Bently Nevada

Welcome to System 1

Version 20.2 [Nov 2020]

Before you Begin

! Installation !

Before installing System 1 20.2, you must uninstall your previous version of System 1.

! Change to Program ID impacting OPC Data Collection !

As part of the Baker Hughes separation from General Electric (GE), OPC DA import settings have been renamed. In order to maintain data collection from OPC connections, please take the following actions:

Property	Prior Versions	Version 20.2	Required Action
Program ID	GE.BentlyNevada.Sys1OPCServer.2	System1OPCServer.1	Change Program ID in client to "System1OPCserver.1"
DCOM Config Name	System 1 OPC Server	System 1 OPC DA Service	**Before Uninstalling System 1** 1. Take a screenshot of DCOM setting for "System 1 OPC Server" for the following tabs: • General • Security (Launch and Activation/Access/Configuration permissions) • Identity **After Installing System 1 v20.2** Reapply the DCOM settings to "System 1 OPC DA Service"

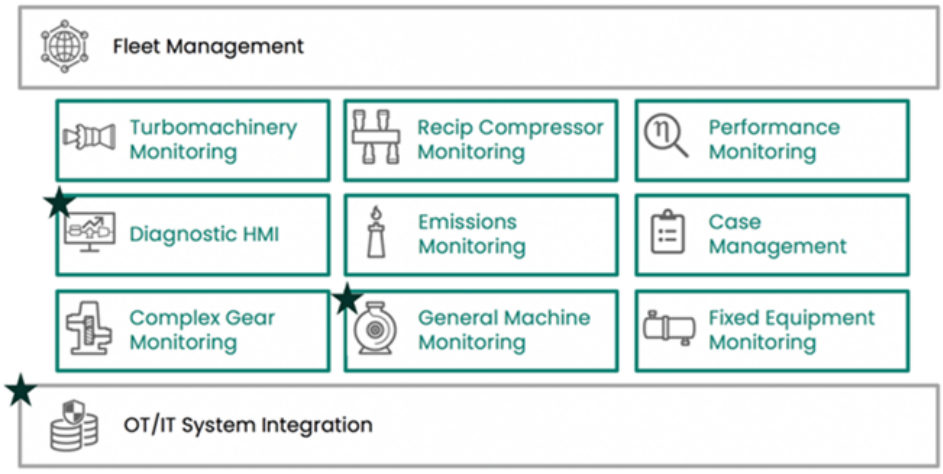
For Bently Performance (BP) installations, open the BP template key and change the Program ID from "Input OPC Server" to "System1OPCServer.1" (as shown in below image).

Bently Performance	Performance 0.6.0
Input OPC Server	System1OPCServer.1
Auto Start	TRUE
Cycle Time	30000
Status	Ok
Input Cell Range	A10:A200
Output Cell Range	V11:V200

For more details, please refer to System 1 Help.

Welcome

Bently Nevada is pleased to present System 1 v20.2. This release delivers major new capabilities to the OT/IT System Integration, Diagnostic HMI, and General Machinery Monitoring use cases provided by System 1.



OT/IT System Integration

Setpoint Configuration on Rx Databases - Users can now configure Condition Monitoring Setpoints on Rx databases, allowing for more convenient asset management from the Business Network. Setpoints that have already been configured on Tx databases will remain read-only. Database configuration within Rx databases will continue to be expanded upon in future releases.

OPC UA Export – System 1 OPC UA Export has been extended to support instrument hierarchy export from System 1 to OPC UA Clients. In addition, System Health Event export has also been added. OPC UA Export is supported on both Tx and Rx Servers, as well as for Portables Databases. This extension of OPC UA capabilities enables customers to interface the rich dataset of System 1 with external data stores for further analytics and enhanced asset insights.

Diagnostic HMI

HMI View Saving & Export/Import – HMI views can be saved as templates and exported for use in other databases, allowing for more efficient and consistent HMI displays across the asset fleet.

Modbus Enhancements – System 1 v20.2 enhances Modbus connectivity with many new capabilities, including support for 200 Modbus devices per database (compared to 20 devices in System 1 v20.1) and the ability to synchronize setpoints between the Control System and System 1 via Modbus.

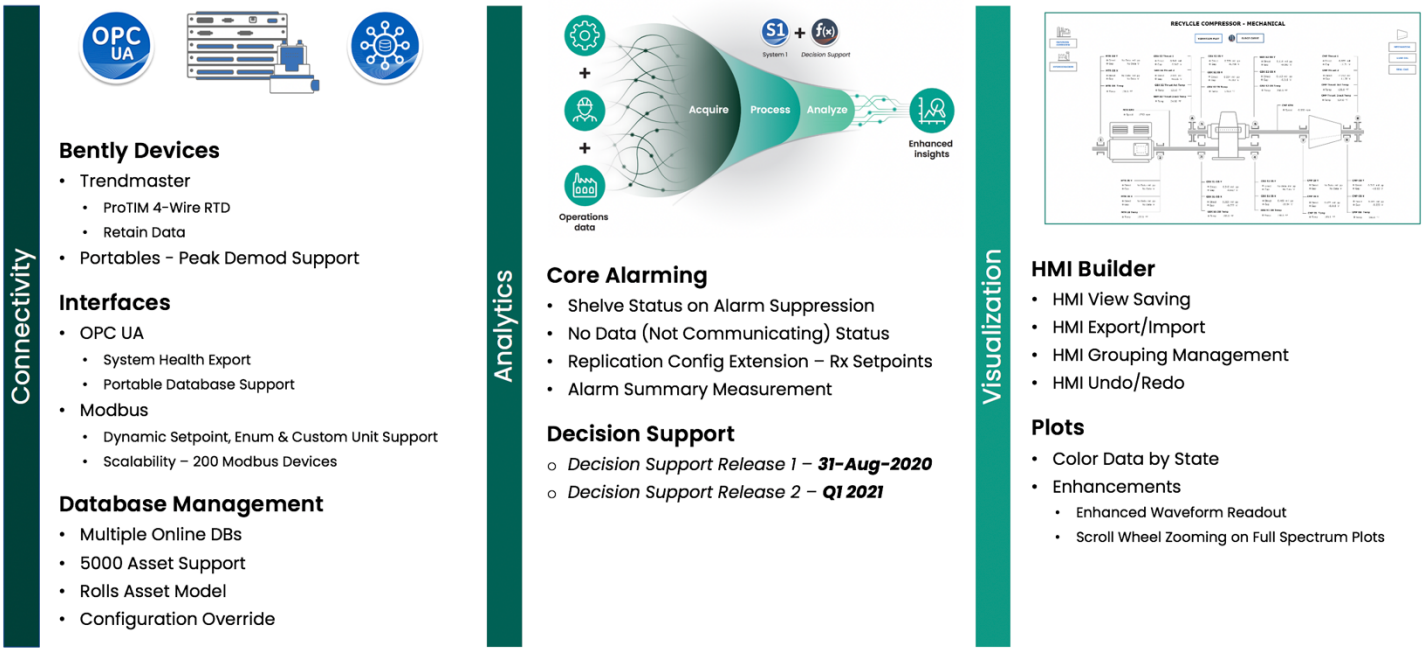
General Machinery Monitoring

Roll Section Asset Model – Utilizing the new Roll Section asset model, users can configure Paper Machines, Conveyors, and Rolling Mills. Many different roll types are available, allowing the configuration to be customized for varying industrial applications.

