

# AMS Machine Works v1.7.5

- Full suite of tools for analysis and tracking machine health
- Supports a variety of Emerson's monitoring technologies, including:
  - AMS Wireless Vibration Monitor
  - AMS 9420 Wireless Vibration Transmitter
  - AMS Asset Monitor for online condition monitoring
- Intuitive dashboard makes keeping up with day-to-day activities and machinery health possible at a glance
- Part of the Plantweb Digital Ecosystem



## Overview

In the past when a problem arose with one of your critical assets you might have had to comb through tons of data, and potentially even different software and databases to identify what's important to you at that moment. Unfortunately, time isn't always on your side in these scenarios. You need relevant information fast, and you need the right tools there to diagnose faults as fast as possible.

AMS Machine Works is a comprehensive software solution that greatly simplifies the fault diagnosis and analysis process by combining predictive maintenance techniques with comprehensive analysis tools to provide easy and accurate assessment of machinery health in your facility.

- One software application and database for all Emerson vibration hardware
- Easy to get started and understand, but contains the power tools necessary for experts
- Scalable and flexible deployment models

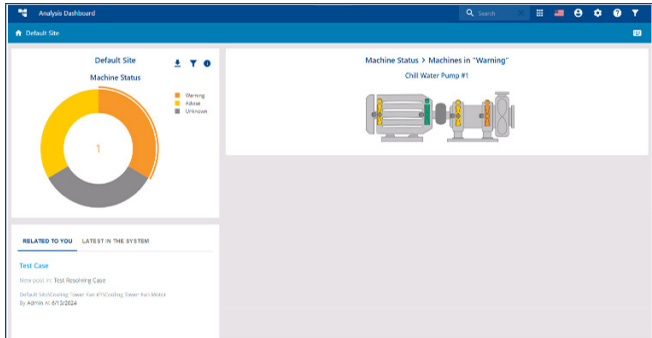
## Powerful Tools in an Intuitive Interface

AMS Machine Works includes a vibration analysis module with familiar, easy-to-use analytical tools such as:

- Scalar value trending
- 1x, 2x, Nx, peak/phase trending, energy in a band trending
- Waveform
- Spectrum
- Spectrum Waterfall and Cascade
- PeakVue™ measurements including overall, waveform\*, spectrum\*
- Fault frequencies
- Standard, harmonic, and sideband cursor
- Circular plot

- Orbit
- Bode/Nyquist
- Harmonic family detection
- Sideband frequency detection
- Shaft centerline

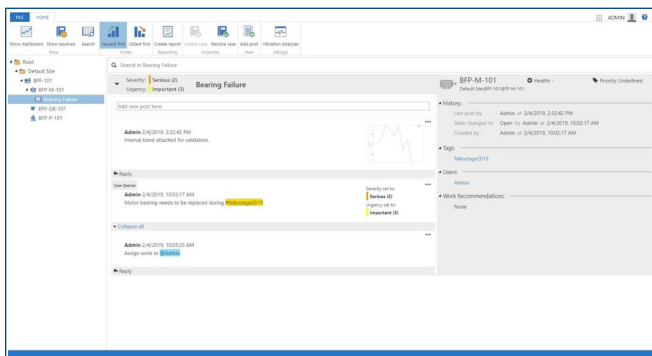
\*PeakVue waveform and spectrum are not supported with Ovation Machinery Health Monitor.



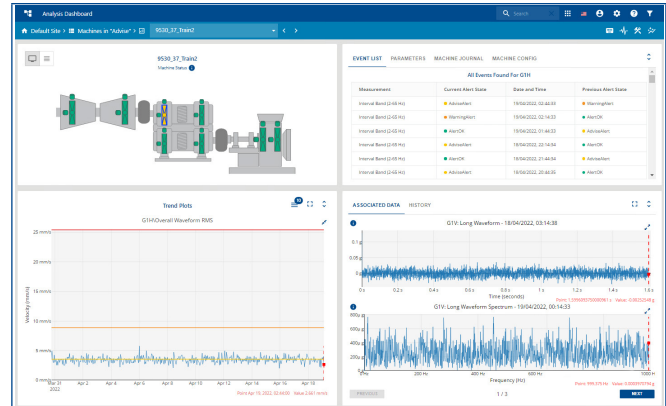
The AMS Machine Works Analysis Dashboard allows users to easily identify what's important.

## Easily Document Machine History and Recommendations

The Machine Journal utility enables you to keep track of your analysis activities and record information to be used for asset management. The flexible interface allows you to add documents, images, and add data directly from the Vibration Analyzer application. It is also persona-specific, so you see what's important to you, but you can also tag other users when necessary. When it's time to take action, you can generate work recommendations, which when connected to Plantweb Optics can be published to your CMMS.



Machine Journal enables users to document analysis activities and pending faults.



