending Position	Set the ending position for the fixed scale.
Defaults	Resets all Time Axis options to default values.

Amplitude Axis Options

Option	Description
Units	Select Stored Units, Acceleration, Velocity, or Displacement as the unit used for the amplitude axis.
Independent Scaling	Allows each plot to scale independently to maximize data resolution.
Autoscale Across Plots	Scales similar data plots to the same amplitude axis scale to make amplitude differences more visually obvious.
Fixed Scale Enabled	Limits the Amplitude Axis range based on specified lower and upper amplitudes for selected units. Enter the lower scale and upper scale values. The lower scale sets the lower amplitude and the upper scale sets the upper amplitude.
Defaults	Resets Amplitude Axis options to default values.

Display Options

Option	Description
Number of Cursor Markers	Sets the number of cursor markers to display. The default value is 5.
Mark Normalizing Frequency	Displays marks for the normalizing frequency.

Option	Description
Plot in Circular Format	Displays the waveform in circular format rather than X-Y format.
Display In Single Column	Displays the analysis pane in a single column.
Display Grid Lines	Displays grid lines on plots.
Display Alarm Levels	Displays alarm levels on waveform plots. Selecting this check box enables the four fields below.
Maximum Peak Acceleration Maximum Peak Velocity Maximum Peak Displacement Maximum Crest Factor	Enter the waveform alarm levels to generate waveform alarms for points that do not have measure waveform analysis.
Defaults	Resets Display options to default values.

Filter Settings

Option	Description
Acceleration	Select a filter for each field. The filters are: • None—No filter is applied to the data. • 1x—A 1xRPM filter is applied to the data. • 2x—A 2xRPM filter is applied to the data. • 3x—A 3xRPM filter is applied to the data. • Custom—A custom filter is applied to data. If any filter is selected, type of filter can be set to Bandpass or Lowpass. The custom filter is defined by Custom Value - number of harmonic of rotation speed.
Velocity	
Displacement	
General Dynamic	
Defaults	Resets all Filter Settings options to default values.

13.9.5 Composite Trend tab

Right-click on the composite trend plot and select **Setup Options → Composite Trend tab**. The Composite Trend tab display options for composite trend plots.

Time Axis Options

Option	Description
Fixed Scale Enabled	Select the check box to limit the range of the Time axis to a specified starting and ending position.
Keep End Date Set to Current on Restart	Select the check box to match the end date with the current date.

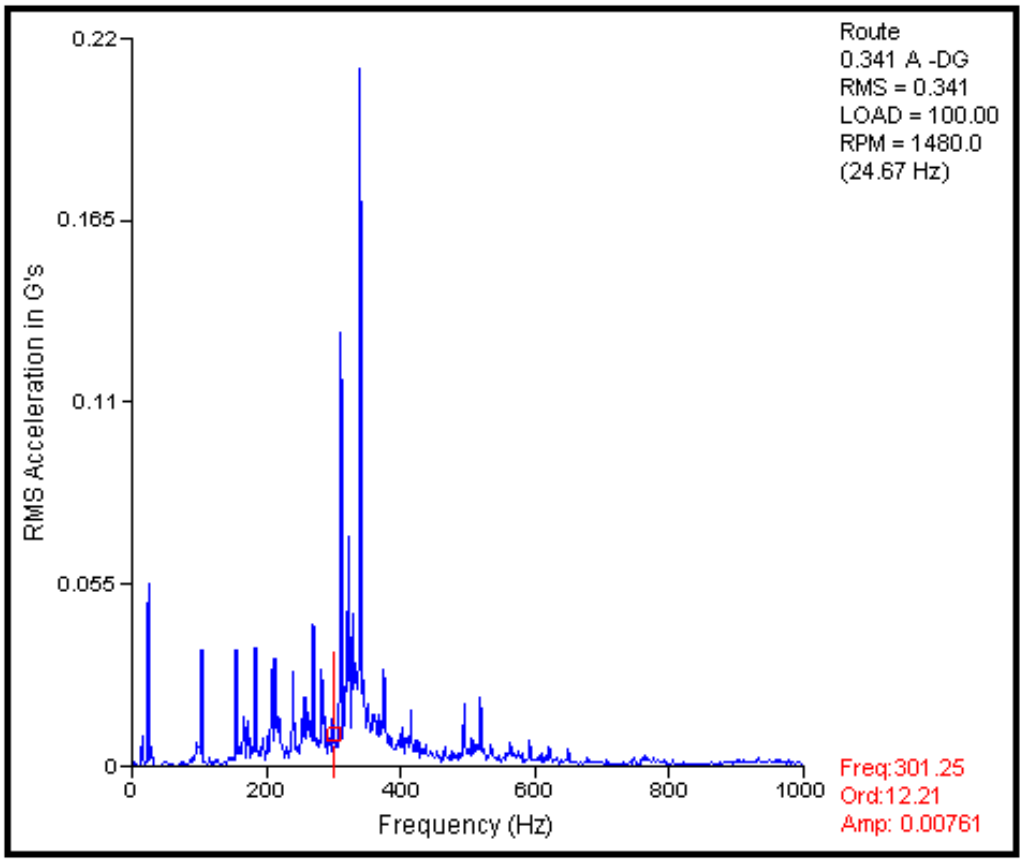
Display Options

Select the **Display Grid Lines** check box to display grid lines on all composite trend plots.

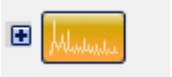
13.10 Spectrum plots

A spectrum plot is a graphical representation of vibration amplitudes in the frequency domain.

To view a spectrum plot, click on a measurement point or channel in the primary navigator. In the Details navigator, under the Spectra table, select a date/time of interest.



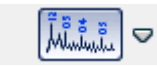
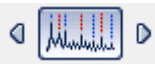
13.10.1 Spectrum function bar



The spectrum function bar is available when:

- a spectrum plot is the only open plot
- a spectrum plot is selected in a plot viewer with multiple plots

Click ⊞ to display all functions.

Button	Function	Description
	Cursor Type	Click to toggle cursor types.
	Peak Locate	Click to locate a peak.
	Label Peaks	Click to label peaks. Click the arrow to label the primary cursor or all cursors.
	Fault Frequencies	Click to open the Fault Frequency List Viewer. Click the left or right buttons to show the previous or next fault frequency.
	Peak List	Click to open the Peak List Viewer. Click the left or right buttons to show the previous or next peak.
	Harmonic Family List	Click to open the Harmonic Family Viewer. Click the left or right buttons to show the previous or next harmonic family.

Note
For multiple spectrum plots, only the Cursor Type, Peak List, and Harmonic Family buttons are displayed.

13.10.2 Display calculated trend from single spectra, multiple spectrum, or cascade plots

Procedure

1. Mark a cursor on the plot.
2. Right-click and select **Display Calculated Trend** → **Primary Cursor Location**.
   The **Primary Cursor Amplitude Trend** dialog is displayed.

Notes

- If a single cursor is marked on the plot, a calculated trend for the frequency or order is displayed.
- If the plot has a reference cursor and a primary cursor, an additional option allows the calculation of a trend for the spectral band bounded by cursors.
- For single spectrum plots, the displayed trend includes a data point for all route spectra present on the current measurement point.
- For multiple spectrum and cascade plots, the generated trend plot includes data points only for the displayed data.

13.10.3 Peak List Viewer

To display the Peak List Viewer, click on the Spectrum function bar.

Use the Peak List Viewer to:

- Display detailed information about peaks in a spectrum plot.
- Select specific peaks to print detailed information.
- Select specific peaks to label on the plot.

13.10.4 Display harmonic family list

Procedure

1. Open a spectrum plot.
2. Click on the Spectrum function bar.
   The **Harmonic Family Viewer** dialog appears.
3. Select a harmonic family or difference family.
   The plot displays your selection.
4. You can also use the left or right buttons to display harmonic families or difference families.

13.10.5 Display fault frequencies

You can display fault frequencies in autocorrelation plots, waveforms, and spectra.

Procedure

1. Open a spectrum or waveform plot. To open autocorrelation plot right click on waveform plot and choose **Autocrrelate**.
2. Expand the Spectrum or Waveform function bar.
3. Click .
   The **Fault Frequency List Viewer** dialog appears.
4. Select a fault frequency.
   The plot displays the selected fault frequency.
5. Select **Keep Frequency Displayed** if you want the plot to always display your chosen fault frequency.
   A checkmark appears beside the selected fault frequency.

   Note
   You can select multiple fault frequencies to be always displayed.

6. Otherwise, click **Clear Displayed Frequencies** if you do not want the plot to show fault frequencies.

   Note
   You can also click the left or right buttons to view the previous or next fault frequency without opening the Fault Frequency List Viewer dialog.

13.10.6 Match the fault frequency of a cursor location

AMS Machine Works compares all fault frequencies (including harmonics) to the current cursor location. If the difference between the cursor frequency and a given fault frequency is less than the match tolerance specified in the Plot Options tab, the frequency will be considered a match.

Procedure

1. Activate a spectrum plot.
2. Mark a cursor to identify the location you want to match.
3. Press **K** on your keyboard.
   Matches display on the plot for the current cursor.

13.10.7 Match any available fault frequency

You can find a match from the entire peak list to any of the available fault frequencies. If the difference between the frequency of a peak in the peak list and a given fault frequency is less than the match tolerance specified in the Plot Options tab, the frequency will be considered a match.

Procedure

1. Activate a spectrum plot, but do not place a cursor.
   If you have a cursor on the plot, remove the cursor.
2. Press **K** on your keyboard.
   Matches display on the plot for the entire peak list.

13.10.8 Locate peaks

When you mark a cursor, the cursor may be near the peak, on a slope instead of a peak. Use this function to move the cursor so that it is on a precise peak. For example, it can be used to determine the exact frequency and amplitude of a peak.

Procedure

1. On a spectrum plot, place the cursor on top of the desired peak by clicking near the peak.
2. Click on the Spectrum function bar or right-click on the plot and select **Locate Peak**.

   Note
   To remove a peak, right-click on the plot and select **Remove Peak**.

13.10.9 Label peaks on single spectrum plots

If you have located peaks on a spectrum plot, you can label the peaks. You can label the primary cursor or all cursors. Use the following methods:

Procedure

- To label the primary cursor, right-click on the plot and select **Label Peak → Primary Cursor**. You can also use the Label Peaks button on the Spectrum function bar. Click the down arrow and select **Label Primary Cursor**.
  The primary cursor is labeled with the horizontal axis value of the peak.
- To label all cursors, right-click on the plot and select **Label Peak → All Cursors**. You can also use the Label Peaks button on the Spectrum function bar. Click the down arrow and select **Label All Cursors**.
  All cursors are labeled with the horizontal axis value of the peaks.

13.10.10 View multiple spectra in one plotting workspace

Multiple spectra plots can be viewed in the plot area together or separately.

Procedure

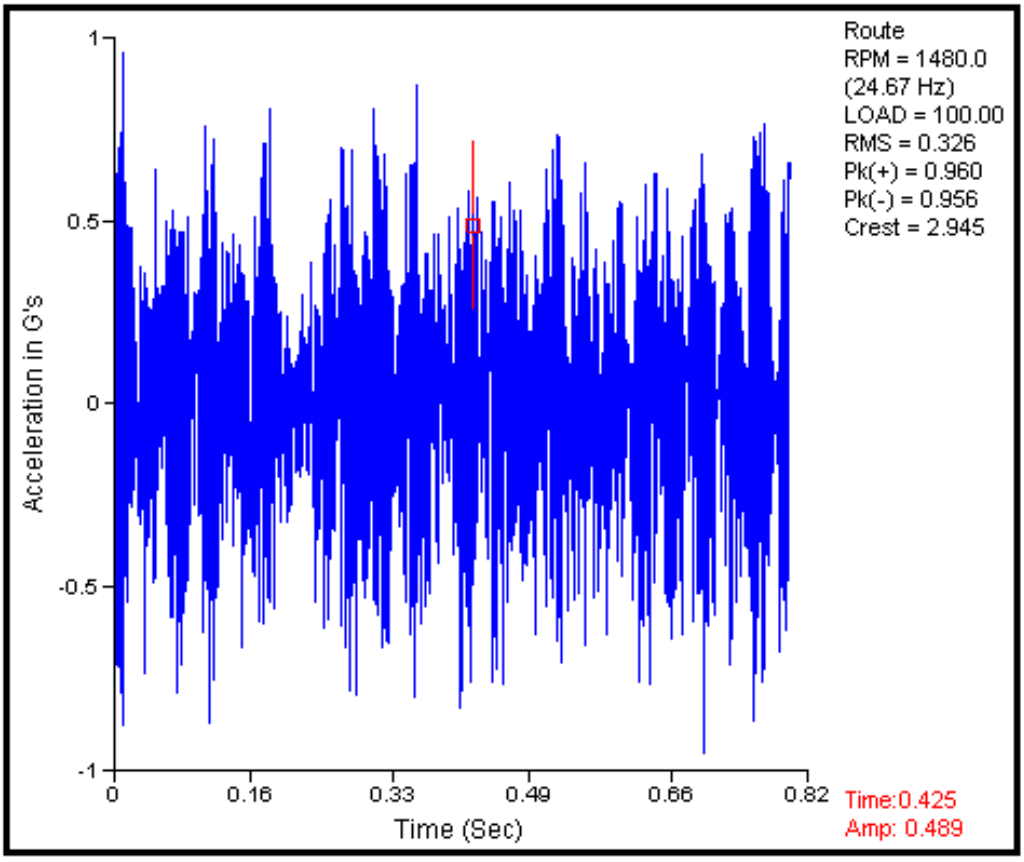
1. Use the Details navigator to find a measurement point.
2. Press **Shift** and click on measurement points to select a range of points. You can also press **Ctrl** and click more than one measurement point to select multiple, specific measurement points.
   The plots appear separately on the plotting workspace.
3. Right-click on the plotting workspace and select **Display Spectra Together**.

Note
To change the plot display back to separate plots, right-click and select **Display Spectra Separately**.

13.11 Waveform plots

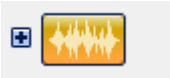
A waveform plot is a graphical representation of how the vibration level changes with time.

To view a waveform plot, click on a measurement point or channel in the primary navigator. In the Details navigator, under the Waveform table, select a date/time of interest.

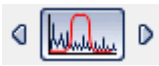


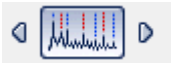
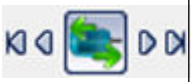
13.11.1 Waveform function bar

Functions for waveform plots.



Click ⊞ to display all functions.

Button	Function	Description
	Cursor Type	Click to toggle cursor types (for example, Single, Difference, and Harmonic).
	Mark RPM	Click to display RPM markers. Use the arrow to select **Toggle Markers** or **Set Markers**. **Toggle Markers** displays or hides the RPM markers. **Toggle Markers** synchronizes the RPM markers with the current cursor location.
	Filter Options	Click the left or right button to show the previous or next filter type. You can select all the available options for band-pass and low-pass filters.

Button	Function	Description
	Fault Frequencies	Click to open the Fault Frequency List Viewer. Click the left or right buttons to show the previous or next fault frequency.
	Peak List	Click the left or right buttons to show the previous or next peak.
	Set Rpm	Click to open pop-up window allowing to set correct RPM speed. Cursor can be used to identify RPM value.
	Toggle Display Format	Click to change the plot display. You can view a waveform in standard X/Y format or in Circular format.
	Toggle All/One Revolutions	Click to display all revolutions or one revolution at a time. When displaying one revolution, click the left or right arrows to display the previous or next revolution. Click the first or last arrows to show the first or the last full revolution (on some data plots, clicking the arrow again will show the remaining "partial" revolution"). When displaying all revolutions, click the arrows to step through each revolution with the cursor.
	Play Audio	Click to open the Waveform Audio Replay dialog and listen to an audio recording of the waveform.