5000 Machines per Database – Users can now add up to 5000 machine cases within a System 1 database (previous limit was 2000 machine cases), allowing users to configure, monitor, and compare more machines across their facility.

Complete New Capability List

Users upgrading to System 1 v20.2 will also benefit from several other improvements to the platform, as outlined below:



Bently Nevada remains focused on delivering the world's premier plant-wide machinery management software through bi-annual product releases. For a detailed overview of the System 1 platform, please visit the System 1 Website.

Thank you,

Chris Kramm
System 1 Product Manager, On behalf of your System 1 Leadership and Development Teams
Bently Nevada, a Baker Hughes business

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1. SYSTEM 1 V20.2 FEATURE OVERVIEW

Connectivity		
Bently Devices		
ProTIM 4-Wire RTD Support	System 1 now supports all ProTIM channel types, with the addition of the ProTIM 4 wire RTD channel.	3.1.1
Retain Data on TIM Replacement	When replacing a TIM with another TIM and the channel type and channel numbers match, historical data is now retained.	3.1.2
Portables Peak Demod Support	System 1 now supports PeakDemod measurements, which can be sent to SCOUT200 devices as part of a route.	3.1.3
6.x API Custom Unit Support	Migrated System 1 Classic API tags (via 6.x connector) with unknown unit can be assigned a custom unit or replaced with a Bently unit.	3.1.4
Interfaces		
OPC UA Instrument Hierarchy & System Health Export	System 1 OPC UA Export has been extended to support instrument hierarchy export from System 1 to OPC UA Clients. In addition, System Health Event export has also been added.	3.2.1
OPC UA Portables Database Support	System 1 now supports OPC UA export of data and events from Portables databases that have Data Collection Enabled.	3.2.2
Modbus Dynamic Setpoints [PostgreSQL]	Synchronize setpoints between the Control System and S1 via Modbus.	3.2.3
Modbus Enum & Custom Unit Support	Support for Enum points and custom units has been extended to tags from Modbus devices.	3.2.4
Modbus Device Scalability [PostgreSQL]	Add up to 200 Modbus devices to a System 1 Database (previous limit was 20).	3.2.5
Data Management		
Multiple Online DBs [PostgreSQL]	Customers can now enable data collection on up to 5 databases on a single System 1 server, based on the system specification.	3.3.1
5000 Machine Case Support [PostgreSQL]	Add up to 5000 machine cases within a single System 1 database (previous limit was 2000 machine cases).	3.3.2
Roll Section Asset Model	A new asset type, Roll Section, has been added to the Configuration Library, allowing users to build Paper machines, Conveyors, Rolling Mills, and more.	3.3.3
Configuration Overwrite [PostgreSQL]	A Configuration-Only Backup can be restored onto a database, allowing for configuration to be modified on a separate machine, while preserving all collected data	3.3.4
User Template Upgrades	System 1 now supports upgrading user defined templates that were exported from a previous version of System 1.	3.3.5

Analytics		
Core Alarming		
Shelve Alarm on Suppression	When suppressing an alarm, users can choose to shelve the alarm and its associated status propagation throughout Display.	4.1.1
No Data Status	When System 1 stops receiving data from an instrument (e.g., Device Not Communicating, Config Out-of-Date), a No Data state occurs, which is propagated in Display as an Instrumentation Level 3 Alarm.	4.1.2
Setpoint Configuration on Rx Databases	Users can now configure Condition Monitoring Setpoints on Rx databases, allowing for more convenient asset management from the Business Network	4.1.3
Alarm Summary Enhancements	Enhancements to the Alarm Summary Measurement, including ability to configure setpoints on status measurements (e.g., Have New Alarm).	4.1.4

Visualization		
HMI		
HMI View Saving	Save created HMI views. When adding new views, select from one or more saved tabs to quickly build out HMI view suites per asset.	5.1.1
HMI Export/Import	Export saved HMI views to a file. This file can be imported into other databases, allowing for consistent and efficient HMI view building.	5.1.2
HMI Grouping	Advanced grouping control is now available, allowing users to group any selected content within the view. Groups can have labels and titles, enhancing content organization and readability.	5.1.3
HMI Enhancements	Other enhancements to the HMI builder include undo/redo, component navigation, and new symbols. See video for more details.	5.1.4
Plots		
Color Data by State (PostgreSQL*)	Users can color code data from different machine operating states within the Plots workspace, enabling deeper analysis of machine condition and its change over time.	5.2.1
Enhanced Waveform Readout	• Display Cursor difference in Frequency unit in Timebase plot • Display Crest factor and Waveform O/All (in rms) values in cursor readout in Timebase and Orbit Timebase plot	5.2.2
Scroll Wheel Zooming on Full Spectrum Plots	When scroll-wheel zooming, Full Mode plots (Spectrum, Waterfall, Cascade) are zoomed symmetrically around the X-axis mid-point.	-

2. VERSION SUPPORT & OPERATING SYSTEM COMPATIBILITY

System 1 follows a semi-annual release cadence with targeted releases in May and November of each year. Versions are fully supported for a minimum of two years from the published date of availability (Table 1).

New Versions of System 1 benefit from:

- Compatibility with the latest Microsoft Client & Server Operating Systems
- Client backwards compatibility to previous versions under support (20.2 Client to 19.1 Server DB)
- Database upgrade from previous versions released within last 3 years (18.2→20.2)
- Security patch & update testing for the latest available version
- Bug fixes included in the latest available version
- Standard technical support with escalation to engineering as required

Versions no longer supported:

- Standard support is provided for common FAQ inquiries, but users are encouraged to update software to the latest version to benefit from new features, OS compatibility, and bug fixes.