Intuitive user interface makes diagnosing faults easier than ever.

## Machine Health at a Glance

With the AMS Machine Works Analysis Dashboard you are no longer required to search through alarm logs or dig through hierarchies to find out what machines need your attention. Nor are you required to look through notes and emails to find out what predictive maintenance activities are taking place and what machines need repair.

With one glance at the Analysis Dashboard you can see:

- Machine health
- Device/system health
- Machines that need your immediate attention
- Machine Journal activity
- Work recommendations and status

Selecting any of the items on the dashboard allows you to quickly focus in on what's important, greatly improving workflow and optimizing user experience.

## AMS Wireless Vibration Monitor and AMS 9420 Wireless Vibration Transmitter

Emerson's AMS Wireless Vibration Monitor and AMS 9420 Wireless Vibration Transmitter's are integrated into AMS Machine Works through the Emerson Smart Wireless Gateway (1410 and 1420 models). AMS Machine Works then utilizes that data to perform in-depth vibration analysis of the monitored rotating assets.

AMS Machine Works provides wireless vibration users with all of the necessary tools and functionality needed to utilize the wireless vibration transmitters to their full potential. This includes complete vibration data including overall levels, energy bands, high resolution spectra, and waveforms.

Also included is Emerson's unique PeakVue technology that filters out traditional vibration signals to focus exclusively on impacting, a more reliable indication of asset health in specific types of equipment. PeakVue can visualize distress signals on a machine that are simply not visible with other vibration measurements.

The AMS Wireless Vibration Monitor also supports Emerson's new PeakVue Plus technology which automates analysis and presents the information in a color-coded graphic so that users can, at a glance, identify not only a machinery issue but its severity.



Emerson's wireless vibration solutions provide best-in-class wireless vibration data and capabilities.

## AMS Asset Monitor

With this release, Emerson's AMS Asset Monitor communicates directly with AMS Machine Works. Now it's possible to store process and vibration data from the AMS Asset Monitor in order to perform in-depth analysis of your important assets.

It accommodates up to 12 CHARMs including several Vibration CHARMs as well as DeltaV CHARMs for process inputs. Predicates can be configured to optimize collection of high resolution waveforms and spectra.



Up to the moment process and condition monitoring results with Store on Alert for automated fault detection.

## System Requirements

System Requirements: AMS Machine Works Server	
AMS Machine Works Version	1.7.5
Operating System	Windows Server 2022 Standard or Datacenter Windows Server 2019 Standard or Datacenter Windows Server 2016 Standard or Datacenter
CPU Architecture	64-bit
Internet Information Services (IIS)	v8.5, v10 (supplied with OS)
Microsoft SQL Server	MS SQL Server 2017 / 2019 Full (must be purchased separately) (recommended) MS SQL Server 2017 Express (included with product, 10GB limit) (proof of concept)
Browsers	Google Chrome (latest version) Microsoft Edge (latest version)
Processor	Large and Extra-Large Systems — 3.2 GHz, 8-core processor, Intel Xeon-scalable (Gold) or faster (recommended) Small and Medium Systems — 2.4 GHz, 6-core processor, Intel Xeon-scalable (Gold) or faster (minimum))
RAM	Large and Extra-Large Systems — 64 GB Medium Systems — 32 GB Small Systems — 16 GB
Hard Drive	SSD hard drive (recommended) SAS hard drive (10K RPM) (minimum)
Available Disk Space	1 TB (recommended) 500 GB (minimum) 100 GB (for wireless-only setup)
Screen Resolution	4K UHD (3840 x 2160 pixels) (maximum) SXGA (1280 x 1024 pixels) (minimum)
Network	2 x 1 GB NIC (use 2 NICs to isolate Level 3 traffic from Level 2 traffic) ( recommended) 1 x 1 GB NIC (supported)