13.11.2 Use micro-step cursor on waveform plots

Procedure

1. Click on a plot.
2. On keyboard press **Ctrl+LEFT ARROW** or **Ctrl+RIGHT ARROW** to move through different data points.

13.11.3 Display fault frequencies

You can display fault frequencies in autocorrelation plots, waveforms, and spectra.

Procedure

1. Open a spectrum or waveform plot. To open autocorrelation plot right click on waveform plot and choose **Autocrrelate**.
2. Expand the Spectrum or Waveform function bar.
3. Click .
   The **Fault Frequency List Viewer** dialog appears.
4. Select a fault frequency.
   The plot displays the selected fault frequency.

5. Select **Keep Frequency Displayed** if you want the plot to always display your chosen fault frequency.
   A checkmark appears beside the selected fault frequency.

   Note
   You can select multiple fault frequencies to be always displayed.

6. Otherwise, click **Clear Displayed Frequencies** if you do not want the plot to show fault frequencies.

   Note
   You can also click the left or right buttons to view the previous or next fault frequency without opening the Fault Frequency List Viewer dialog.

13.11.4 Play waveform audio

Procedure

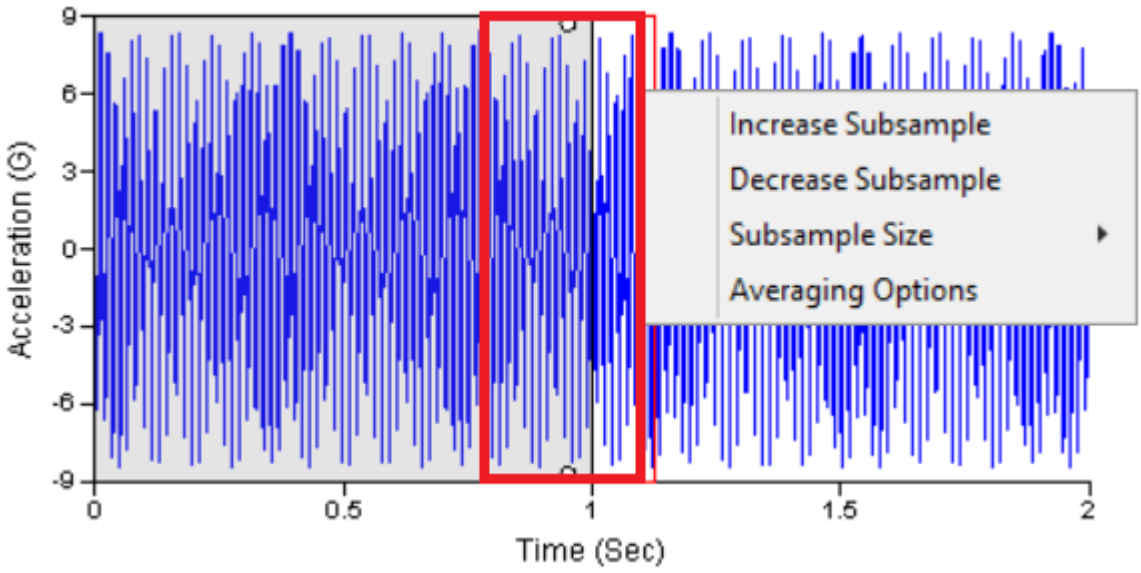
1. On a waveform plot, click
   The on the waveform function bar. **Waveform Audio Replay** dialog is displayed.
2. Click to play and operate the waveform audio recording.
3. You can also save a copy of the audio file by clicking .
   The **Save Waveform Audio File** dialog is displayed. Browse to your selected folder and click **Save**.

13.11.5 Replay a waveform

This function is available for Transient Waveforms. When you reply a transient waveform you can watch the plot and associated measurements changing in the plotting workspace. It is useful for analyzing vibration behavior of machine during e.g. run-up, passing of machine through resonance, etc.

Procedure

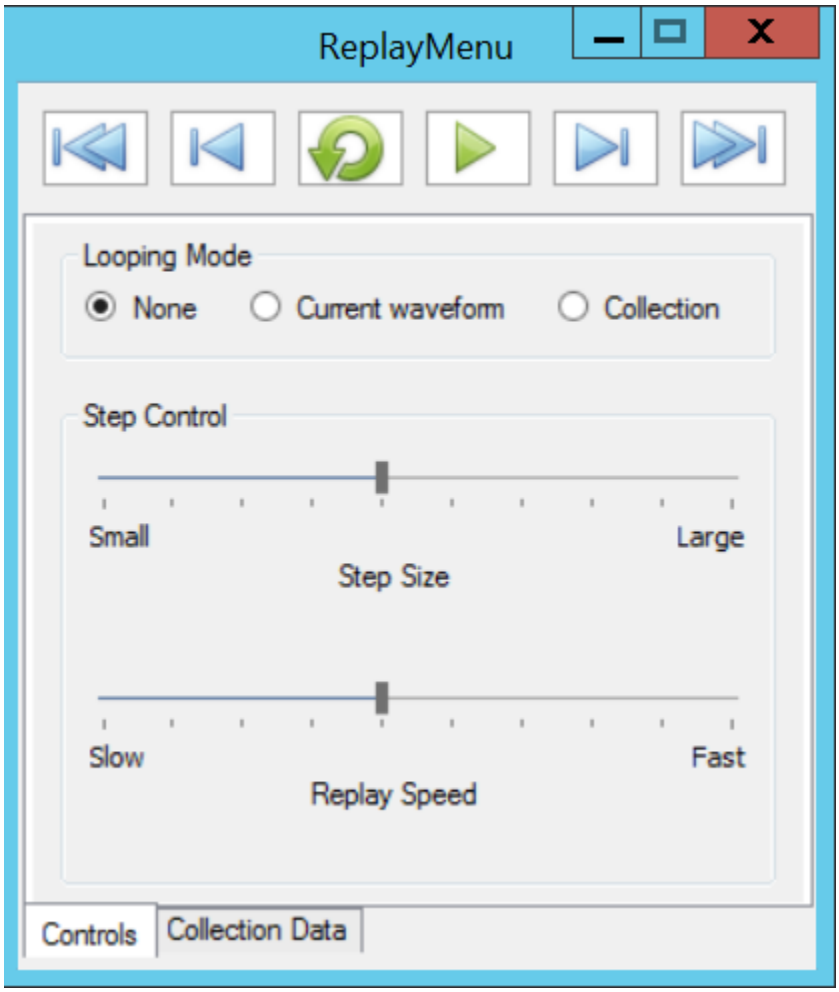
1. In the waveform plotting workspace, move the subsample (red box) to select a portion of long waveform to focus on. Right click to adjust resolution of the subsample (Increase/Decrease Subsample, Subsample Size).



2. Right click the Region of Interest area (gray colored box, right click must be outside of the subsampler box) and select **Replay Menu**.

   The **Replay Menu** dialog is displayed.

Figure 13-8: Replay Menu



3. On the **Replay Menu**, go to the **Controls** tab and set your playback settings.

   On the **Replay Menu**, go to **Collection Data** tab and select the dates that you want to play.

4. Click to play the waveform recording.

   The waveform subsample box will move according to the selected playback settings and collection time.

13.11.6 View each revolution in a waveform

You can view each single revolution in a waveform plot. You can view all the revolutions on the same plot or display them one at a time.

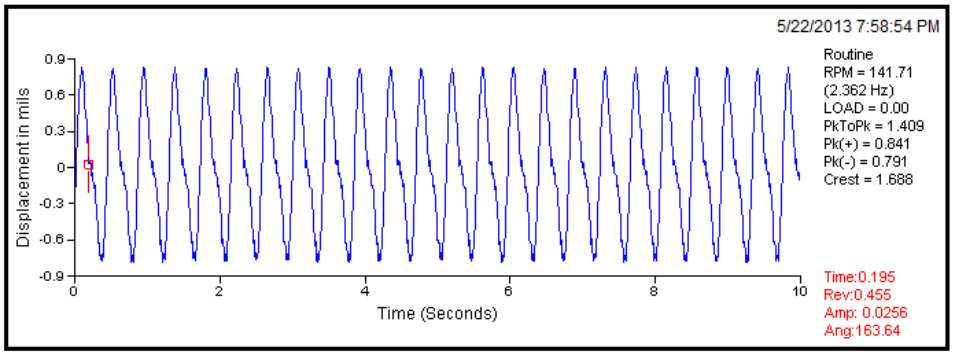
Procedure

1. Use the Navigator to find a measurement point.
2. Expand the measurement point and click a waveform.

   In the plotting workspace, a waveform is displayed for all the revolutions in the measurement. The revolutions are selected based on set rotation speed.

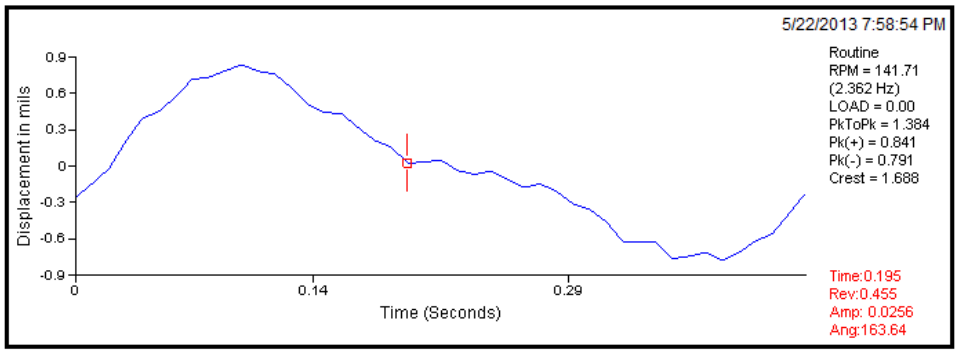
   You can select multiple waveforms. Press **Shift** and click the range of points in the Navigator. You can also press **Ctrl** and click multiple, specific waveforms.

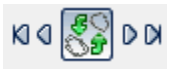
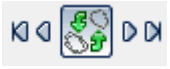
Figure 13-9: Waveform plot: all revolutions in X/Y mode



3. Click to toggle from all rotations to one revolution.

Figure 13-10: Waveform plot: one revolution in X/Y mode



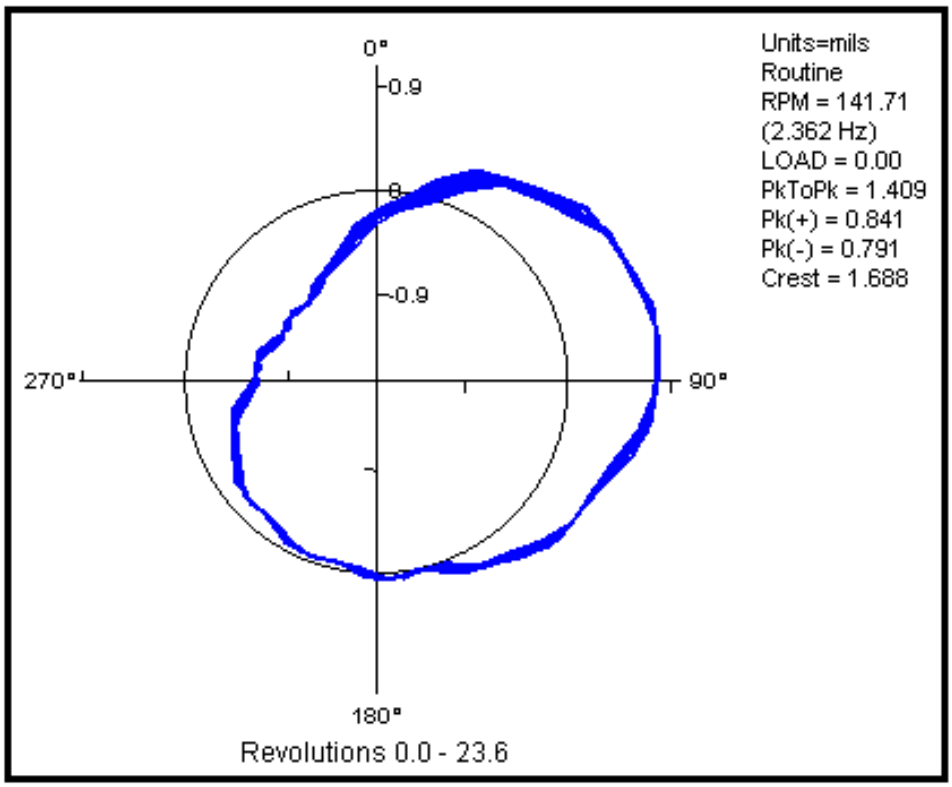
4. Click the right and left arrows  to view the next and previous complete revolutions.
5. Click the first and last arrows  to view the first and last complete revolutions.

   To see a partial revolution after the last complete revolution, click the right arrow.

6. Click to toggle from the waveform plot to the circular waveform plot.

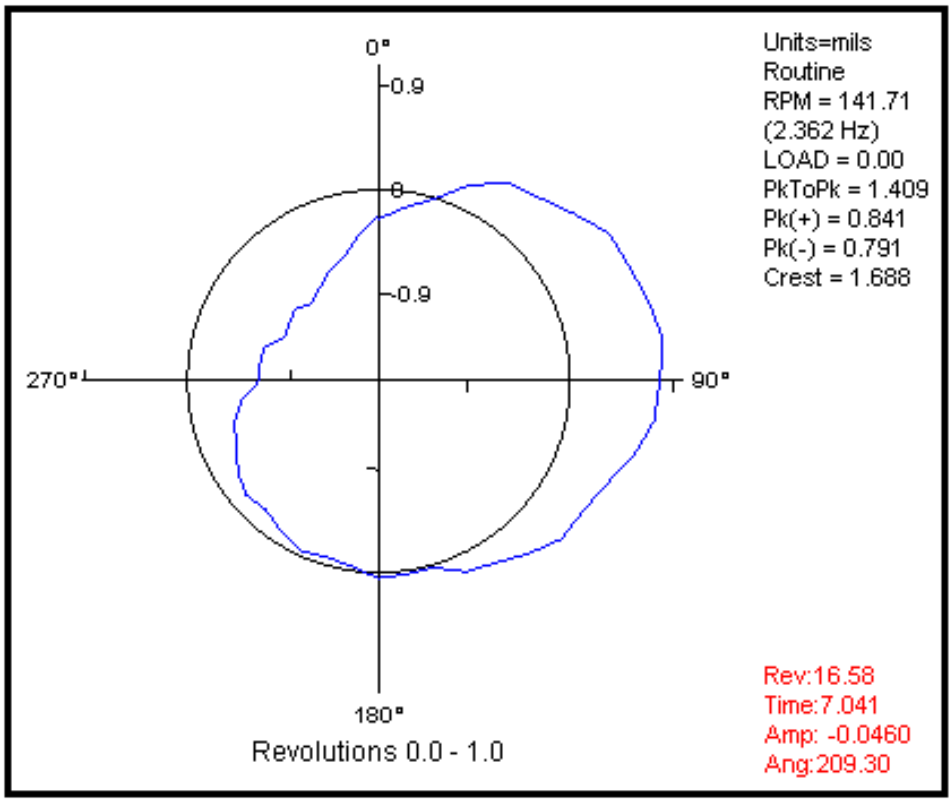
   The waveform plot displays all the revolutions in the measurement.