Table 1: System 1 Version Support & OS Compatibility Matrix

System 1 Versions & Support			Windows Server OS					Windows Client OS (64bit)		
Version	Available	End of Support	2019	2016	2012 R2	2012	2008 R2	10**	8.1 U1	7 SP1
20.2	Nov 2020	Nov 2022	✓	✓	✓			✓	✓	
20.1	May 2020	May 2022	✓	✓	✓	✓		✓	✓	
19.2	Nov 2019	Nov 2021	✓	✓	✓	✓	✓	✓	✓	✓
19.1	May 2019	May 2021	✓	✓	✓	✓	✓	✓	✓	✓
18.2	Dec 2018	Dec 2020		✓	✓	✓	✓	✓	✓	✓
18.1	Jul 2018	Jul 2020		✓	✓	✓	✓	✓	✓	✓

**Windows 10 version compatibility will track Microsoft's published release and support model. The latest version of System 1 will be tested and supported on all versions of Windows 10 under support as published on their website based on the System 1 version's published date of availability.

System 1 v20.2 (Windows 10 v1903, 1909, 2004)

System 1 v20.1 (Windows 10 v1903, 1809, 1803)

System 1 v19.2 (Windows 10 v1903, 1809, 1803)

System 1 v19.1 (Windows 10 v1809, 1803)

System 1 v18.2 (Windows 10 v1803, 1709)

3. CONNECTIVITY

3.1 Bently Devices

3.1.1 ProTIM 4-Wire RTD Support

Trendmaster DSM video located in Bently Nevada Tech Support Training Library
Valid M&S Agreement Required

System 1 v20.2 adds support for the 4-Wire RTD channel type from the ProTIM (Programmable Transducer Input Module) family. With this addition, all ProTIM channel types are supported within System 1.

A complete list of supported channel types is captured in Table 2. Customers can migrate configuration and data for supported channel types, including spectral band configuration, setpoints, and data.

Table 2: Supported Trendmaster Channel Types (see Data Sheet for HW P/N)

TIM	19.2	20.1	20.2
ProTIM	○ Accel to Velocity Point ○ Low Frequency Accel to Velocity Point ○ Rack Buffer Output point ○ Temperature Point: 2-3 wire Platinum RTD ○ Temperature Point: TC K Type ○ Speed Input: Keyphasor	○ Displacement Point ○ Pressure Point ○ Process Points ○ Accel to Velocity with AE (Acceleration Enveloping)	○ 4 wire RTD Point
FlexiTIM	○ Accel to Velocity FlexiTIM ○ 100 Ohm Platinum RTD FlexiTIM ○ J Type TC FlexiTIM ○ K Type TC FlexiTIM		
TIM		○ Displacement Point ○ Keyphasor Point ○ Process Points ○ Rack Buffered Keyphasor Point ○ Rack Buffered Output Point ○ Accel to Velocity Point ○ Velocity Point ○ Type J Thermocouple Temperature Point ○ Type K Thermocouple Temperature Point	
1900 Monitors		○ 1900/25 Velocity Monitor ○ 1900/55 Fan Monitor	

3.1.2 Retain Data on TIM Replacement (Only for Trendmaster Devices)

In System 1 v20.2, historical data is retained when a customer replaces a TIM with new/spare TIM. This feature enables customers to view historical data collected with old hardware, while continuing to fetch live data from new hardware, without data loss.

The following conditions summarize when data will be retained:

- If a TIM is replaced with another TIM of the same TIM type and channel type, then historical data and configuration will be retained. Examples are captured in Table 3.
- If the above conditions are not met, then historical data and configuration will not be retained in System 1. Examples are captured in Table 4.

NOTE: Retained configuration includes: Channel & measurement properties, spectrum & waveform configuration, software trended variables, setpoints, Keyphasor association, point mapping, and state trigger definitions.

To retain historical data for non-supported replacement scenarios, users may choose to retain old TIMs (and their historical data) within the hierarchy and then add new TIMs as part of a new configuration. Alternately, users can create audit files to retain historical data before replacing TIMs.

Table 3: TIM Replacement Examples where Historical Data & Configuration are Retained

	Original TIM	New (Replacement) TIM
✓	FlexiTIM Accel to Velocity	ProTIM Accel to Velocity
✓	TIM Accel to Velocity	1900/25 Velocity Monitor
✓	FlexiTIM 100 Ohm Platinum RTD	FlexiTIM / ProTIM any other supported Temperature Type
✓	FlexiTIM J Type TC	FlexiTIM / ProTIM any other supported Temperature Type
✓	FlexiTIM K Type TC	FlexiTIM / ProTIM any other supported Temperature Type
✓	TIM J Type TC	TIM K Type TC
✓	ProTIM 2-3 wire Platinum RTD	ProTIM / FlexiTIM any other supported Temperature Type
✓	ProTIM 4 wire RTD	ProTIM / FlexiTIM any other supported Temperature Type
✓	ProTIM K Type TC	ProTIM / FlexiTIM any other supported Temperature Type

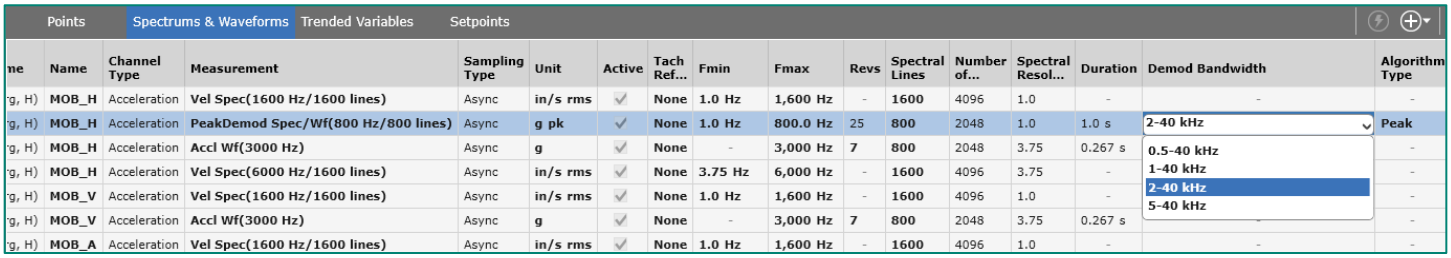
Table 4: TIM Replacement Scenarios where Historical Data & Configuration are Not Retained

	Original TIM	New (Replacement) TIM
×	Single channel Legacy TIM	1900 Monitor/FlexiTIM/ProTIM with same channel type
×	FlexiTIM Accel to Velocity	ProTIM Accel to Velocity w/ Enveloping Or ProTIM Low Freq. Accel to Velocity
×	ProTIM Accel to Velocity	ProTIM Accel to Velocity w/ Enveloping Or ProTIM Low Freq. Accel to Velocity

3.1.3 Portables Peak Demod Support

System 1 now supports PeakDemod measurements, which can be sent to SCOUT200 devices as part of a route. PeakDemod uses a peak-based algorithm to detect full amplitude of low frequency machinery impacts in a high-frequency carrier (up to 40kHz) (Figure 1). It retains the true amplitude of short duration pulses.