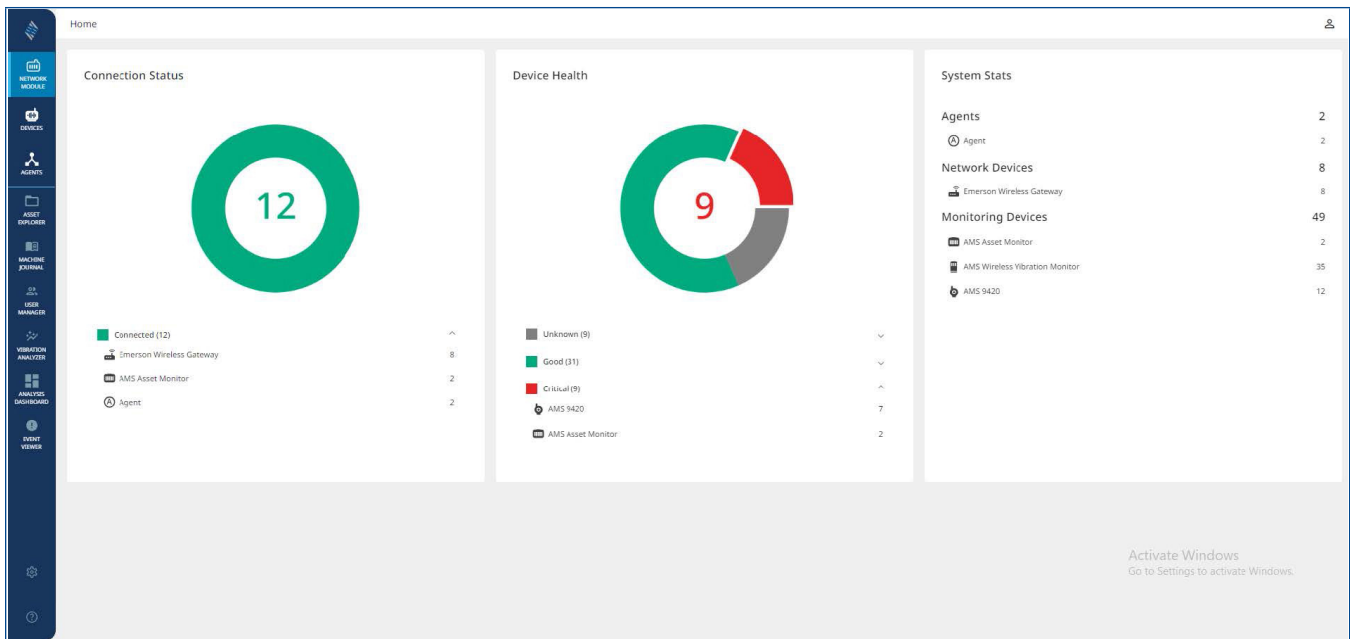
System Requirements: AMS Machine Works Vibration Analyzer Client	
Operating System	Windows Server 2022 Standard or Datacenter Windows Server 2019 Standard Windows Server 2016 Standard Windows 10 Pro Windows 10 Enterprise
CPU Architecture	64-bit
Internet Information Services (IIS)	v8.5, v10 (supplied with OS)
Processor	2.2 GHz, 4-core processor Intel Xeon, Intel Core i5 6th Gen (i5 6400T) or better
RAM	16 GB (recommended) 8 GB (minimum)
Hard Drive	SAS hard drive (10K RPM)
Available Disk Space	100 GB
Screen Resolution	4K UHD (3840 x 2160 pixels) (maximum) SXGA (1280 x 1024 pixels) (minimum)

Supported Device Quantities	
AMS Wireless Vibration Monitor	Up to 5,000 devices connected across 120 Emerson Wireless Gateways
AMS 9420	Up to 600 devices across 50 Emerson Wireless Gateways
AMS Asset Monitor	Up to 4,800 channels or 400 AMS Asset Monitors on a single AMS Machine Works system

System Requirements: External MongoDB Server	
Operating System	Windows Server 2022 Standard or Datacenter Windows Server 2019 Standard or Datacenter Windows Server 2016 Standard or Datacenter
CPU Architecture	64-bit
MongoDB Server	MongoDB 6.0.10
Processor	2.2 GHz, 4-core processor Intel Xeon-scalable or faster
RAM	Large and Extra-Large Systems — 32 GB Small and Medium Systems — 16 GB
Hard Drive	SAS hard drive (10K RPM) SSD hard drive, separated for OS and Data
Available Disk Space	Refer to Machine Works 1.7.5 System Guide
Network	2 x 1 GB NIC

System Requirements: AMS Machine Works Agent Server	
Operating System	Windows Server 2022 Standard or Datacenter Windows Server 2019 Standard or Datacenter Windows Server 2016 Standard or Datacenter
CPU Architecture	64-bit
Internet Information Services (IIS)	v8.5, v10 (supplied with OS)
Processor	Two Agent Systems — 2.4 GHz, 6-core processor Intel Xeon-scalable or faster Single Agent Systems — 2.4 GHz, 4-core processor Intel Xeon-scalable or faster
RAM	Two Agent Systems — 32 GB Single Agent Systems — 16 GB
Hard Drive	SSD hard drive (recommended) SAS hard drive (10K RPM) (minimum)
Available Disk Space	10 GB (Wireless Agent) 10 GB (AMS Asset Monitor Agent)
Network	2 x 1 GB NIC (use 2 NICs to isolate Level 3 traffic from Level 2 traffic) (recommended) 1 x 1 GB NIC (supported)

## AMS Machine Works 1.7.5 Overview



Machine Works 1.7.5 introduces many new architectural and functional enhancements to Machine Works. These include:

- New infrastructure
- Network Device Module
- Improved OPC UA server
- Data retention procedure

New infrastructure components improve Machine Work's ability to monitor more online and wireless devices, gather parameters from these devices with better throughput and latency, and improve the overall experience of the user accessing the application. Screen loading times are reduced to provide optimal scrolling and viewing of waveform and spectrum data. The revised OPC UA server improves the ability to map and export tags from Machine Works to external data historian systems. Other enhancements such as the network device module provides a more intuitive way of for users to configure devices and ensure consistency with other setup activities, such as alarm and analysis parameter setup.