Figure 13-11: Waveform plot: all revolutions in circular mode



7. Click to toggle from all rotations to one revolution.

Figure 13-12: Waveform plot: one revolution in circular mode



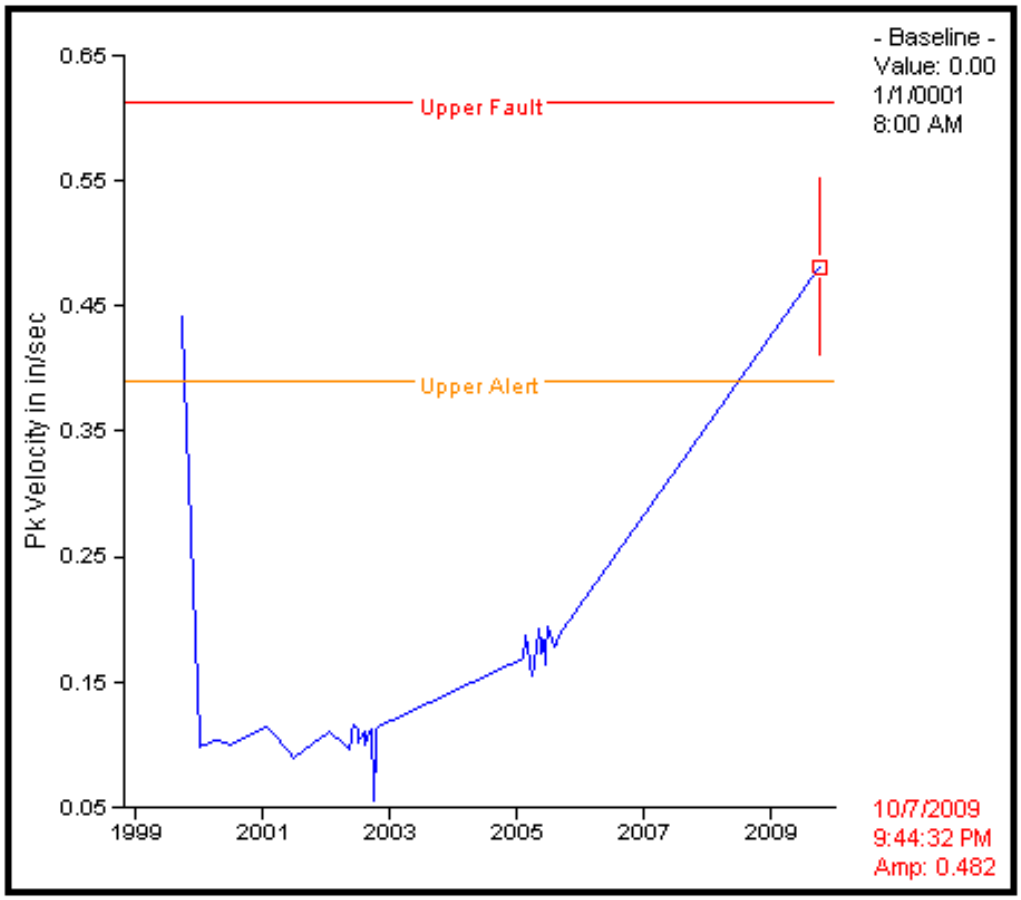
8. Use the arrows to view each revolution.

13.12 Trend plots

A trend plot shows a set of values of a vibration parameter over a period of time.

To view a Trend plot, click on a measurement point or channel in the primary navigator. In the Details navigator, under the Trends table, select a date/time of interest.

Figure 13-13: Trend Plot



13.12.1 Trend function bar

Single trend plots

The following functions are available when a single trend plot is shown on the plotting workspace:

Button	Function	Description
	Trend On/Off	Click the button beside the image to show all functions.
	Label Point	Displays a label for your selected data point.

Multiple trend plots displayed together

The following functions are available when multiple trend plots are displayed together:

Button	Function	Description
	Parameter Correlation	Compares two different parameters.
	Amplitude Display Format	Changes the vertical axis to a relative scale.

13.12.2 View multiple trend plots on one plot

Multiple trend plots may be selected and viewed in the plot area together or separately.

Procedure

1. Use the Details navigator to find a measurement point.
2. Press **Shift** and click on measurement points to select a range of points. You can also press **Ctrl** and click more than one measurement point to select multiple, specific measurement points.
   The plots appear separately on the plotting workspace.
3. Right-click the plotting workspace and select **Display Parameters Together**.

Note

When you view multiple trend plots together, the Trend Function bar displays the Parameter Correlation button and the Amplitude Display Format button. See Related information for more details.

Related information

Trend function bar

13.12.3 Display a correlation plot

Procedure

1. Use the Details navigator to find a measurement point.
2. Press **Shift** and click on measurement points to select a range of points. You can also press **Ctrl** and click more than one measurement point to select multiple, specific measurement points.
   The plots appear separately on the plotting workspace.
3. Right-click the plotting workspace and select **Display Parameters Together**.
4. Click on the **Trend** function bar.
   The **Select Parameters for Correlation** dialog is displayed.
5. Select two different parameters to compare. The first parameter appears on the horizontal axis and the second parameter appears on the vertical axis.
   A plot displays the data points for each parameter matched by date and time.

13.12.4 View normalized multiple trend plots

The vertical axis is labeled based on the type of data shown, if multiple trend plots are viewed separately. However, if you view multiple trend plots together, the vertical axis displays data in absolute terms or mixed units in absolute terms (if more than one amplitude is present).

Procedure

Click on the trend function bar to cycle through the following scale options:

- Mixed Units (default)
- Percent Alert
- Percent Fault
- Percent Change from Mean
- Percent Change from Baseline

13.12.5 Show/hide upper danger, warning, and advise alarm levels

Procedure

Right-click on the trend plot and select **Alarm Options**.

- To show upper alarm levels, select:
  - **Show Upper Danger**
  - **Show Upper Warning**
  - **Show Upper Advise**
- To hide upper alarm levels, select:
  - **Hide Upper Danger**
  - **Hide Upper Warning**
  - **Hide Upper Advise**

13.13 Transient data

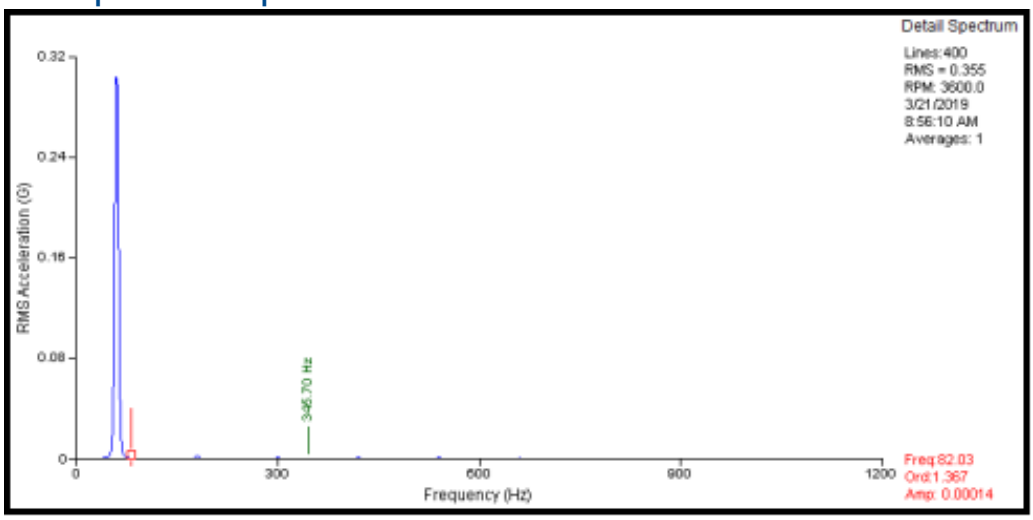
Transient data is a longer recording of a vibration signal, usually covering unsteady operation conditions of a monitored machine. A length of a transient waveform may differ significantly depending on the type of events one wants to capture but it may be from several minutes to more than an hour. The main purpose of collecting transient data is to analyze the response of the machine to changes in the underlying process (such as startup, shutdown, increasing or decreasing load). However, it might be also used to capture rare intermittent events, difficult to record in regular time-based collections. In either case, a transient waveform is not intended to be analyzed as a whole. For example, there is no point in calculating a spectrum from the entire recording, analysis of which requires stable operation of the machine. The goal of transient data analysis is to observe the variability of an instantaneous state of the machine during the transient conditions.

This can be accomplished by comparing instantaneous waveforms or spectra at different moments of the recording (cascade or waterfall plot) or trending amplitudes and phases of selected harmonics (Bode-Nyquist plots).

The AMS Machine Works 1.7 provides tools for transient data analysis via the Vibration Analyzer application. A special set of functions is enabled for recordings longer than 4096 points (1600 spectral lines). Transient data analysis is not supported in the Analysis Dashboard yet.

Within supported devices, the AMS 6500 ATG and Ovation MHM offer the ability to collect transient data. AMS 6500 ATG can record up to 96000 points in a single data file. Ovation MHM module collects waveforms in a continuous manner up to the capacity of the respective Machinery Health Waveform Recorder software. However, they are available in the AMS Machine Works in packages containing maximum 1048576 points. A transient analysis is possible on a single data package at a time.

13.13.1 Full spectrum plot

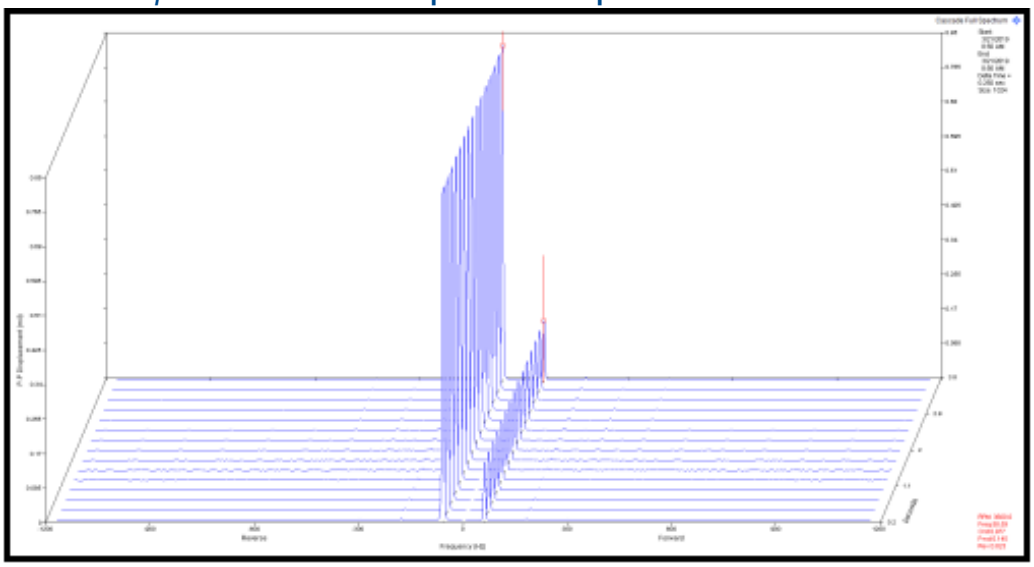


The full spectrum plot is part of the default display when you select a pair of companioned measurement points under a transient job file in the Navigator. The plot is generated based on the Subsampler selection of waveforms of the companioned points.

The following context menu options are available for full spectrum plots:

Option	Description
Clear Cursor	Remove all cursors on the plot.
Set Reference Cursor	Place a reference cursor on the plot.
Clear Plot	Remove all cursors and labels on the plot.
Amplitude Units	Select the amplitude unit for the plot.
Label Peak	Label the primary cursor or all cursors.

13.13.2 Cascade/Waterfall full spectrum plot



The cascade/waterfall full spectrum plot is displayed when you select a measurement point under an AMS 6500 ATG in the Location Navigator. It is based on the Region of Interest of waveforms.

Click to change the plot perspective.

To change the context of your cascade/waterfall plot, modify Block Size in the Region of Interest Settings dialog. The plot type is also dependent on the Mode:

Mode	Plot
Delta RPM	Waterfall
Delta Time	Cascade
Fixed Number	Waterfall

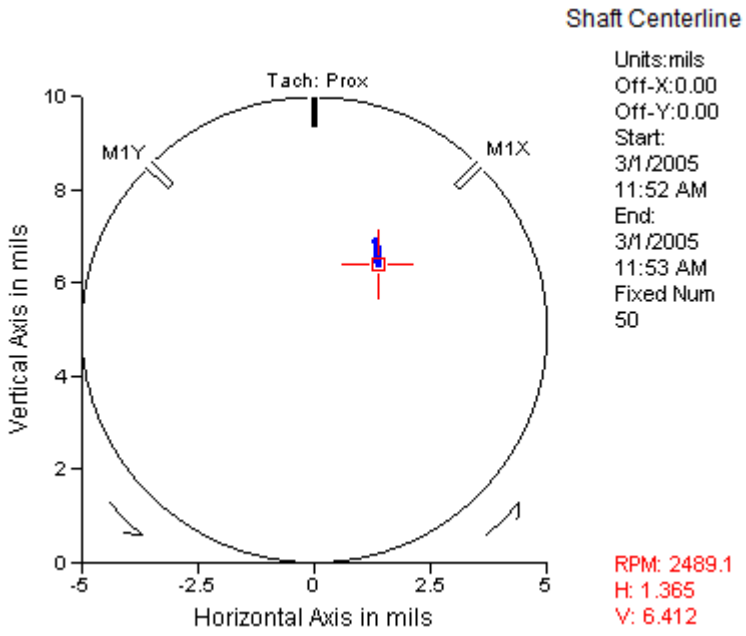
The following context menu options are available for cascade/waterfall plots:

Option	Description
Cursor Type	Change the cursor type to Single, Harmonic, or Sideband.
Update Subsampler	Updates the Subsampler location on the transient waveform, thus updating the detail waveform/spectrum to the specified waterfall spectrum.
Dynamic Display Control	Change the display of spectral overlap and data perspective.
Display Trend Plot	Displays a trend plot across displayed spectral data, at constant frequency or constant order.

Option	Description
Display Calculated Trend	Displays a trend plot based on the primary cursor location, maximum band amplitude, or band total energy.
Apply Runout Correction/Clear Runout Compensation	If a runout waveform is stored in the archive being analyzed, the data can be adjusted for runout.

13.13.3 Shaft centerline plot

The shaft centerline plot displays the average shaft position with respect to the bearing surface.



The bearing clearance value is equal to the difference between the shaft diameter and the diameter of the bearing journal. The diameter of the displayed circle is equal to the specified bearing clearance value. The data points represent the average position of the shaft center. If the shaft is in the exact center of the bearing, it could move a distance in any direction equal to half the bearing clearance before contacting the inner surface of the bearing. Thus, data points touching the circle indicate contact between the shaft and the bearing. The dynamic shaft motion may result in contact between the shaft and the bearing lining prior to the data points actually touching the circle.

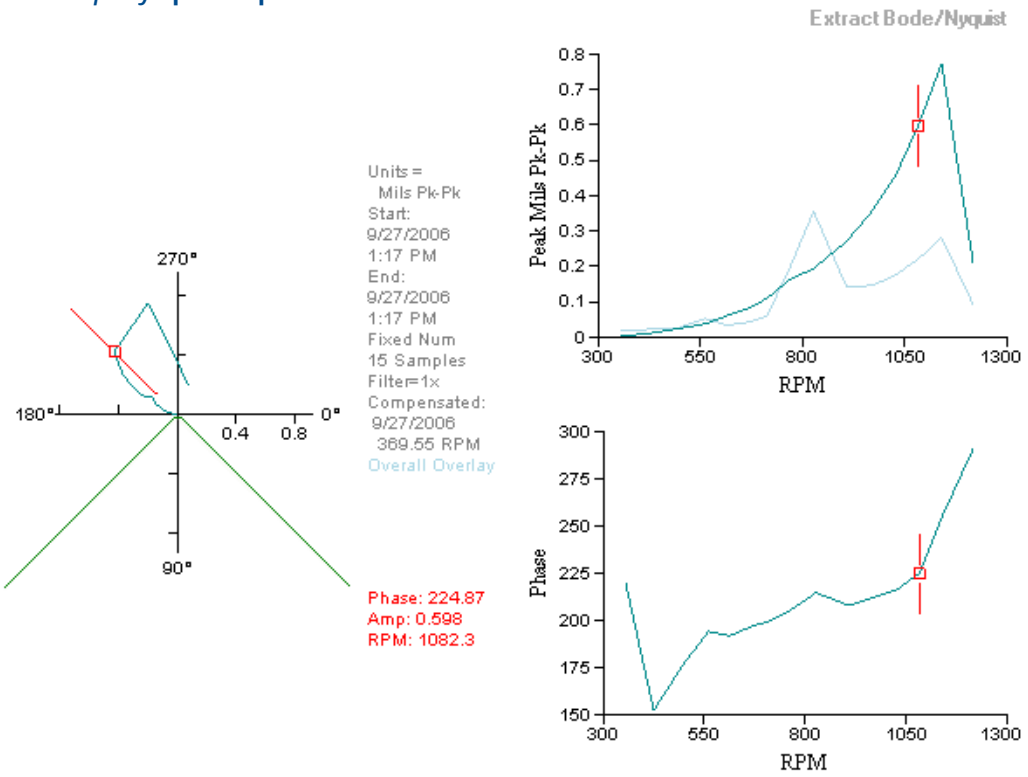
The following context menu options are available for shaft centerline plots:

Option	Description
Clear Cursor	Remove the cursor on the plot.
Add RPM Labels/Clear RPM Labels	Add or remove RPM labels on the plot.
Clear Plot	Remove the cursor and revolution markers on the plot.