For very low speed machines, PeakDemod has the advantage that its peak-widening retains the full amplitude of the impacting events in the waveform, so these impact spikes stay well above the noise floor (Figure 2).



ne	Name	Channel Type	Measurement	Sampling Type	Unit	Active	Tach Ref...	Fmin	Fmax	Revs	Spectral Lines	Number of...	Spectral Resol...	Duration	Demod Bandwidth	Algorithm Type
g, H)	MOB_H	Acceleration	Vel Spec(1600 Hz/1600 lines)	Async	in/s rms	✓	None	1.0 Hz	1,600 Hz	-	1600	4096	1.0	-	-	-
g, H)	MOB_H	Acceleration	PeakDemod Spec/Wf(800 Hz/800 lines)	Async	g pk	✓	None	1.0 Hz	800.0 Hz	25	800	2048	1.0	1.0 s	2-40 kHz	Peak
g, H)	MOB_H	Acceleration	Accl Wf(3000 Hz)	Async	g	✓	None	-	3,000 Hz	7	800	2048	3.75	0.267 s		-
g, H)	MOB_H	Acceleration	Vel Spec(6000 Hz/1600 lines)	Async	in/s rms	✓	None	3.75 Hz	6,000 Hz	-	1600	4096	3.75	-		-
g, H)	MOB_V	Acceleration	Vel Spec(1600 Hz/1600 lines)	Async	in/s rms	✓	None	1.0 Hz	1,600 Hz	-	1600	4096	1.0	-		-
g, H)	MOB_V	Acceleration	Accl Wf(3000 Hz)	Async	g	✓	None	-	3,000 Hz	7	800	2048	3.75	0.267 s		-
g, H)	MOB_A	Acceleration	Vel Spec(1600 Hz/1600 lines)	Async	in/s rms	✓	None	1.0 Hz	1,600 Hz	-	1600	4096	1.0	-	-	-

Figure 1: Configuration Properties of PeakDemod Measurement

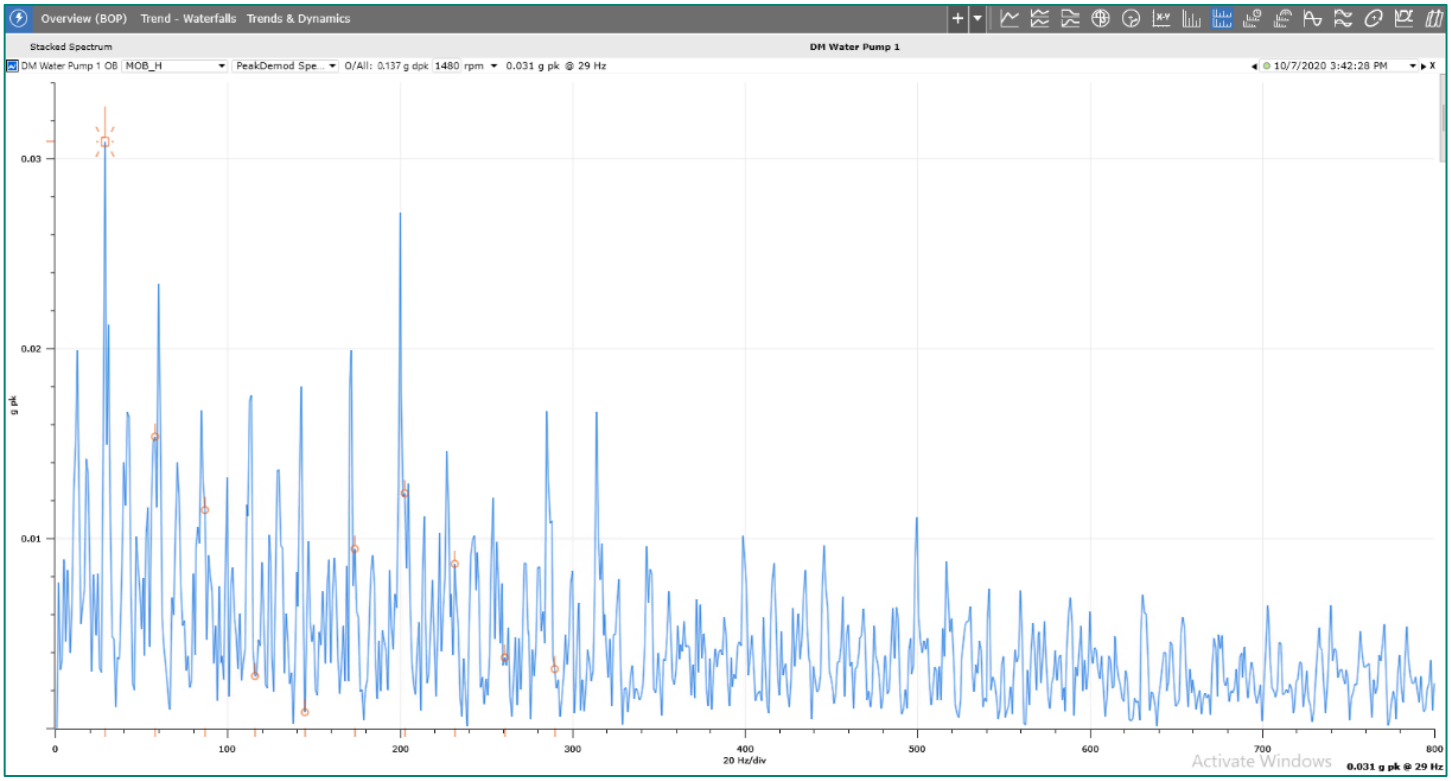


Figure 2: PeakDemod Measurement on Spectrum Plot

3.1.4 Bently Performance Migration & Custom Unit support

With System 1 v20.2, users can migrate Bently Performance data from System 1 Classic to System 1 Evo. The historical data for these API tags (System 1 Classic Bently Performance Outputs) and new OPC tags (System 1 Evo Bently Performance Outputs) can be overlaid and compared in the Plots Workspace. NOTE: Data from Classic will not be "stitched together" at the same tag level.