### New Architectures

Version 1.7.5 of Machine Works introduces new components to improve communications with online and wireless devices as well as provide better scalability. Paramount to this are the AMS Asset Monitor and Wireless Vibration Monitor Agent servers. These effectively replace the interface servers used in 1.7.2 and earlier versions of Machine Works. Agents are software constructs that can be deployed on either the same server as Machine Works or on external servers located near the equipment they are monitoring. By leveraging device specific protocols, agents help to improve communication to enable faster data transfer between online and wireless devices and Machine Works. Other benefits include the ability to support a larger number of these devices per agent, improving Machine Work's ability to monitor more devices overall than previous iterations. Device whitelisting, which had been a manual process in the application, can now be thoroughly handled by agents.

Another new component in 1.7.5 is the Mongo database for storage of historical data. Mongo uses open-source technology and enables faster querying of the database through horizontal partitioning. As such, 1.7.5 will support a larger number of concurrent application as well as vibration analysis (VibApp) users, in addition to improved performance for the Machine Works web applications.

### OPC UA Server

The new OPC UA server will enable automated integration and easy generation of the required tag list, as well as a more intuitive tree for selecting data sources.

### Network Device Module

The network device module is a new component in 1.7.5 that is dedicated to the purpose of configuring channels and measurement points for the AMS Asset Monitor and wireless vibration transmitters and analyzers. This enables users to focus on device setup and maintenance as a separate activity while not interfering with configuration of alarms, analysis parameters and machine train configuration.

## Ordering and Licensing Information

AMS Machine Works can be licensed on a subscription basis. The length of the subscription and renewal terms will be three years unless otherwise set forth in the applicable Emerson proposal. Each license must include an AMS Machine Works Server and a purchased quantity of users and vibration tags. The purchaser may not use the AMS Machine Works software with more than the purchased number of users and vibration tags, all of which as set forth in the applicable Emerson proposal.

License Options	Subscription Part Number
AMS Machine Works Server	A43-SYSTEM
<b>Users (combine for desired amount, max of 25 total per system)</b>	
1 User	A43USER-1
5 Users	A43USER-5
15 Users	A43USER-15
25 Users	A43USER-25
<b>Vibration Tags (combine for desired amount, max of 12000 total per system)</b>	
100	A43TAGS-100
500	A43TAGS-500
1000	A43TAGS-1000
2000	A43TAGS-2000
5000	A43TAGS-5000
10000	A43TAGS-10000
12000	A43TAGS-12000
20000	A43TAGS-20000
<b>Add-on Licenses</b>	
OPC UA	A43-OPCUA



## AMS Machine Works Cloud Hosted Solution

Emerson has partnered with Microsoft to offer **AMS Machine Works Cloud Hosted Solution** in the Azure cloud platform. This eliminates the need for customers to deploy and maintain on-premise installations of the software along with costly infrastructure investment. AMS Wireless Vibration Monitor and AMS 9420 Wireless Vibration Transmitters are easily integrated into AMS Machine Works in the cloud through the Emerson Smart Wireless Gateway and a secure VPN connection established via Cisco Industrial 4G routers.

Having your system on the cloud means that authorized staff can securely access information and data anytime and anywhere. This translates into enhanced mobility, flexibility and collaboration within your teams, with your corporate analyst pool, or even with Emerson experts.

## Asset Condition Monitoring Services

Emerson's team of machinery monitoring experts can supplement plant programs with **Asset Condition Monitoring Services**. Specialists are available to monitor and analyze data from Emerson's route-based vibration analyzers, wireless vibration devices, and online systems. They follow up with easy-to-read, actionable periodic reports for your maintenance department.

## Software Support

Standard support including 24x7 call support, hotfixes, and updates to the software is included for the current and previous major software versions.

©2024, Emerson. All rights reserved.

The Emerson logo is a trademark and service mark of Emerson Electric Co. The AMS logo is a mark of one of the Emerson family of companies. All other marks are the property of their respective owners.

The contents of this publication are presented for informational purposes only, and while diligent efforts were made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. All sales are governed by our terms and conditions, which are available on request. We reserve the right to modify or improve the designs or specifications of our products at any time without notice.

### Contact Us

 [www.emerson.com/contactus](http://www.emerson.com/contactus)