Option	Description
Specify Bearing Parameters	Override specified resting voltage and bearing clearance values.

For the AMS 6500 ATG, the shaft centerline plot is part of the default display when you select a pair of companioned measurement points in the Navigator. The plot is generated based on the sensor DC values collected from companioned displacement probes as set in AMS Machine Studio.

13.13.4 Bode/Nyquist plot



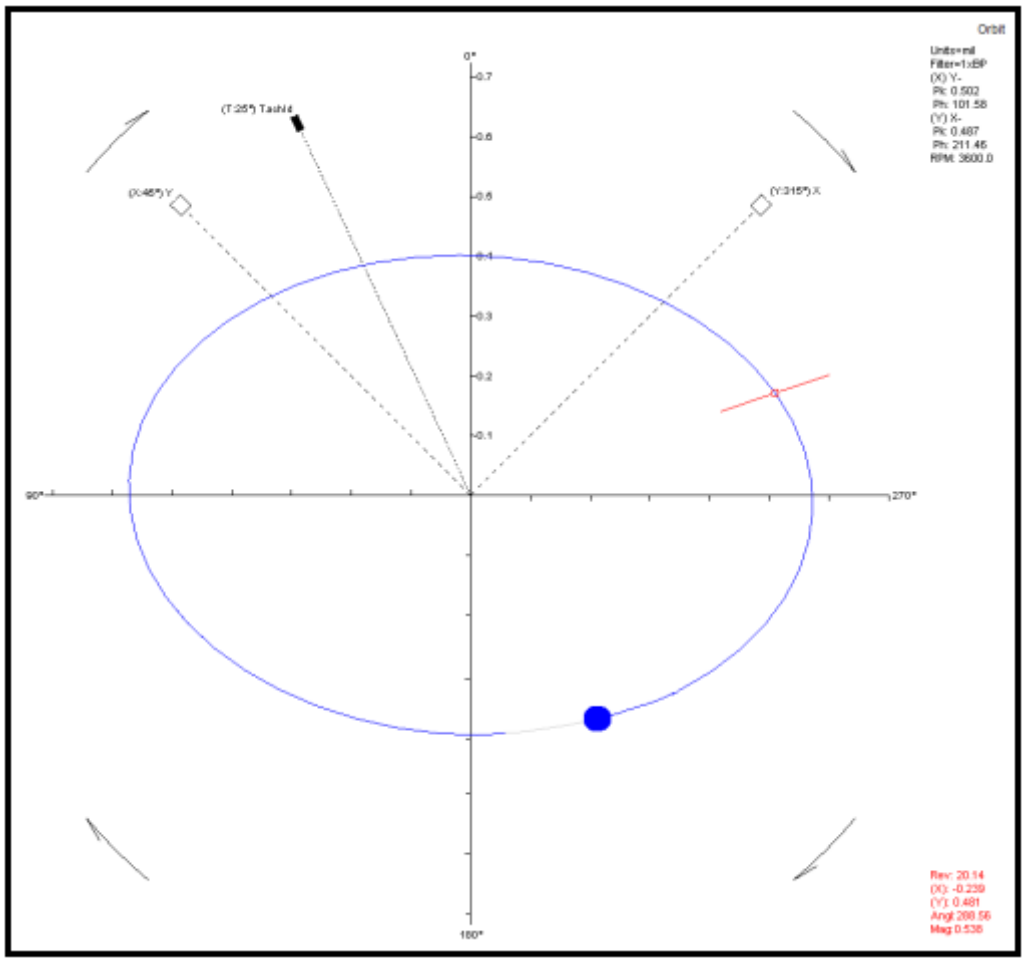
Option	Description
Filter Options	Select how waveform data is filtered. Select 1xRPM, 2xRPM, 3xRPM, or Custom.
Display Versus Time	Opens a new window displaying the plots with Time as the horizontal axis value.

The Bode/Nyquist plot is part of the default display when you select a pair of companioned measurement points under a transient job file in the Navigator. The Region of Interest determines the size and position of the Bode/Nyquist plots.

13.13.5 Orbit plot

An orbit plot shows the two-dimensional movement of the shaft centerline relative to the pair of sensors (such as displacement probes) mounted at right angles at the same location. Orbits are constructed from the waveform data collected from each sensor. The sensors are typically named with an X and Y to identify the position of the sensor along the x-axis and y-axis.

The orbit plot displays the sensor location, tachometer location, and direction of rotation.



The following context menu options are available for orbit plots:

Option	Description
Filter Options	Select how waveform data is filtered.
Clear Cursor	Remove the cursor on the plot.
Clear Plot	Remove the cursor and revolution markers on the plot.
Show Rev Markers/Hide Rev Markers	Show or hide revolution markers on the plot.
Amplitude Units	Select the amplitude unit for the plot.

Option	Description
Specify sensor angles	Specify the angular position of X, Y and tach sensors

14 Health

14.1 Health calculation

The health of each asset is calculated in the software and displayed as a numerical rating.

Health index

Each extension that interacts with a given asset assigns it a health index between 0–100, where 0 is completely unhealthy, and 100 is completely healthy. The software calculates an overall asset health index (or asset health roll-up) based on the entries set by all sources.

Each asset also has an asset priority that affects its weight in the health calculation methods. The asset priority represents the importance of an asset with respect to other assets in the system. The software also uses the health index to derive an asset's status.

Health opinion

A health opinion is reported by the asset source for assets in that asset sources' hierarchy. The health opinion is presented as a health index number between 0-100.

An asset can have health opinions from varying asset sources. The software takes into consideration the health opinions to calculate the overall health of an asset.

The health of multiple assets can be aggregated by either creating a generic asset and/or moving assets around to create parent/child associations.

Related information

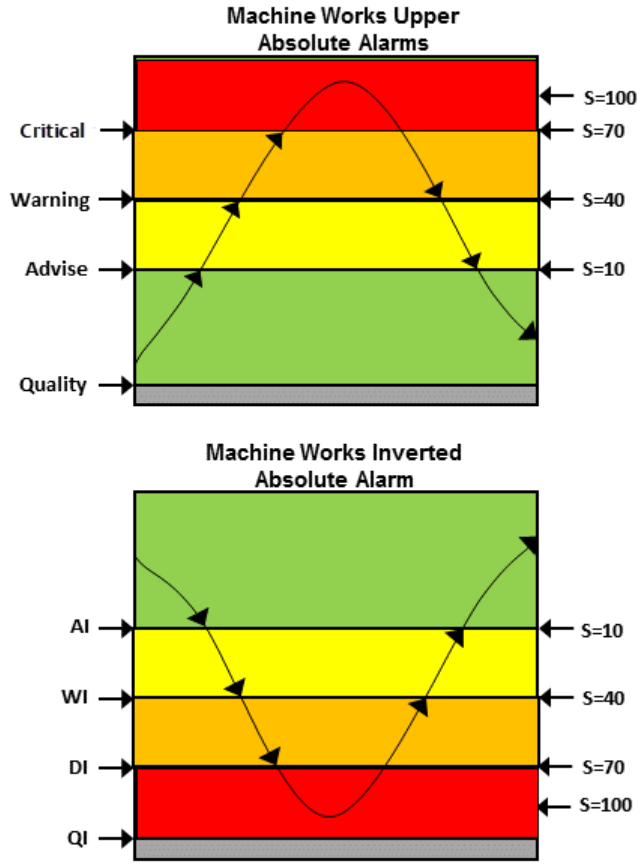
Health index conversion
Set the health calculation method
Set the asset priority
Set the priority of health opinions from interfaces or asset extensions

14.2 Health index conversion

Severity to health index

Asset sources, such as devices, monitor machines. When there is a problem with a device or the machine being monitored by the device, one or more alerts may be reported. The severity of the alert is determined by comparing a measured value against a group of set points, also referred to as alert limits.

Figure 14-1: AMS Machine Works alert types and alert set points mapped to severity ratings



AMS Machine Works uses multiple measured value severity scores to calculate an overall asset severity which is subsequently converted to an overall heath index.

Health index = 100 – S where S is device severity as reported in AMS Machine Works

Related information

Health calculation
Set the health calculation method

14.3 System status service

The System Status service listens for health status updates from all other AMS Machine Works services. It has a complete list of services that are expected to report the status. If the System Status does not receive updates from a service, it marks the service as unavailable.

Possible system statuses

There are three possible values for the health status:

- Healthy

- Degraded
- Unhealthy

Along with the health status, a short description provides more details. Examples:

- Cannot connect to the database
- ATG Interface unavailable (or offline)
- Cannot connect to Historian service
- Device Orphaned (not being handled by any interface)

15 Asset Explorer

The Asset Explorer utility allows you to set up your site, create locations, add machines and devices, and arrange them according to how your plant is set up. This utility lets you centrally manage and view the health status of your plant assets. You can set persona-specific functions for user accounts by setting responsibilities and permissions in the User Manager utility. Permissions and responsibilities ensure the user has the proper access to locations and assets to which he is assigned. You can also do the following from the Asset Explorer utility:

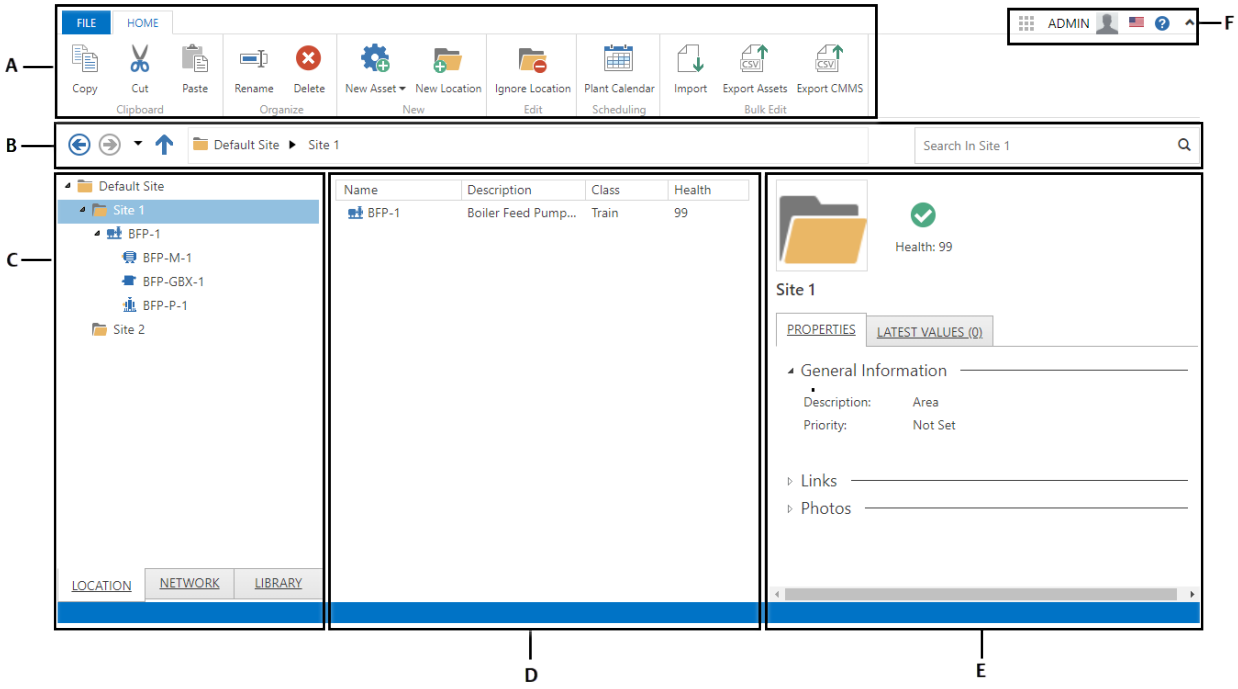
- Set up your site hierarchy.
- Add assets to AMS Machine Works for asset sources such as AMS Asset Monitor, Emerson Wireless Gateway, AMS 9420 Vibration Analyzer, AMS Wireless Vibration Monitor, AMS 6500 ATG, AMS Asset Monitor, and Ovation Machinery Health Waveform Recorder.
- Configure data collection settings for devices.
- Assign asset class responsibilities to users.
- Launch AMS Machine Works Vibration Analyzer

Related information

Asset Explorer user interface
The Location navigator
The Network navigator
The Library

15.1 Asset Explorer user interface

Figure 15-1: Asset Explorer user interface



A. ***Ribbon***—*contains a link to the File menu and to the Home ribbon, a context-sensitive tab that display actions and editable settings.*
B. ***Navigation bar***—*icons and breadcrumbs that help you move through the Location, Network, and Library navigators.*
C. ***Navigators***—*displays Navigator trees for the Location, Network, and Library tabs.*
D. ***Contents pane***—*displays the name, description, class, and health of the item selected in the navigator.*
E. ***Details pane***—*displays information based on the selection in the Contents panel.*
F. ***User toolbar***—*allows launching of other applications, utilities, and software. This also displays your account information, a link to the Online Help, and a button to collapse the ribbon.*

15.1.1 File menu

Option	Description
System Info	This page shows the activation status of the software. **About** — view software versions and licenses.

Option	Description
System Settings	The settings in this menu are **Health Settings** — This option is not used in AMS Machine Works. **Ignored Asset Management** — This option is not used in AMS Machine Works. **Plant Calendar Management** — This option is not used in AMS Machine Works. **Spam Management** — This option is not used in AMS Machine Works. **CMMS Configuration** — This option is not used in AMS Machine Works.
User Settings	**Message Subscription Management** — This option is not used in AMS Machine Works. **Junk Management** — This option is not used in AMS Machine Works. **Responsibility Settings** — set user responsibilities. **Note** User settings are only relevant to your account, and do not affect other users in the system.
Account	**User Information** — lists the user account that is currently logged in. **Sign Out** — log out of AMS Machine Works. **Change Password** — change your password.

15.1.2 Home ribbon

In the Asset Explorer utility, the home ribbon displays several default actions.

Table 15-1: Home ribbon options in Asset Explorer

Action	Description
Copy	Copy the selected location or asset, along with its configuration, to the clipboard.
Cut	Cut the selected location or asset, along with its configuration, and place it on the clipboard.
Paste	Add the contents of the clipboard as a child of the currently selected location or asset.
Rename	Specify a new name for the selected location or asset.
Delete	Delete the selected location or asset.
New Asset	Add a new machine, machine train, device placeholder, or generic asset as a child of the currently selected location or asset.
New Location	Add a new location folder as a child of the currently selected location.
Failure Effects	Opens the **Failure Effects** selection menu.
Functions	Opens the **Functions** selection menu.
Ignore Asset	Ignore the selected asset or manage all ignored assets.
Ignore Location	Ignore the selected location and all assets under it.
Edit	When a machine is selected, this opens the **Machine Configurator** dialog, where you can edit the configuration of the selected machine.
Status	If you have a machine train or machine component selected, this launches the AMS Machine Works Vibration Analyzer in context.
Configure Device	Opens the Device Configuration dialog.