To migrate Bently Performance tags into System 1:

1. Migrate Data for API tags via 6.x connector (Figure 3)

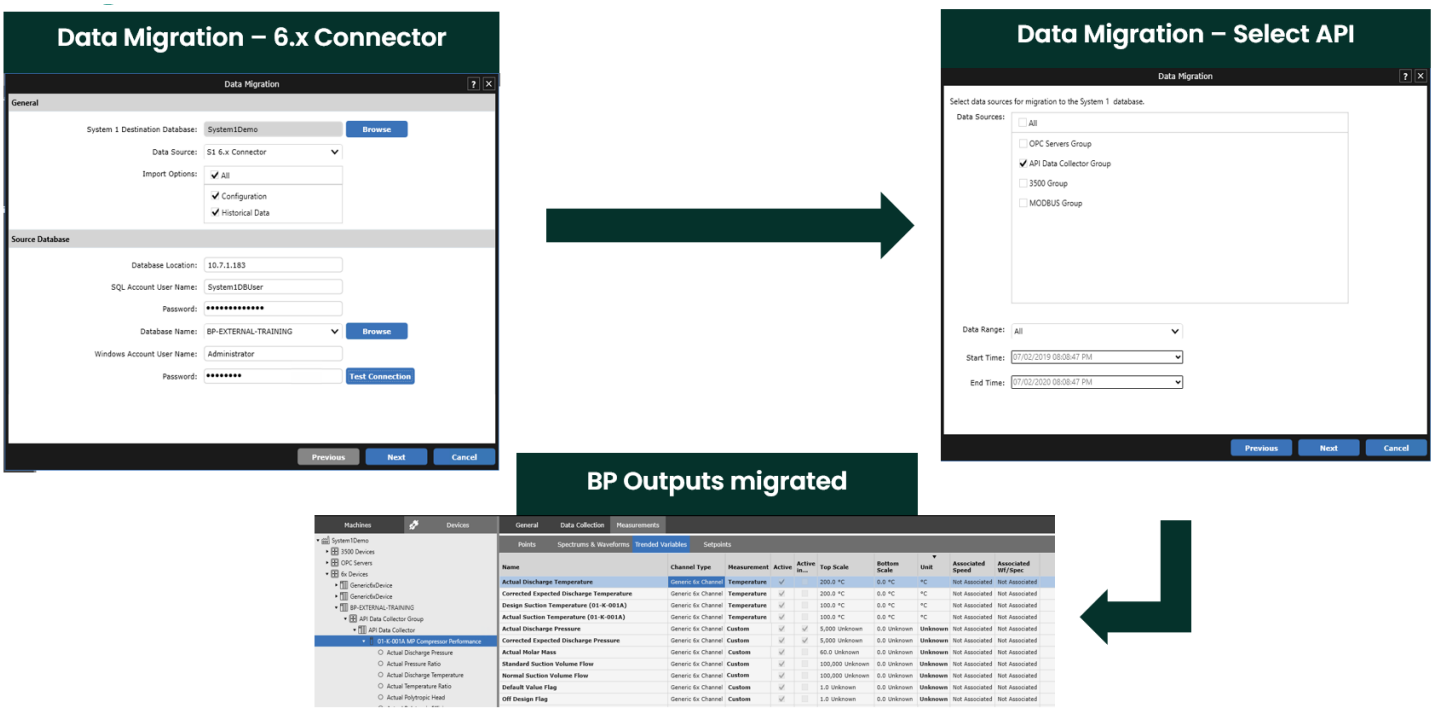


Figure 3: API Tag Migration Process

2. Add a custom unit for migrated API tags with unknown units (Figure 4)

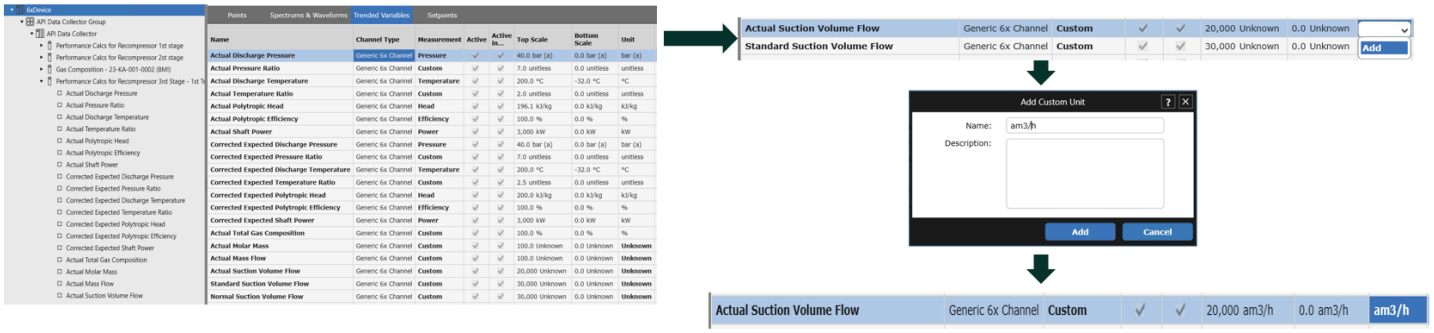


Figure 4: Add Custom Unit for Tags with Unknown Units

3. Replace custom unit with Bently unit (if desired) within the Units tab of the Custom Component Manager (Figure 5)

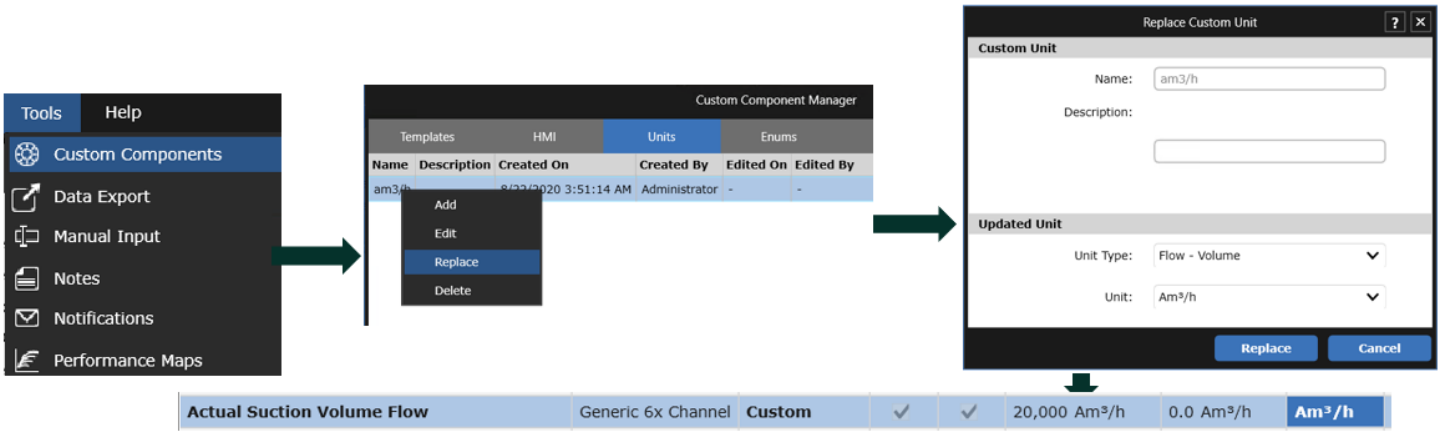


Figure 5: Assign Bently Unit to Custom Units in Custom Component Manager

4. View migrated System 1 Classic and System 1 Evo performance data within the Plots workspace (Figure 6)