Table 15-1: Home ribbon options in Asset Explorer *(continued)*

Action	Description
Map Channels	Opens the **Map Channels** dialog, where you can associate each channel on an asset source with a particular measurement location on a machine.
Vibration Analyzer	If you have a machine or device selected, this launches the AMS Machine Works Vibration Analyzer.
Add Asset Source	When in the Network navigator, this opens a dialog where you can connect to an asset source. **Note** This requires that the user has the MANAGEASSETSOURCE permission. This button is not displayed if the user does not have this permission.
Remove Asset Source	Available in the Network navigator. Allows you to disconnect asset sources from the system. **Note** This requires that the user has the MANAGEASSETSOURCE permission. This button is not displayed if the user does not have this permission.
Remove Device	Removes the selected device from the system.

15.1.3 Navigation bar

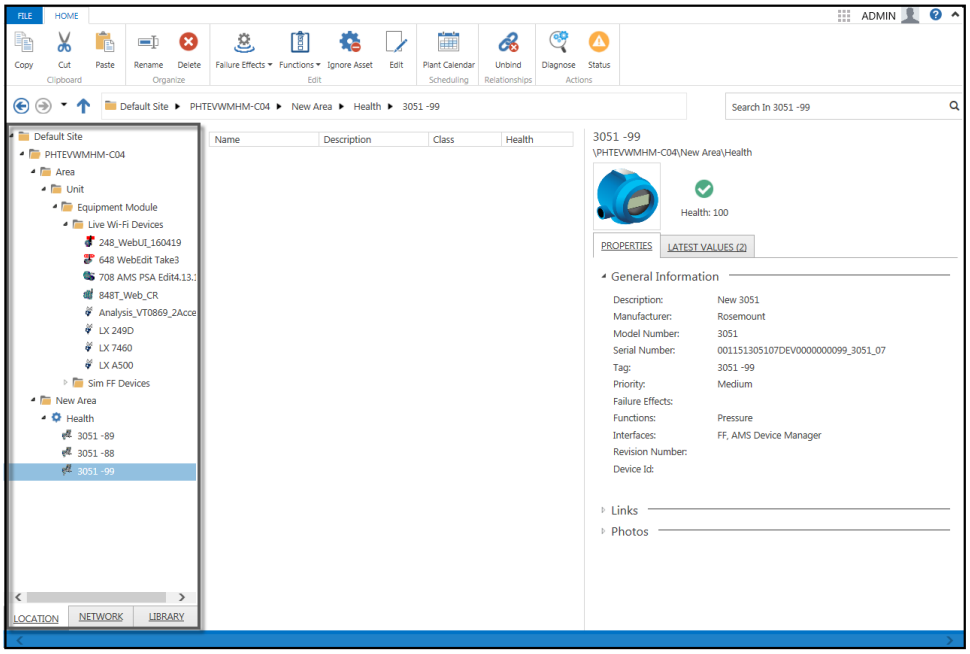
	The back arrow moves to the last item selected in the navigator. The forward arrow is only active if the back arrow has been clicked; it moves to the item selected before the back arrow was clicked.
	Moves up one level in the navigator.
Breadcrumbs	The breadcrumb path shows the full path to your current location in the navigator. Go to any level within the path by clicking its breadcrumb.
	Search displays results for locations and assets. By default, it filters based on the level selected in the navigator.

15.1.4 The Location navigator

The Location navigator lets you organize machines in the Asset Explorer utility in a way that makes sense to you and your users. It also lets you view information about the locations and machines you create, and perform operations within the context of a selected location or machine.

The Location navigator is a logical representation of your site. Each location is represented by a folder icon. You can expand and collapse locations.

Figure 15-2: Asset Explorer Location navigator



Generally, the Location navigator is organized by **Site** → **Location** → **Machine**. The top level in the Location navigator is called the Site. Sites contain locations and machines. Rename the site to something specific or relevant to your plant setup.

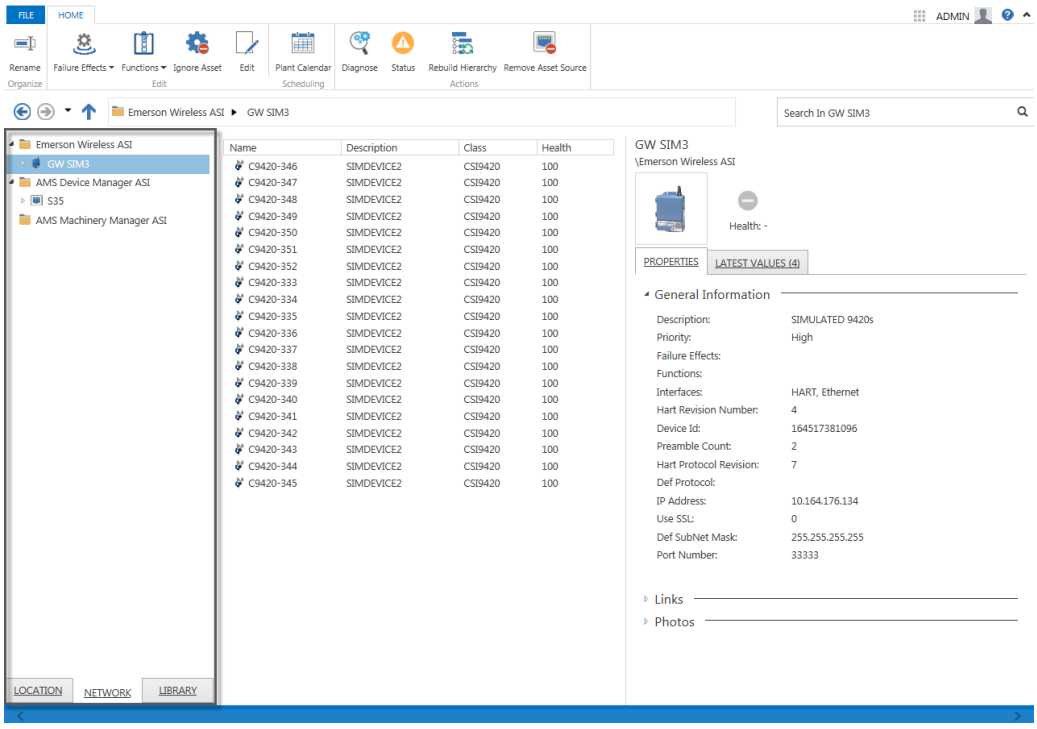
Related information

Add locations to your site
Add assets to your site

15.1.5 The Network navigator

The Network navigator displays monitoring assets that have been added to the software. The assets are organized by source, then by asset (device).

Figure 15-3: Asset Explorer Network navigator



The hierarchy in the Network navigator lets you view all assets as they are arranged by source. Assets in the Network navigator hierarchy cannot be moved.

The Network navigator is also where you can add additional asset sources to the software.

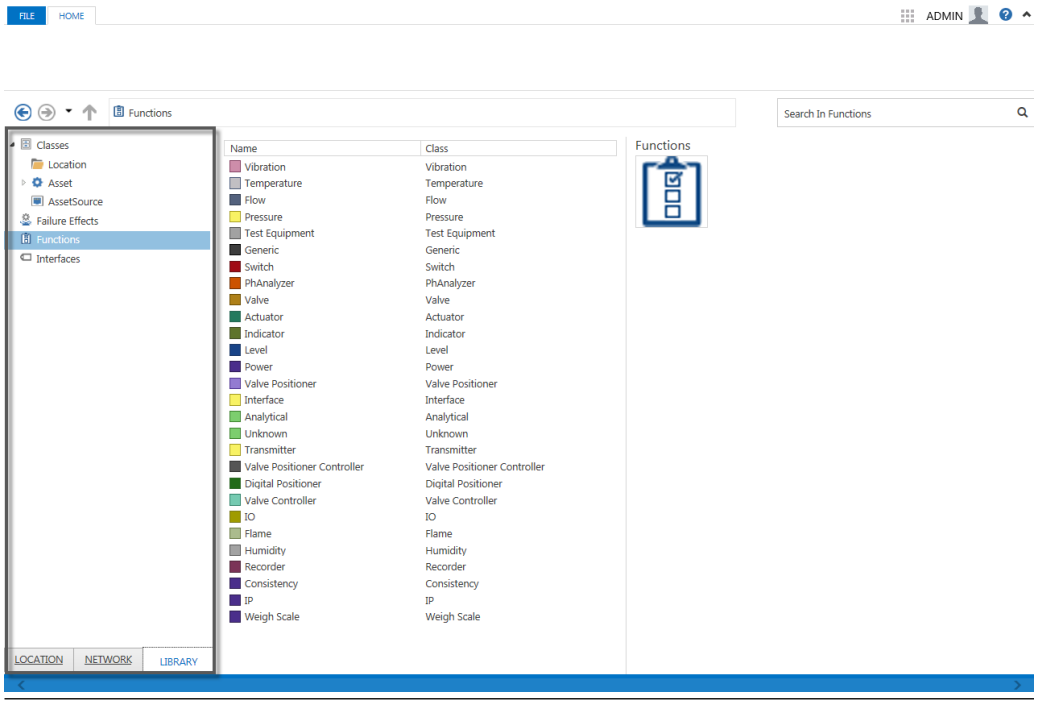
Related information

Add an Emerson Wireless Gateway to AMS Machine Works

15.1.6 The Library

The Library stores configured class instances so you can quickly add them into the Location or Network navigators.

Figure 15-4: Asset Explorer Library



15.2 Add locations to your site

Use locations to represent functional areas, floors, or sections of your site. You can nest locations within locations. You can add asset locations and asset source locations to locations. However, you cannot add locations to assets or asset source locations.

Procedure

1. In the Asset Explorer utility, select the **Location** tab, and highlight the site or a location.
2. From the **Home** ribbon, click **New Location**.
   A new location appears at the bottom of the navigator. It has a folder icon and is named **New Area**. To rename, highlight **New Area** and, in the **Home** ribbon, click **Rename**.
3. Create and name additional locations at the site level, and structure locations within the locations to represent different places in your facility.
   You can create an unlimited number of locations.

Postrequisites

Add assets and asset sources to your site.

Related information

Add assets to your site
Locations versus assets

15.3 Add assets to your site

You can add assets at the site level, in locations, or in other assets. Organize the assets in logical groups similar to how the assets are physically organized in your facility.

Procedure

1. In the Asset Explorer utility, click the **Location** tab.
2. Highlight the location where you want to add assets, or create a new location.
3. From the Home ribbon, select **New Asset**:
   a) Select **Asset (Generic)** to create a new generic asset.
   b) Select **Device** to create a new device.
   c) Select **Machine**, then select from the available machine components to create a machine train.

   An asset or device labeled "New" appears below the location. If you added a machine train, the name you assigned in the Machine Configurator dialog is displayed.
4. Rename the asset or device to something relevant or appropriate to your plant setup.

Related information

Add locations to your site
Locations versus assets

15.4 Locations versus assets

Locations and generic assets can contain machines and devices or other generic assets, but in certain situations, it makes sense to use one instead of the other. You can create several types of locations and organize them in the Location navigator. All locations have basic properties, and each additional type of location has additional properties specific to its type and are represented in the Location navigator with unique icons.

An area is a location represented by a folder. It has the most basic properties of a location, such as a name and links to the other locations beneath it. It does not have a health score, because it is not an asset.

An asset location is a type of location represented by its own icon, and can contain other locations, assets, or devices. An asset location has properties common to all assets, such as a health score.

A device is a type of location that represents a monitoring device. Specific types of devices have their own properties and icons. For example, the AMS 9420 Wireless Vibration Transmitter is represented by a transmitter icon.

A machine is a type of asset location defined by AMS Machine Works. A machine has specific properties defined for collecting specific measurements such as PeakVue, vibration, and temperature. This data is analyzed and used to diagnose problems and schedule maintenance based on an equipment condition, before a failure actually occurs.

Table 15-2: Assets vs. locations

Property	Assets	Locations
Asset health score	Every asset has a health score, including generic assets, for which a health score is calculated by a (user-defined) method that considers all its child assets.	Locations have health scores based on child locations and child assets.
Contents	Generic assets can contain any number of machines or asset sources, but cannot contain a location.	Locations can contain any number of child locations, allowing you to organize your Location navigator in any way that makes sense to you.
Filtering	You can apply filter preferences to assets so they are easier to find with the search function.	You cannot apply filter preferences to locations.
Customization	You can customize assets to display specific icons and images.	The icon for a location is always a folder.

Related information

Add locations to your site
Add assets to your site

15.5 Map asset source channels to measurement points

In AMS Machine Works, channels have to be mapped to measurement locations on a machine to which a sensor is mounted. Mapping assigns the sensor channel of the device that is monitoring the asset to a measurement point on the asset.

Note
Mapping is also part of the Add a Machine Train to your site process. See Add a Machine Train to your site. The *Map asset source channels to measurement points* procedure is just a way to go back and make edits to mappings without going through the entire *Add a Machine Train* process.

Procedure

1. In the Asset Explorer utility, highlight a machine or machine train in the Location navigator.
2. From the Home ribbon, select **Map Channels**.
3. In the **Map Channels** dialog, select channels and measurement locations:
   a) Click **Add Device**.
   b) In the **Add Device** dialog, select a device and click **OK**. Use the **Device Type** selection list as a filter to show only the desired type of device.

   Note
   If the device you want to add does not show in the **Add Device** dialog, it may be because the device has not been discovered by AMS Machine Works.

Depending on the size and quality of your wireless network, AMS Machine Works device discovery can take from several minutes to several hours. Please wait and try adding the device again. A device has completed the AMS Machine Works discovery when additional parameters from AMS Machine Works are visible on the Latest values tab in Asset Explorer.

c) In the **Network Devices** tree, highlight the channel that you want to map to a measurement location.

d) Either drag and drop the channel to the **Acquisition Channel** field next to the desired measurement location, or simply highlight the channel and then click in an **Acquisition Channel** field to map it.

Note
The channel must be configured to match the signal type of the measurement location you want to map to. Otherwise, the **Map** button does not appear in the Actions column. Mapping a CML value requires adding a custom measurement location.

e) Click **OK**.

Related information

Unbind an asset source location from a device on the network

15.6 Set the asset priority

The priority you assign to an asset affects the health calculation for that asset. By default, all assets and equipment are assigned a priority of Low.

Note
The priority setting only affects the Weighted Average method.

Prerequisites

Launch the Asset Explorer utility.

Procedure

1. In the Location navigator, select the asset with priority you want to set.
2. On the Details pane Properties tab, click the **Priority** drop-down menu, and select an asset priority.

   You can select from Not Set, Low, Medium, High, or Very High.

15.7 Ignore an asset or location

Ignore an asset or location when you want to disregard messages and health for that asset or location for a specific period of time. When you ignore a location, all assets under that location are also ignored.

Ignore is a global setting across all users and the system. An ignored asset or location only affects messages and health-related functionality. You still see the health score for an

ignored asset or location, but it is grayed out and labeled as Ignored. An ignored asset or location does not contribute to the health calculation.

Prerequisites

Launch the Asset Explorer utility.

Procedure

1. Select an asset or Location, and from the **Home** ribbon, click **Ignore Asset** or **Ignore Location**.
   The **Ignore Asset** or **Ignore Location** dialog appears.
2. In the Duration area, specify how long to ignore the asset or location:
   - Select **Indefinite** to ignore the specified asset or location until a user removes the Ignore status in the **Ignored Asset Management** dialog.
   - Select **Specific Date** and specify a start and end date to ignore the asset or location.
   - Select **Plant Calendar** to ignore the specified asset according to range set by a Plant Calendar entry.
     Use the drop-down menu to select from existing Plant Calendar entries. Click **Create New Event** to create a Plant Calendar entry to associate with this ignored asset or location.