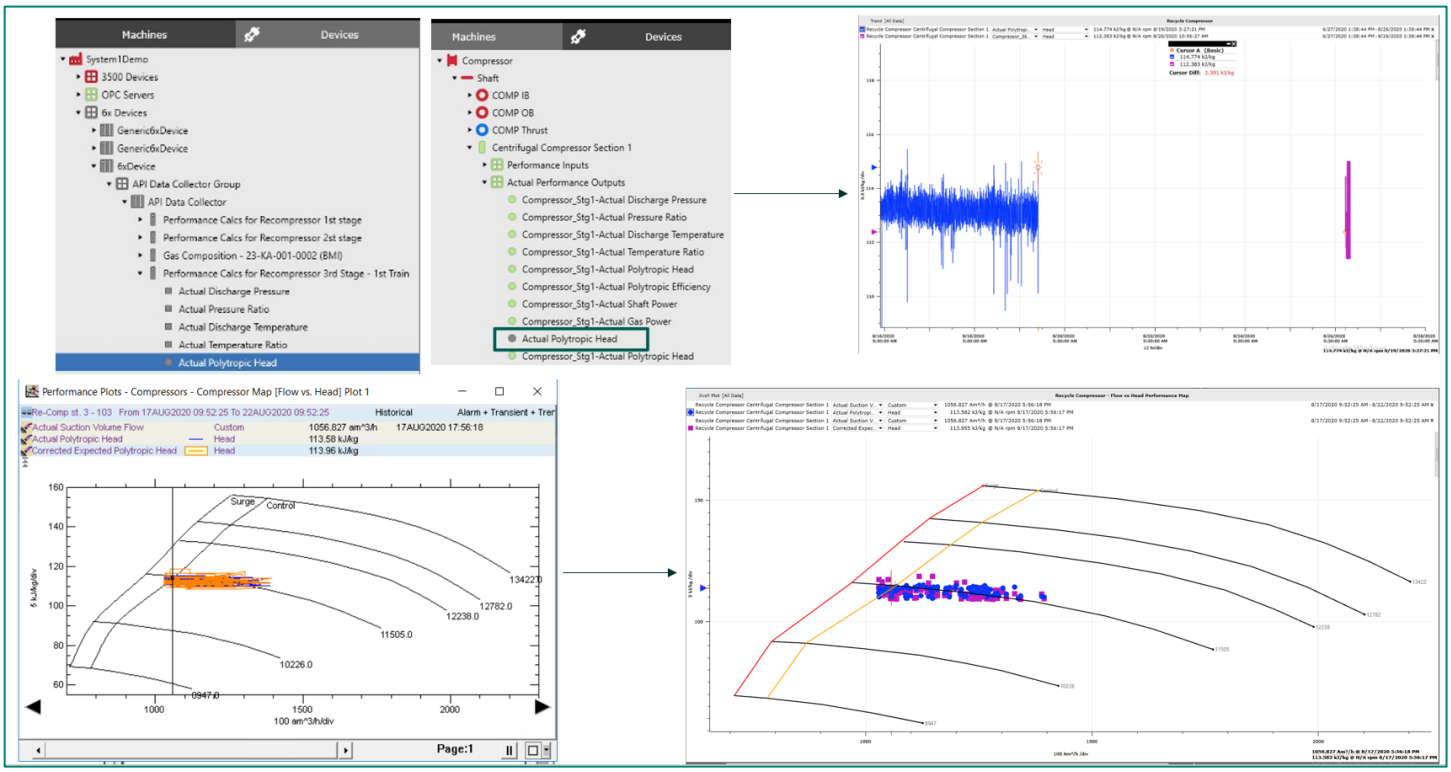


Figure 6: System 1 Classic and Evo Performance Data in Plots Workspace

3.2 Interfaces

3.2.1 OPC UA System Health Export

OPC UA Enhancements video located in Bently Nevada Tech Support Training Library
Valid M&S Agreement Required

System 1 v20.2 extends OPC UA Alarm Event Export to System Health Events. This export includes all System Health Events classified under Instrumentation, Transient, System, and User Initiated. In addition, the OPC UA address space now displays the Devices Hierarchy alongside the Machines Hierarchy. Users can subscribe to any hierarchy node, including the root node, and from any OPC UA Compliant Client (Figure 7).

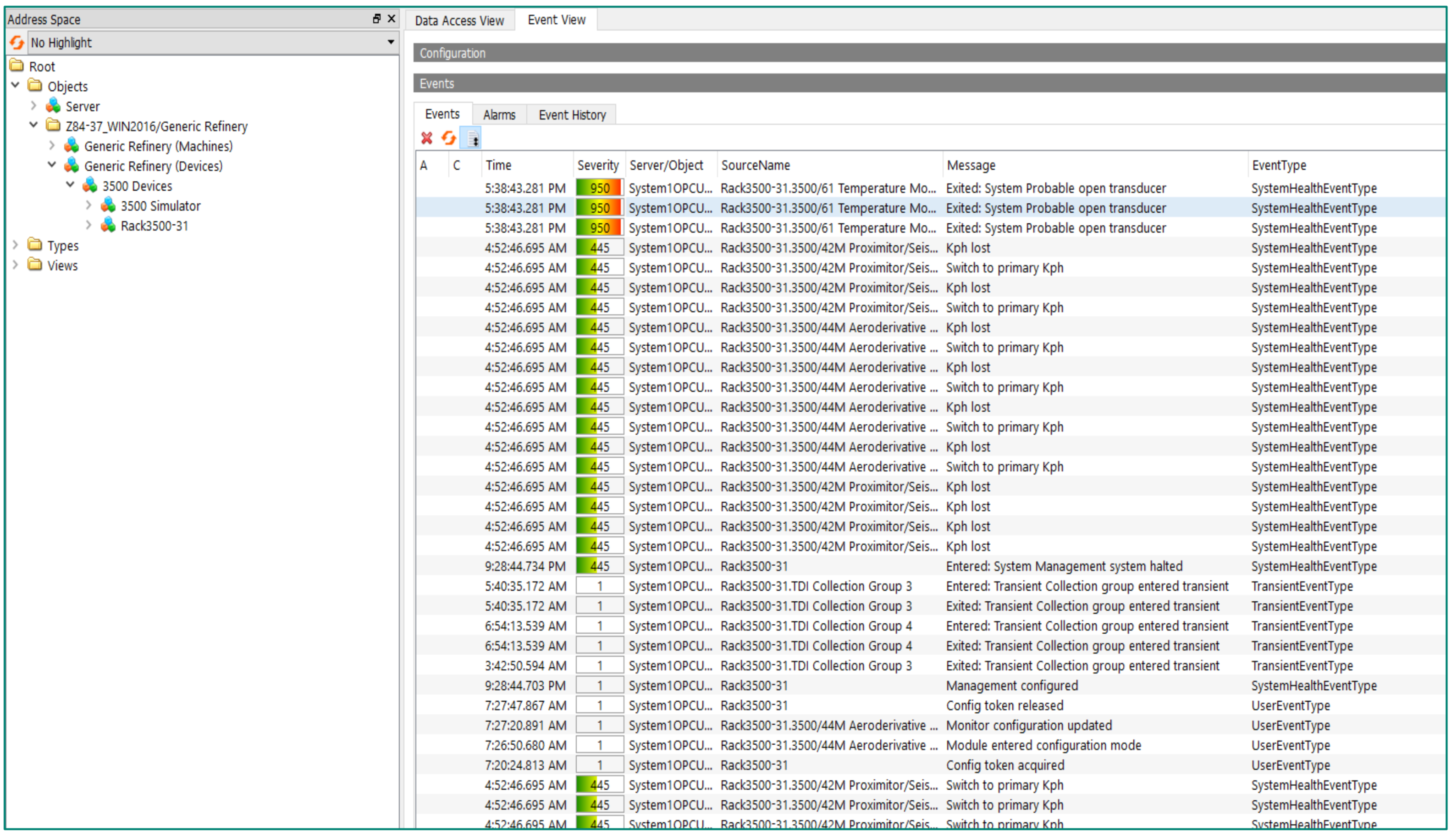


Figure 7: Devices Hierarchy and Associated System Health Events

3.2.2 OPC UA Portable Data Export

In System 1 v20.2, if users enable Online Data Collection within a Portables database, they will be able to configure OPC UA Export of Static, Dynamic, and Alarm Events into any OPC UA compliant client.

3.2.3 Modbus Dynamic Setpoint Support

Modbus Enhancements video located in Bently Nevada Tech Support Training Library
Valid M&S Agreement Required

Prior to this release, customers had to manually update setpoint values associated with Modbus tags every time that they were altered in external systems. Inherently, this led to the external system and System 1 becoming out of sync and inconsistent alarm generation. With the release of v20.2, externally configured setpoints for process data can now be dynamically synchronized with System 1 via Modbus. NOTE: This capability was added for OPC DA tags in the v19.2 release.

Within the CSV file, users can now enter the Function Code and Location of the setpoint tag under the desired setpoint severity column (Figure 8). On importing the .csv file, System 1 adds a setpoint group to the Devices Hierarchy and creates a corresponding setpoint tag under that group (Figure 9). In addition, this setpoint tag is associated to the setpoint level of its parent process point (Figure 10).

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	Action Ty	Point Name	Tag Name	Group Name	Function Code	Location	New Func	New Loc	Data Type	Hardware Min Scale	Hardware Max Scale	Min Scale	Max Scale	Unit	Enum	Alarm Type	Level 4 Under	Level 4 Over	Level 3 U	Level 3 O
2	Add	Compressor Status	Compressor Status	C-101-A	1	100			2	0	1	0	1		Running/Stopped					
3	Add	Suction Valve position	Suction Valve position	C-101-A	3	105			2	0	100	0	100		ValvePosition	under	3|106			
4	Add	Suction Pressure	Suction Pressure	C-101-A	3	100			2	0	10	0	10	kgf/cm² (a)						
5	Add	Suction Temperature	Suction Temperature	C-101-A	3	101			2	0	200	0	200	°C		over		3|107		
6	Add	Discharge Pressure	Discharge Pressure	C-101-A	3	102			2	0	10	0	10	kgf/cm² (a)						
7	Add	Discharge temperature	Discharge temperature	C-101-A	3	103			2	0	200	0	200	°C						
8	Add	Suction Flow	Suction Flow	C-101-A	3	104			2	0	500	0	500	m3/s						
9																				

Figure 8: CSV File with Function Code and Locations entered for setpoint levels

Points | Spectrums & Waveforms | Trended Variables | Setpoints

Name	Tag Name	Type	Active	Function Code	Location	Data Ty...	Decimal Precis...
Suction Valve position_Level 4 Under	Suction Valve position_Level 4 Under	Modbus Setpoint Channel	✓	3	106	2	0
Suction Temperature_Level 4 Over	Suction Temperature_Level 4 Over	Modbus Setpoint Channel	✓	3	107	2	0

Figure 9: Setpoint Tag in Configure Workspace

Points | Spectrums & Waveforms | Trended Variables | Setpoints

Name	Measurement	Alarm Source	Alarm Type	State	Level 4...	Level 4 Under	Level 4 Over
Compressor Status	Running/Stopped	Condition Monitoring	Over	Standard	☐	-	0.0
Suction Valve position	ValvePosition	Condition Monitoring	Under	Standard	☑	Suction Valve position_Level 4 Under	-
Suction Pressure	Pressure - Absolute	Condition Monitoring	Over	Standard	☐	-	0.0 kgf/cm² (a)
Suction Temperature	Temperature	Condition Monitoring	Over	Standard	☑	-	Suction Temperature_Level 4 Over °C
Discharge Pressure	Pressure - Absolute	Condition Monitoring	Over	Standard	☐	-	0.0 kgf/cm² (a)
Discharge temperature	Temperature	Condition Monitoring	Over	Standard	☐	-	0.0 °C
Suction Flow	Unknown Unit	Condition Monitoring	Over	Standard	☐	-	0.0 m3/s