   ⚠ CAUTION

   When you ignore a parent asset, all child assets are also ignored.
3. Click **OK** to save your changes.

15.8 Applying labels: failure effects, functions, and interfaces

Filter preferences are labels for categorizing system elements to allow grouping and filtering when using the Search feature.

In the Asset Explorer utility, you can label any asset with one or more of the following labels:

Failure Effects	Failure Effects identify and organize assets according to the effects they cause if there is an equipment failure. For example, you can label a Machine type Fan with **Environmental Control** if the purpose of the fan is to provide cooling to a production environment.
Functions	Functions describe the functionality of the asset. For example, for AMS 9420 Wireless Vibration Transmitters, you can apply the Functions **Vibration**, **Temperature**, and **Analytical**.
Interfaces	Interfaces describe how the asset sends and receives information on the network. Examples include **HART** and **Ethernet**.

Apply labels in the Library navigator

When you add a new asset to the Location navigator, it is created based on the definition in the Library. When you apply a label to a class in the Library navigator, it becomes a default.

The General Information for the Location class, by default, has a blank Description and Priority of Not Set. If all of your locations are Priority Medium or higher, you can set the default Priority to Medium.

If your site contains many AMS 9420 Wireless Transmitters, you can apply the Functions, **Vibration** and **Analytical** to **Asset** → **Device** → **Transmitter** → **CSI** → **CSI9420**.

Apply labels in the Location navigator

After you add a new device to an asset, location, or machine in the Location navigator, you can update the device's information to describe the specific purpose and effects for this particular application of the device.

For example, after adding an AMS 9420 that is monitoring temperature, you can apply the function **Temperature**. From the Location or Network navigator, right click an asset and select from one of the label menus.

View all labels applied to individual assets

To see what labels are applied to an asset, select the asset in the navigator. The details pane displays the labels under **Properties** → **General Information**.

View all assets with a specific label (Search)

You can refine your search results using labels. Begin your search in the navigation bar by clicking in the search box. You can choose the label type (such as Failure Effects) and one or more of the labels from the Search ribbon. You can also choose the label type and show assets that have any label of that type (Any Failure Effects) or no label of this type (No Failure Effects).

Or, you can begin typing all or part of the name of a label. For example, type the letter E and "Failure Effects and Interfaces" appear as choices in the predictive search box. Select one of the options, and a new list appears with the labels. Choose one or more labels.

15.8.1 View and apply labels

Labels help filter the search results thus making search more efficient.

The following are ways to apply labels in the Asset Explorer utility:

Procedure

- Right click an asset in the Location or Network navigator and select from one of the label menus.
- Highlight an asset in the Location or Network navigator and select a label menu from the **Home** ribbon.
- Highlight an asset in the Location or Network navigator and, in the asset's details pane, below General Information, select the text area beside the label to edit that property.

The text area becomes a menu and you can select one or more labels from the drop-down menu.

15.8.2 Manage Failure Effects

You can define or modify Failure Effects in the Library navigator.

Procedure

1. In the Asset Explorer utility, select the **Library** tab.
2. Right-click **Failure Effects** and select **Manage Failure Effects**.
   - Click **New** to create a new Failure Effect.

     Note
     You can assign up to 25 differently-colored labels.

   - Select a Failure Effect and click **Rename** to change the name an existing Failure Effect.
   - Select a Failure Effect and click **Delete** to remove the Failure Effect from the list.
3. Click **OK** to save your changes.

16 Event Viewer utility

The Event Viewer utility allows you to view system-generated events. You can choose to display events per module or view all events logged by the system.

The following modules log events:

- **Device Configuration**—events relating to configuration of connected devices, such as device discovery errors.
- **Asset Explorer**—events and configurations in the Asset Explorer utility, such as adding, editing, and deleting assets and locations, asset binding, and all asset health changes.
- **Data Highway**—all events occurring in the Data Highway, such as parameter registration and unregistration.
- **Machine Configuration**—all machine configurations, such as adding, editing, and deleting components, bearings, collections, measurement definitions, alarm limits, and channel mappings.
- **User Manager**—all events in the User Manager utility, such as adding, editing, and deleting users and logging in and logging out users.
- **AMS Machine Works Vibration Analyzer**—all events in the AMS Machine Works Vibration Analyzer, such as adding, editing, and deleting plot labels and machine notes, RPM changes, machine health train changes, and alarms.

Events are displayed with the following details:

- **Date and Time**—date and time the event was recorded.
- **Event Type**—the type of event to which the interface responds.
- **Source**—the module associated with the event.
- **Asset**—the asset associated with the event.
- **Attachments**—the attachment associated with the event. Events with attachments have a paper clip icon.

Note
The database in a Tier-1 installation (Limited Storage), Microsoft SQL Server 2017 Express, has a size limit of 10 GB. If the databases reach this size limit, the software will no longer be able to store new events.

Related information

View events

16.1 View events

Only system-generated events can be viewed in the Event Viewer utility.

Prerequisites

Launch the Event Viewer utility.

Procedure

1. On the left pane, select to view events by **Application** or by **Modules**:
   - Click **Application** to view all events logged by the system.
   - Expand the **Modules** folder and click on a module to view events recorded for the specific module.
2. Select an event from the list.

   Details display in the bottom pane. If an event has an attachment, a thumbnail of the attachment is displayed.

16.2 Archive events

Events stored in Plantweb Optics are archived periodically. Archived events are deleted from the database and stored in an archive file.

By default, events that are older than 180 days are archived. Event archiving automatically happens every 30 days. You can retrieve archived files in `C:\EMERSONCSI\DATA\Backups\Events`. Archive files are in .csv format with the text `OpticsEventsArchive` appended in the file name.

Note
Archived events cannot be imported and viewed in the software.

17 Settings available from Asset Explorer and User Manager

17.1 User settings

User settings are only relevant to your account, and do not affect other users in the system. From either the Asset Explorer or User Manager utilities, click **File** → **User Settings** to view or customize settings specific to your user account.

You can specify settings for the following:

- Message subscriptions
- Junked assets
- User class responsibilities and other responsibility types

17.1.1 Edit class responsibilities for your account

Classes define how elements such as assets and asset sources are structured in the system. Class responsibilities allow you to choose what to show in the Asset Explorer utility's Location and Network navigator tabs for your user account. You can choose to show assets and assets sources and narrow them down to their specific types such as asset source, machines, types of machines, devices, types of devices, device manufacturers, and device name.

Prerequisites

Launch the Asset Explorer utility.

Procedure

1. Click **File** → **User Settings** → **Responsibility Settings**.
2. In the Class Responsibilities tab, uncheck the classes that you do not want displayed in Asset Explorer for your user account.

   All classes are checked by default.

   Note
   Newly added assets and asset sources may still display even when the classes are unchecked. They will update once the system is restarted.

   The following class responsibilities are available for AMS Machine Works:

Asset	These selections control the machine types you can see in the Locations tab of Asset Explorer.Asset is a generic type of machine types you create by selecting **Add Asset -> Generic**, and visible with this selection.
Machine	These selections control the machine types you can see in the Locations tab of Asset Explorer. The list consists of each type of machine registered in the system. Examples include Motor, Pump,

	Fan, and Compressor. If you unselect these, your user will not see them in the hierarchy.
Device	These selections control the devices you can see in the Locations tab of Asset Explorer. The Analyzer and CSI Analyzer selections are reserved for future use.
AMS Machine Works Asset	These selections control what you can see in the Locations tab of Asset Explorer. Online • Select OMHM to see Ovation Machinery Health Module devices. • Select ATG to see AMS 6500 ATG systems. AMS Machine Works Wireless • Select 9420 to see the AMS 9420 Wireless Transmitter devices. • Select 9530 to see the AMS Wireless Vibration Monitor devices. • Select Asset Monitor to see the AMS Asset Monitor devices • Select Generic to see the generic devices.
Asset Source	These selections control what you can see in the Network tab of Asset Explorer. ATG Asset Source AMS Machine Works Asset Source • OMHM Asse tSource • Wireless Interface • DeltaV Interface • ATG Asset Source • Asset Monitor Source

3. Click **OK**.
4. Click **OK** on the subsequent dialogs to restart the system.

17.1.2 Disable user responsibility for assets and devices tagged with labels

Assets and devices can be assigned labels, such as Failure Effects, Functions, and Interfaces. You can choose which assets and devices that have been assigned labels are to be shown in the Asset Explorer utility's Location and Network navigator tabs for your user account.

Prerequisites

Launch the Asset Explorer utility.

Procedure

1. Click **File** → **User Settings** → **Responsibility Settings**.

2. Select the **Additional Responsibilities** tab.
3. Select a responsibility type on the left pane.
   - **Failure Effects**—Labels that identify and organize assets according to the effects they cause if there is an equipment failure.
   - **Functions**—Labels that describe the functionality of an asset.
   - **Interfaces**—Labels that describe how the asset sends and receives information on the network.
4. On the right pane, select the **Disable Responsibilities** check box and select from the available Failure Effects, Functions, and Interfaces labels check boxes.
   Devices and assets tagged with the selected Failure Effects, Functions, and Interfaces labels will not show in the Asset Explorer utility's Location and Network navigator tabs for your user account.
5. Click **OK**.
6. Click **OK** on the subsequent dialogs to restart the system.

17.2 System settings

System settings are global and affect all items and users across AMS Machine Works. These settings are available for all user accounts and changes will affect all other users in the system.

⚠ CAUTION

Use caution when editing system settings. Contact your AMS Machine Works administrator prior to changing system settings.

Note
These settings may only be changed if the user has the **MANAGESYSTEMSETTINGS** permission.

To set the system settings, click **File** → **System Settings** from either the Asset Explorer or User Manager utility.

You can specify system settings for the following, depending on the responsibilities assigned by your AMS Machine Works administrator:

- Health settings
- Ignored assets
- Plant Calendar
- Spam

Note
Specifying Ignored assets, Plant Calendar, and Spam will have no effect. This option is not used in AMS Machine Works.

17.2.1 Set the health calculation method

The software calculates the health of each asset in the system and displays it as a numerical rating. Each extension that interacts with a given asset assigns it a health score between 0–100, where 0 is completely unhealthy, and 100 is completely healthy. The software calculates an overall asset health score based on the entries set by all sources.

The health calculation method you choose allows you to set how the system weighs the combined health scores of your assets.

Prerequisites

Launch the Asset Explorer utility.

Procedure

1. Select **File** → **System Settings** → **Health Settings**.
2. In the **Health Settings** dialog left pane, choose **Settings**.
3. Choose the Health Calculation Method from the drop-down menu.

Item	Description
Weighted Average	Health calculation based on the average of individually-weighted health scores of an asset and its children.
Average	Health calculation based on the average of the equally weighted individual health scores of an asset and its children.
Worst	Health calculation based on the worst health score of the individual health score of an asset and its children. This is the default setting.

4. Click **OK**.

17.2.2 Set the priority of health opinions from interfaces or asset extensions

Interfaces and asset extensions have health opinions that are given priority values. The assigned priority affects the weight of the health opinion in the health calculation methods. The priority represents the importance of the health opinion from the interface or asset extension with respect to other interfaces and asset extensions in the system. The software also uses the health score to derive an asset's status.

Note
The priority setting only affects the Weighted Average method.

Prerequisites

Launch the Asset Explorer utility.

Procedure

1. Select **File** → **System Settings** → **Health Settings**.

2. In the **Health Settings** dialog left pane, select the interface or asset extension for which you want to set a priority.
3. From the drop-down menu, select the priority.

Priority	Weight
Does Not Contribute	0
Low	0.25
Medium	0.5
High	0.75
Very High (default)	1.0

4. Click **OK**.

18 User Manager

The User Manager function varies for administrators (those users with MANAGEUSER permission) and users. From User Manager, administrators can add users to the system, as well as edit properties, responsibilities, and settings for all currently registered users. For users without administrator permissions, User Manager displays read-only information about user properties and responsibilities.

Note
Administrators are users that have been given a MANAGEUSER permission in User Manager.

Note
Options may not be available in your user account and may only be available for administrator accounts. Some features may be visible in the user interface but have no function. For example, tokens are not used by AMS Machine Works.

18.1 User Manager utility user interface

18.1.1 Add a new user

Prerequisites

- Log in to AMS Machine Works as an Administrator.
- Launch User Manager.
- Click the LICENSES tab to confirm there is an available user license.

Procedure

1. Click the **USERS** tab at the bottom left side of the screen.
2. In the **HOME** ribbon, click **New User**.
3. Enter the new user account details:

Field	Description
Username	The username to access the software. The username must be unique to the system. Spaces are not allowed.
Email address	A valid email address to contact the user. The user receives notification emails and messages at this address, based on the user's subscription settings.
First Name	The user's first name.
Last Name	The user's last name.

Field	Description
Password	Password for the user when logging in to the software for the first time. **Note** The password must meet the complexity set in **SETTINGS** → **Password Settings**.
Confirm Password	Enter the password again to ensure that it was entered correctly.
User must change password on next logon	Check this checkbox if you want the user to create a new password when the user logs in for the first time.
Account is disabled	Check this checkbox if you want to set up the new user now, but want the user account to remain disabled until a later time.

4. Click **OK**. The new user is added to the **USERS** list. You can then assign responsibilities and locations, and issue mobile tokens for the user.

18.1.2 Delete a user

Prerequisites

- Log in to AMS Machine Works as an Administrator.
- Launch User Manager.

Procedure

1. Click the **USERS** tab at the bottom left side of the screen.
2. In the user hierarchy on the left side of the screen, select the user to be deleted.
3. In the ribbon, click the **Delete User** button. The user is deleted.

18.1.3 Change a user's name

Prerequisites

- Log in to AMS Machine Works as an Administrator.
- Launch User Manager.

Procedure

1. Click the **USERS** tab at the bottom left side of the screen.
2. In the user hierarchy on the left side of the screen, select the user to be deleted.
3. Click **Edit** next to the user's name on the right side of the screen.
   A dialog displays that allows you to edit the user's first and last name.

18.1.4 Disable a user account

A disabled user account cannot login and cannot receive notifications or messages.

Prerequisites

- Log in to AMS Machine Works as an Administrator.
- Launch User Manager.

Procedure

1. Click the **USERS** tab at the bottom left side of the screen.
2. In the user hierarchy on the left side of the screen, select the user to be disabled.
3. In the ribbon, click the **Disable User** button. The user is disabled.

18.1.5 Lock a user account

A locked-out user receives notifications and email messages, but is unable to log in. If Lockout Settings are enabled, an account can also become locked after a specified number of failed login attempts.

Prerequisites

- Log in to AMS Machine Works as an Administrator.
- Launch User Manager.

Procedure

1. Click the **USERS** tab at the bottom left side of the screen.
2. In the user hierarchy on the left side of the screen, select the user to be disabled.
3. In the ribbon, click the **Lock User** button.
   The user account is locked.

18.1.6 Force a user to log out

You can force a user to log out at any time.

Prerequisites

- Log in to AMS Machine Works as an Administrator.
- Launch User Manager.

Procedure

1. Click the **USERS** tab at the bottom left side of the screen.
2. In the user hierarchy on the left side of the screen, select the user to be logged out.
3. In the ribbon, click the **Force Logout** button.
   The user is logged out after a slight delay. The user is then required to log in again.

18.1.7 Edit user login information

Use the **Edit Logins** button to change the **OpenID Connect Provider** and the **Claim Value** for a user.

Prerequisites

- Log in to AMS Machine Works as an Administrator.

- Launch User Manager.

Procedure

1. Click the **USERS** tab at the bottom left side of the screen.
2. In the user hierarchy on the left side of the screen, select the user whose information requires editing.
3. In the ribbon, click the **Edit Logins** button.
4. On the **Edit Logins** screen, in the **OpenID Connect Provider** field, select the OpenID Connect Provider that was created during configuration. For the **Claim Value**, enter the claim value provided by the OpenID Connect provider.
5. Click **OK**.
   The user's login information is updated.

18.1.8 Reset a user password

Prerequisites

- Log in to AMS Machine Works as an Administrator.

  Note
  Administrator privileges are not required to reset your own password, but they are required to reset other users' passwords.

- Launch User Manager.

Procedure

1. Click the **USERS** tab at the bottom left side of the screen.
2. In the user hierarchy on the left side of the screen, select the user requiring a password reset.
3. In the ribbon, click the **Reset Password** button.
   An email is sent to the user with instructions for resetting the user's password.

18.1.9 Refresh the users list

After making changes to user information, it can be helpful to refresh the user list with updated information.

Prerequisites

- Log in to AMS Machine Works as an Administrator.
- Launch User Manager.

Procedure

1. Click the **USERS** tab at the bottom left side of the screen.
2. In the user hierarchy on the left side of the screen, select **All Users**.
3. In the ribbon, click the **Refresh Users** button. All user information is updated.
   All user information is updated.

18.1.10 Export the users list to a .csv file

The users list .csv file contains information about all users.

Prerequisites

- Log in to AMS Machine Works as an Administrator.
- Launch User Manager.

Procedure

1. Click the **USERS** tab at the bottom left side of the screen.
2. In the ribbon, click the **Export to CSV** button on the ribbon to download and open a .csv file in Excel.

18.1.11 Assign permissions and locations to a user

User Manager provides a way to make changes to a user's permissions and the locations the user can view in AMS Machine Works.

Prerequisites

- Log in to AMS Machine Works as an Administrator.
- Launch User Manager.

Procedure

1. Click the **USERS** tab at the bottom left side of the screen.
2. In the user hierarchy on the left side of the screen, select the user requiring a permissions change.
3. On the right side of the screen, select the **RESPONSIBILITIES** tab.
4. Click **Edit Permissions**.
   The **Edit Permissions** screen displays.
5. Click the **Enabled** checkbox next to the permission you want to provide to this user. Descriptions of each permission are provided on the screen. There are five different permissions that can be selected.
   a) **MANAGEUSER**. This permission provides the user with administrator privileges. Specifically, it allows the user to perform the following actions in User Manager: manage users; manage templates; manage user, password, lockout, and OIDC settings.
   b) **HISTORIZEASSET**. This option is not used in AMS Machine Works.
   c) **CREATEWORKNOTIFICATION**. This option is not used in AMS Machine Works.
   d) **MANAGEASSETSOURCE**. This permission enables the user to add and remove asset sources in Asset Explorer under the **Network** tab. Users that do not have this permission do not see the **Add Asset Source** button (or similar buttons) in the ribbon.

6. Click **OK**.
7. Click **Edit Locations**.
   The **Edit Locations** screen displays.
8. Select the checkboxes for the locations the user can view in Asset Explorer.
9. Click **OK**.

Permissions and locations are assigned.

18.1.12 Create a user template

User Manager allows you to create a template to use when setting up new users.

Prerequisites

- Log in to AMS Machine Works as an Administrator.
- Launch User Manager.

Procedure

1. Click the **TEMPLATES** tab at the bottom left side of the screen.
2. In the templates hierarchy on the left side of the screen, select the folder where this new template will be placed.
3. In the ribbon, click the **New Template** button. The **New Template** screen displays.
4. In the **Name** field, enter a name for this template.
5. Click the **Enabled** checkboxes for each permission to assign to the users created with this template.
6. Click the locations checkboxes for each location the users will be able to view in Asset Explorer.
7. Click **OK**.
   The new template is created and shown in the folder selected.

18.1.13 Apply a user template

You can apply a template to users once they have been created. Please note that any future changes made to the template do not automatically apply to the user's information that was created using this template. The updated template would have to be applied to the users again.

Prerequisites

- Log in to AMS Machine Works as an Administrator.
- Launch User Manager.

Procedure

1. Click the **TEMPLATES** tab at the bottom left side of the screen.
2. In the templates hierarchy on the left side of the screen, navigate to and select the template you want to use.
3. In the ribbon, click the **Apply Template** button.

The **Apply Template** screen displays.

4. Click the checkboxes next to the names of the users to which you want to apply this template's settings.
5. Click **OK**.
   The selected users now have the permissions and locations settings specified in the template.

18.1.14 Delete a user template

Prerequisites

- Log in to AMS Machine Works as an Administrator.
- Launch User Manager.

Procedure

1. Click the **TEMPLATES** tab at the bottom left side of the screen.
2. In the templates hierarchy on the left side of the screen, navigate to and select the template you want to delete.
3. In the ribbon, click the **Delete Template** button.
   The selected template is deleted.

18.1.15 Register licenses

You can view the status of and register licenses from User Manager. The license applies to the entire enterprise. It does not apply to a specific user.

Note
To complete this task, you must have MANAGESYSTEMSETTINGS permission.

Prerequisites

- Log in to AMS Machine Works as an Administrator.
- Launch User Manager.

Procedure

1. Click the **LICENSES** tab at the bottom left side of the screen.
2. On the screen, the following information displays:
   a) **Status**: The status information indicates if the current license is **GOOD**, **FAIR**, or **POOR**. A **GOOD** license is not in any danger of running out. A **FAIR** license is getting close to running out. A **POOR** license is currently running out or is about to expire.
   b) **Source**: The source information shows the product for which the license is assigned.
   c) **Feature**: The feature information shows the part of the product to which this license applies.

d) **Expires**: The expiration date information shows when the current license is set to expire.

3. Select the license to register from the list. Click the **Register License** button from the ribbon.
4. Click **Choose File** and browse to the license file for this feature on your PC. Typically, license files are emailed to the customer and stored in a folder of their choosing. You may need to email or call an Emerson representative to update your license. Follow the instructions on the screen.
5. Click **OK**.
   You will receive email notification that the license has been registered.

18.1.16 Request a license proposal

You can request a proposal for a license from Emerson directly from User Manager.

Prerequisites

- Log in to AMS Machine Works as an Administrator.
- Launch User Manager.

Procedure

1. Click the **LICENSES** tab at the bottom left side of the screen.
2. Click the **Request Proposal** button from the ribbon.
3. Click **Copy** to copy the machine fingerprint needed for the proposal. Email Emerson requesting a proposal and include the machine fingerprint. Follow the instructions on the screen.
4. Click **OK**.
   You will receive an email response from Emerson.

18.1.17 View Guardian information

The **Guardian Info** feature is used to collect information about the server that can be exported to a file and emailed to an Emerson Guardian employee for help with issues the user may be having. It is a tool used for customer support.

Prerequisites

- Log in to AMS Machine Works as an Administrator.
- Launch User Manager.

Procedure

1. Click the **LICENSES** tab at the bottom left side of the screen.
2. Select the license for the proposal from the list. Click the **Guardian Info** button from the ribbon.
   The **Guardian Information** screen displays.
3. Click **Export** to export the Guardian information to a .epm file.

18.1.18 Change user settings

Prerequisites

- Log in to AMS Machine Works as an Administrator.
- Launch User Manager.

Procedure

1. Click the **SETTINGS** tab at the top left side of the screen.
2. Click the **User Settings** button from the ribbon.
   The **User Settings** screen displays.
3. Click the **Require Unique Email** checkbox to prevent a single email address from having multiple accounts.
4. Click the **Allow Only Alphanumeric User Names** checkbox to prevent users from adding special characters to their user names.
5. Click **OK** to make these changes.

18.1.19 Change password settings

Prerequisites

- Log in to AMS Machine Works as an Administrator.
- Launch User Manager.

Procedure

1. Click the **SETTINGS** tab at the top left side of the screen.
2. Click the **Password Settings** button from the ribbon.
   The **Password Settings** screen displays.
3. In the **Required minimum length** field, enter a minimum length for user passwords.
4. Click the **Require special character** checkbox to require users to include at least one allowed special character in their passwords.
   The following special characters are allowed:
   Space; \ / | " * : < > ? , . ; ' " [ ] { } - _ = + ~ `
5. Click the **Require lowercase** checkbox to require users to include at least one lowercase letter in their passwords.
6. Click the **Require uppercase** checkbox to require users to include at least one uppercase letter in their passwords.
7. Click the **Require digit** checkbox to require users to include at least one numeric character in their passwords.
8. Click **OK** to make these changes.

18.1.20 Change lockout settings

These settings control the **Lock User** functions on the User Manager **HOME** tab.

Note
These changes are not applied until the user restarts the software.

Prerequisites

- Log in to AMS Machine Works as an Administrator.
- Launch User Manager.

Procedure

1. Click the **SETTINGS** tab at the top left side of the screen.
2. Click the **Lockout Settings** button from the ribbon.
   The **Lockout Settings** screen displays.
3. Click the **Enabled** checkbox to enable lockout settings.
4. In the **Lockout Time (in minutes)** field, enter the amount of time, in minutes, that a user is prevented from attempting to log in after the account is locked.
5. In the **Max Failed Access Attempts** field, enter the number of times a user can incorrectly enter his login credentials before the account is locked.
6. Click **OK** to make these changes.

18.1.21 Change OIDC settings

The OpenID Connect settings control which options appear in the login page under the section . These external accounts allow you to log in to AMS Machine Works using your credentials from another source—for example, from your Google account, or your Microsoft account, or your Active Directory account. As long as these external providers implement OpenID Connect, a standard protocol for sharing authentication information between Web Services, they can be used to link a user in AMS Machine Works External Account

The OpenID Connect settings are different depending on which OpenID Connect provider you are using.

Note
These changes are not applied until the user restarts the system.

Prerequisites

- Log in to AMS Machine Works as an Administrator.
- Launch User Manager.

Procedure

1. Click the **SETTINGS** External tab at the top left side of the screen.
2. Click the **OIDC Settings** button from the ribbon.
   The **OpenID Connect Settings** screen displays.

3. On the left side of the screen, select the display name whose settings you want to change. For example, AFDS.
4. In the **Claim Type** field, if you are using Active Directory/ADFS, then enter **http://schemas.xmlsoap.org/we/2005/05/identify/claims/upn**. If you are using a different provider, enter the claim type information specific to that provider. The **Claim Type** field defines which claim is used to link the user in the **Edit Logins** dialog.
5. In the **Display Name** field, enter the user defined display name. For example, **ADFS**.
6. In the **Scheme Name** field, enter the user defined scheme name. For example, **adfs**. The **Scheme Name** must be unique and cannot be the same name as another OpenID Connect Provider in the software.
7. In the **Authority** field, use this format for this field, if you are using Active Directory/ADFS, then enter **https://<YOUR ACTIVE DIRECTORY SERVER>/adfs/**. If you are using a different provider, enter the URL specific to that provider in the format of **https://<AUTHORITY>/.well-known/openid-configuration**. For example, **https://accounts.google.com/.well-known/openid-configuration**.
8. Enter the **Callback path** specific to the provider you are using.
9. Enter the **Client ID** specific to the provider you are using.
10. If the provider requires a client secret, check the **Enable Client Secret** checkbox and enter the secret in the **Client Secret** field.
11. Click **Add an OIDC Provider** to add a provider to the software.
12. Click **Delete this OIDC Provider** to remove this provider from the software.

19 OPC UA Server

19.1 Connect to OPC server

Follow these instructions to run the OPC Client (UaExpert) system and connect to the OPC Server.

Procedure

1. From your Desktop, run the **UAExpert OPC Client**.
2. Add the OPC Server by clicking on the + sign.
3. Click on **<Double click to Add Server>**.
4. Before clicking **OK**, choose if you prefer to connect via username and password or by providing the OPC UA Client's Certificate. See Connect an OPC UA client. Click **OK**.
5. Using the Server Hierarchy (on the left side of the screen), right-click on AMS Machine Works and click **Connect**.

19.2 Connect an OPC UA client

Building the plant hierarchy can take several minutes after installing the software and after rebooting the computer. Allow several minutes after installing or rebooting before attempting to connect OPC UA clients to the OPC UA Server.

The OPC UA Server has security features that protect your connection and your data. You may configure these settings after installation and setup.

Prerequisites

- Click the LICENSES tab in User Manager to confirm the OPC UA Server license is enabled
- The OPC UA client certificate must be a trusted certificate of the OPC UA server (AMS Machine Works server)

Procedure

1. From your OPC UA Client, supply the connection information of the OPC UA server. The OPC UA URL is **opc.tcp://[server]:4840**, where [server] is the computer name of the OPC UA server (AMS Machine Works server).
2. **Security Settings**—From your OPC UA client, select the security policy and message security mode that applies to your network. The OPC UA server supports these security settings:
    a) Security Policy
        - Basic128Rsa15
        - Basic256
        - Basic256Sha256

b) Message Security Mode
   - Sign
   - Sign and Encrypt

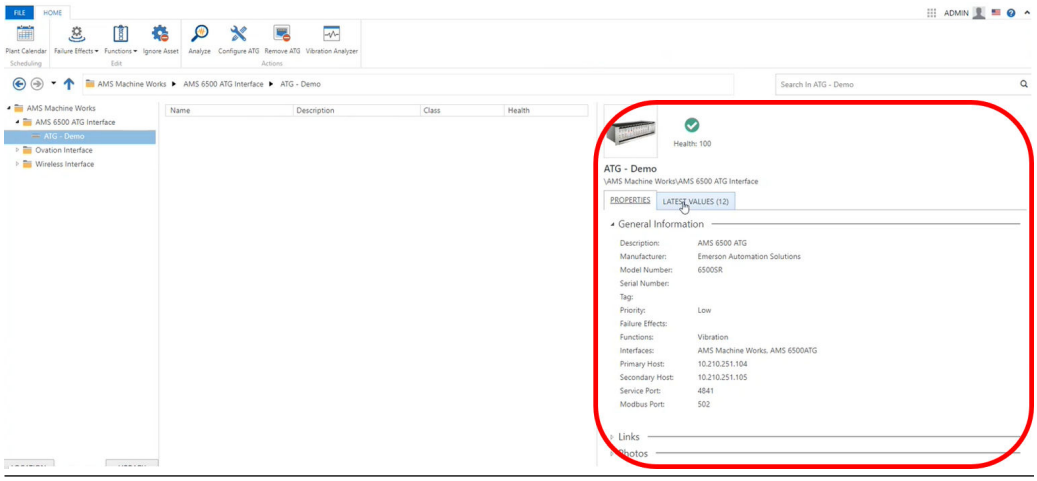
3. **Authentication Settings**—An OPC UA client may be able to connect to the OPC UA server via a predetermined username and password, or through certificate validation. To enable an OPC UA client to connect to the server via username and password, an Administrator must add the user to the Plantweb Optics OPC UA Users Windows Group.

19.3 Publish data through OPC UA

Anything that can be represented as a scalar value can be published through OPC UA. This means that waveforms and spectra cannot be published through OPC UA, however, derived measurements attached to waveforms and spectra can.

A good visual aide for determining the type of data that can be published trough OPC UA is the right side pane of a selected machine or device in the Asset Explorer. Any information contained within that area can be published through OPC UA using the UAExpert client.

Figure 19-1: A highlighted area containing all types of information that can be published through OPC UA



Information from both the **Latest Values** and **Properties** tabs can be published through OPC UA, as well as the machine/device **Health**.

Figure 19-2: Latest Values of an AMS 9530 visible in Asset Explorer

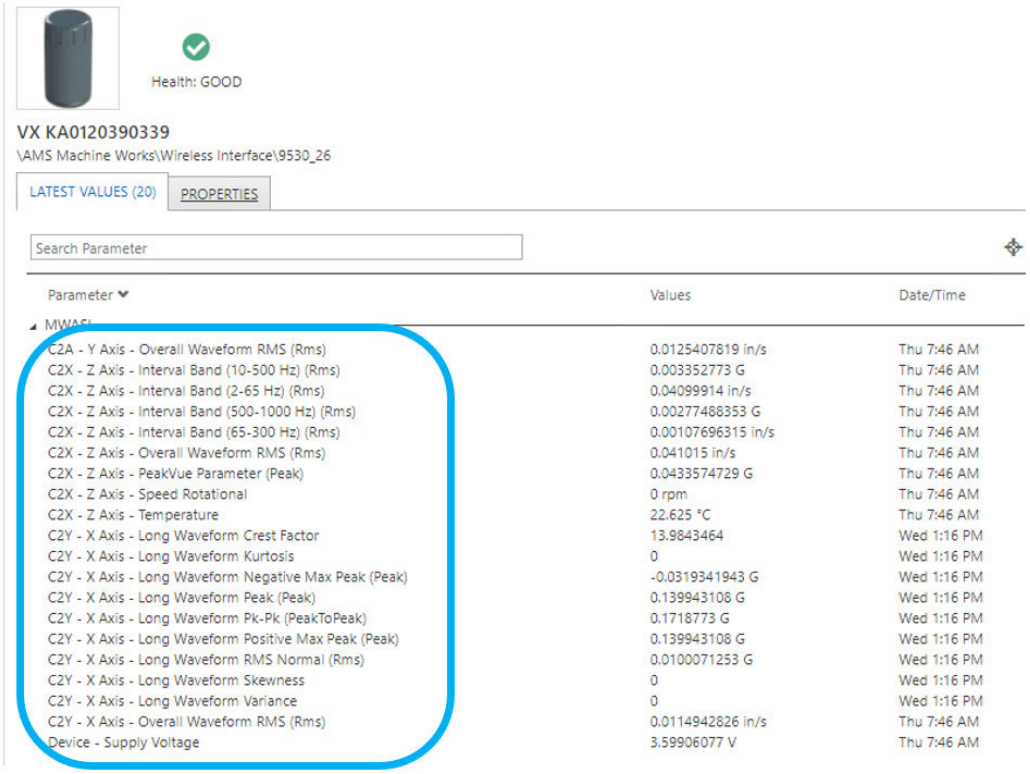


Figure 19-3: Properties of the same AMS 9530 visible in Asset Explorer

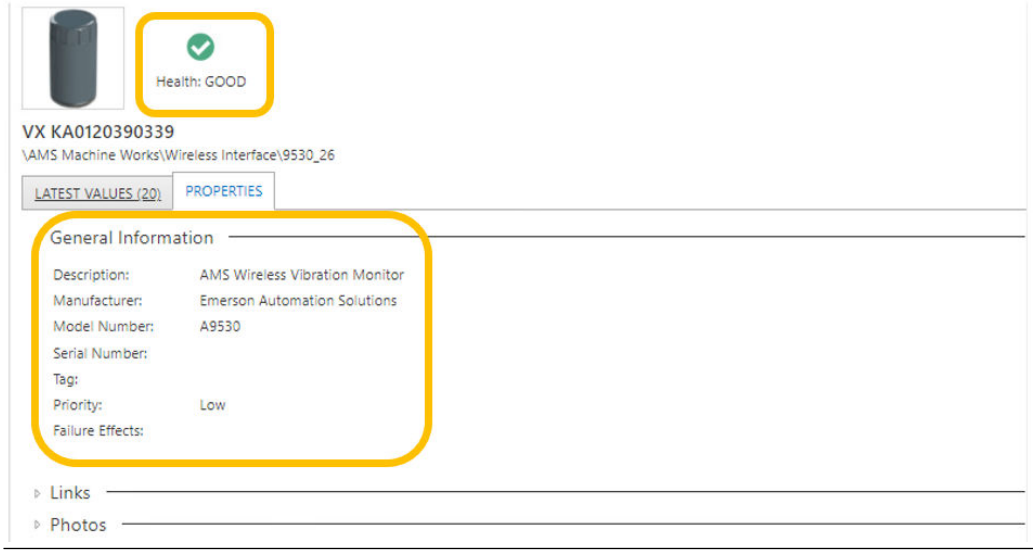
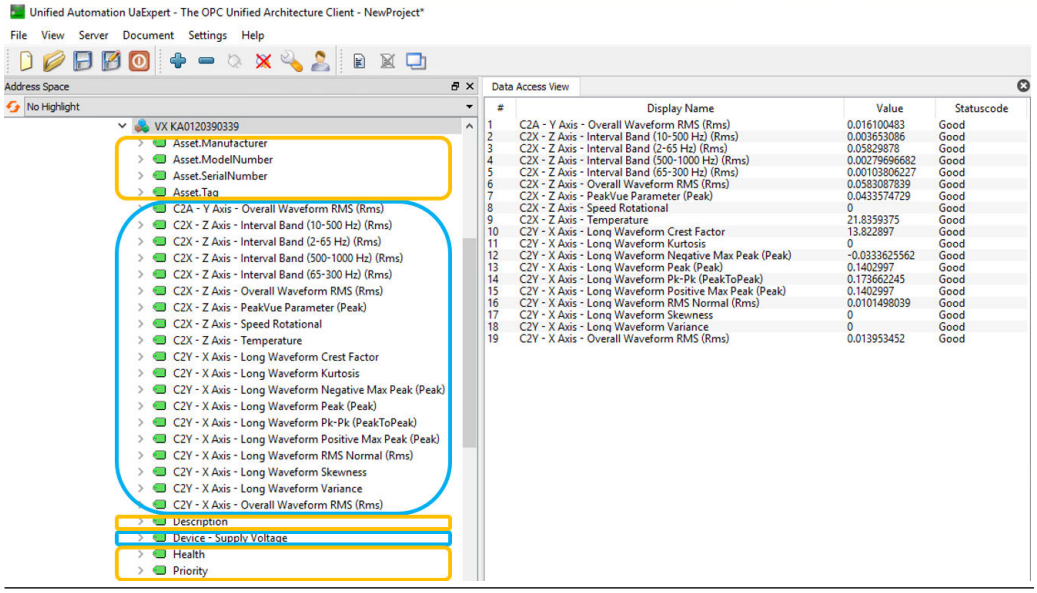


Figure 19-4: Data from both previous figures highlighted within UAExpert



20 AMS Machine Works Limits

Table 20-1: AMS Machine Works Limits

Item	Name	Limit	Units
Asset Explorer			
1	New Asset (Name)	60	characters
2	Name (ATG Name)	60	characters
4	Modbus Port Number	65535	-
5	AMS 6500 ATG Configuration Port Number	65535	-
6	New Device (Name)	60	characters
8	Asset Generic	500	count
9	Locations	1,000	count
10	Machine Trains	500	count
11	AMS 6500 ATGs	25	count
12	AMS 9420s	400	count
13	Emerson Wireless Gateway	20	count
Device Configuration			
14	Measurement Points	2,000	count
15	Collections per AMS 6500 ATG	25	count
16	Measurements per collection	2,000	count
Machine Configuration			
Machine Train Details			
20	Machine Train Components	3	components
21	Speed	120,000	RPM
22	Machine Train Name	60	characters
23	Machine Train Description	125	characters
24	Machine Train Component Name	60	characters
25	Machine Train Component Description	125	characters
Motor			
26	Manufacturer	60	characters
27	Model	60	characters
28	Speed (RPM)	120,000	RPM

Table 20-1: AMS Machine Works Limits *(continued)*

Item	Name	Limit	Units
29	Power	50,000	HP
30	Number of Poles	48	
31	Number of Rotor Bars	500	
32	Number of Stator Slots	501	
33	Frame Size	NaN	-N
34	Rated Volts	20,000	Volts
35	Full Load Current	1,000	Amps
36	Rated RPM	120,000	RPM
Motor Parts (similar to turbine parts, blower, centrifuge, compressor, generator, Generic, Spindle)			
37	Shaft Name	60	characters
38	Bearing	9	-
Coupling			
39	Coupling Name	60	characters
40	Coupling Description	255	characters
Gearbox			
41	Gearbox Name	60	characters
42	Gearbox Description	255	characters
43	Manufacturer	60	characters
44	Model	60	characters
45	Gearbox Ratio	100	-
47	Shaft	3	-
48	Gearbox Parts - Shaft Name	60	characters
49	Gearbox Parts - Gear Name	60	characters
50	Gearbox Parts - Number of Teeth	2,000	-
51	Number of Gears per shaft	2	-
52	Number of Bearings per shaft	2 per shaft	-
Pump			
53	Pump Information - Number of Inlet Pump Vanes	100	-
54	Pump Information - Number of Outlet Pump Vanes	100	-
55	Pump Stages	20	-

Table 20-1: AMS Machine Works Limits *(continued)*

Item	Name	Limit	Units
56	Number of Vanes	100	-
57	Number of Bearings per Pump	9	-
Fan			
58	Fan - Number of Primary Fan Blades	100	-
59	Fan - Number of Secondary Fan Blades	100	-
60	Fan Stages	20	-
61	Fan Number of Blades	100	-
62	Number of Bearings per Fan Shaft	9	-
Machine Configuration			
Combined Measurement Location Properties			
69	Sensor Angle	360	Degrees
70	Tach. Angle	360	Degrees
71	Resting Voltage	24	Volts
72	Bearing Clearance	1000 Um	microns
74	Tach name	60	characters
Misc			
75	Point ID	30	characters
76	Point ID Description	60	characters
Machine Journal			
General			
77	Cases per system	5,000	count
78	Cases (Open) per machine component	50	count
79	Cases (Resolved) per machine component	50	count
80	Cases (Open + Resolved) per machine component	100	count
81	Posts/Replies per system	500,000	count
82	Posts/Replies per case	100	count
83	Replies per post	NA	count
84	Post text size	102,400	characters
85	Case text size	64	characters

Table 20-1: AMS Machine Works Limits *(continued)*

Item	Name	Limit	Units
86	Attachments per post	64	count
87	Attachment (Single image) size	15	MB
88	Attachment (Single other) size	50	MB
89	Attachment filename length	256	characters
90	Attachment link length	1,024	characters
91	Attachment description length	256	characters
92	Tag text size	64	characters
93	Tags per post	50	count
94	Mentioned users per post	20	count
95	Number of severities	100	count
96	Number of urgencies	100	count
97	Severity text size	64	characters
98	Urgency Text Size	64	characters
99	Number values of severities	100	value
100	Number values of urgencies	100	value
101	Attachment size per download	1 GB	GB
102	Work recommendations per post	64	count
103	Work recommendations per system	480,000	count
104	Posts per report	200	count
105	Work recommendation subject length	256	characters
106	Work recommendation description length	500	characters
107	Work recommendation comment length	256	characters
Vibration Analyzer			
108	Concurrent Users	5	
109	Maximum nested hierarchy levels supported	6	

Glossary

active message

A message that has not been read by the user or has been previously read by the user and not dismissed.

alert state

A user-defined categorization of the health of an asset. For WirelessHART devices (such as AMS 9420s), these states are Advise, Maintenance, and Fail.

asset

Any physical component (such as a device or machine) being monitored by AMS Machine Works, or the logical representation of a physical asset. Examples include: motor, pump, fan, turbine, AMS Wireless Vibration Monitor, AMS 9420, and Emerson Wireless Gateway.

Asset Explorer

Utility that provides an interface for organizing and interacting with assets, and launching other utilities.

asset extension

Adds tasks or actions to the software. It can introduce specific classes of assets to the system, add menu options, and allow users to launch context-based dialogs and applications.

asset health

A numeric value on a normalized health scale, 0–100, that creates a single health index for an asset from the individual health score of the asset and from the health score of child assets, if available.

asset location

A type of location represented by its own icon and can contain other locations, assets, or devices. It has properties common to all assets, such a health score. A machine is a type of asset location defined by AMS Machine Works.

asset priority

A value representing the importance of an asset with respect to other assets in the system: **Does Not Contribute**, **Low, Medium**, **High**, or **Very High**.

asset source

Anything that collects data to be associated with an asset. For example, an Emerson Wireless Gateway, an AMS Wireless Vibration Monitor, or AMS 9420 Wireless Vibration Transmitter.

asset source location

A representation of the real-world, physical position of the asset source. Asset source locations allow users to arrange assets and asset sources by their physical locations, in addition to their logical positions in the network.

asset weight

The value associated with an asset, based on its priority, that affects the health calculation.

auto-binding

Happens when an asset source on the network, such as an AMS Wireless Vibration Monitor, is automatically bound to an asset source location in the Location navigator when mapping channels of a machine.

binding

Process of associating a device in the Network navigator with an asset source location or placeholder in the Location navigator. Binding completes the definition of an asset. There are two methods of binding: auto-binding and late binding.

channel mapping

The association of each channel on an asset source with a particular measurement location on a machine.

collection measurements

In Device Configuration, each device has collection measurements that bring in data to AMS Machine Works.

dashboard

AMS Machine Works dashboard provides status, measurement, and health information of machines and devices at-a-glance.

dynamic variable data

Four data values you can configure an AMS 9420 or any WirelessHART device to measure: primary value, secondary value, tertiary value, and quaternary value (PV, SV, TV, QV).

event

Any occurrence in AMS Machine Works that a service or utility wants the system to record and possibly react to. Certain events initiate a message that is delivered to users subscribed to receive messages for the event type. A user should have access to the asset as assigned by the AMS Machine Works administrator.

You can view all system events in the Event Viewer utility.

Event Viewer

Utility that allows you to view system-generated events.

failure effects

A filter option. Failure Effects identify and organize assets according to the effects they cause if there is an equipment failure. For example, you can label a Machine type Fan with **Environmental Control** if the purpose of the fan is to provide cooling to a production environment.

filters

Labels for categorizing system elements to allow grouping and filtering using the Search feature. In the Asset Explorer utility, you can label any asset with one or more of the following labels: Failure Effects, Functions, Interfaces.

functions

A filter option. Functions describe the functionality of the asset. For example, for AMS 9420 Wireless Vibration Transmitters, you can apply the Functions **Vibration**, **Temperature**, and **Analytical**.

ignore

An asset state in which the messages and health of an asset is disabled for a user-specified time period.

individual health score

The health of an asset calculated using the individual health score calculation method, from the modules' health opinions reported on the asset.

interfaces

Extends the software by adding connectivity and communications to asset sources, such as external devices or systems. An interface allows data to be stored and accessed in the software.

interfaces

A filter option. Interfaces describe how the asset sends and receives information on the network. Examples include **HART** and **Ethernet**.

late binding

The process of manually binding a placeholder to an asset source discovered on the network.

Library

Stores configured class instances so you can quickly add them into the or navigators.

location

A logical representation of an area in a facility. You determine how to organize your facility into locations.

Location navigator

An area in the Asset Explorer utility where you can create and organize your site, view information about the locations and assets you create, and perform operations within the context of a selected location or asset.

measurement location

The physical location where data is acquired; usually the physical location of a sensor.

Network navigator

An area in Asset Explorer that displays assets that have been added to the Network tab. The assets are organized by their Asset Source Interface, then by asset.

Plant Calendar

Used to schedule plant activities and events such as plant maintenance outages.

spectrum

A spectrum plot is a graphical representation of vibration frequencies and their amplitude. In AMS Machine Works you can view spectra in the Vibration Analyzer application or in the AMS Machine Works Dashboard.

store on alert

Store on alert lets you capture data as specific measurement parameters go in or out of alert states.

trends

A trend plot shows a number of measurements of a parameter over a period of time. In AMS Machine Works you can view trends in the Vibration Analyzer application or in the AMS Machine Works Dashboard.

User Manager

Utility that lets you control and monitor access to various components of the software.

Vibration Analyzer

A module of AMS Machine Works that lets you analyze periodic vibration data collected from supported devices connected to machines in your site.

waveform

A waveform plot is a graphical representation of how the vibration level changes with time. In AMS Machine Works you can view waveforms in the Vibration Analyzer application or in the AMS Machine Works Dashboard.

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Rev. 02
2022

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