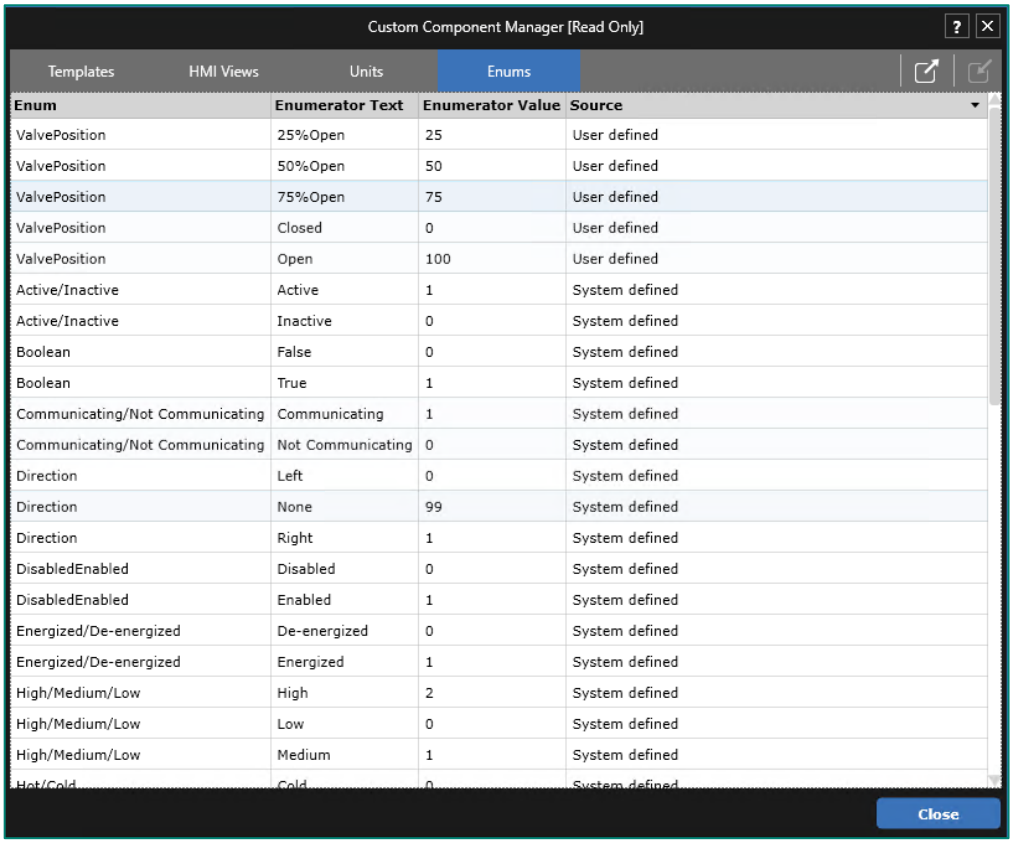
Figure 10: Setpoint Tag Associated to Alarm Level in Setpoints Workspace

All areas of the application that display setpoint values are dynamically updated to reflect setpoint changes in the external system. In addition, alarms are generated when the parent Modbus process point exceeds this setpoint value.

3.2.4 Modbus Enum & Custom Unit Support

In System 1 v20.2, users can import Enum measurements from Modbus devices and display the associated status on HMI Views. Users can leverage existing Enums defined for OPC points or add user-defined Enums within the Custom Component Manager (Figure 11).

In addition, users can now configure custom units for Modbus tags. NOTE: Custom units can be replaced with Bently-defined units within the Units tab of Custom Component Manager.



Enum	Enumerator Text	Enumerator Value	Source
ValvePosition	25%Open	25	User defined
ValvePosition	50%Open	50	User defined
ValvePosition	75%Open	75	User defined
ValvePosition	Closed	0	User defined
ValvePosition	Open	100	User defined
Active/Inactive	Active	1	System defined
Active/Inactive	Inactive	0	System defined
Boolean	False	0	System defined
Boolean	True	1	System defined
Communicating/Not Communicating	Communicating	1	System defined
Communicating/Not Communicating	Not Communicating	0	System defined
Direction	Left	0	System defined
Direction	None	99	System defined
Direction	Right	1	System defined
DisabledEnabled	Disabled	0	System defined
DisabledEnabled	Enabled	1	System defined
Energized/De-energized	De-energized	0	System defined
Energized/De-energized	Energized	1	System defined
High/Medium/Low	High	2	System defined
High/Medium/Low	Low	0	System defined
High/Medium/Low	Medium	1	System defined
Hot/Cold	Cold	0	System defined

Figure 11: Enums Tab in Custom Component Manager

3.2.5 Modbus Device Scalability

NOTE: This is only supported for databases with PostgreSQL as the data historian

Users can now add up to 200 Modbus devices into a single System 1 database. The increased number of supported devices will address the use case of integrating a large number of third-party Modbus TCP devices having a smaller number of measurement points. The overall limit of Modbus + OPC points remains 15,000 per database.

3.3 Database Management

3.3.1 Multiple Online Databases

NOTE: This is only supported for databases with PostgreSQL as the data historian

Database scalability video located in Bently Nevada Tech Support Training Library
Valid M&S Agreement Required

In System 1 v20.2, users can enable data collection for multiple (up to 5) databases on a single server, with data replication supported for all enabled databases. ***Recommendation***: Total load of all enabled databases on a System 1 server should not exceed 100%, as per the Server load calculation tool.

To check the database health of enabled databases, launch Database Manager and connect to the server in the General tab (Figure 12). Select each database to see Storage Settings and Device Rates.

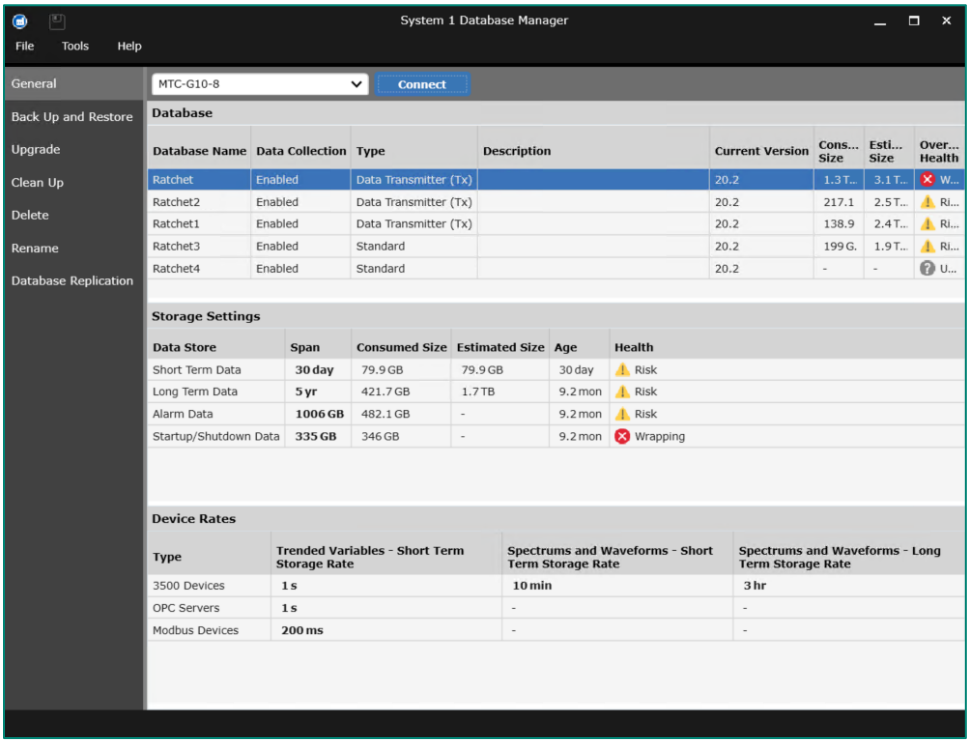


Figure 12: Five "Data Collection" Enabled Online Databases

3.3.2 5000 Machine Case Support

NOTE: This is only supported for databases with PostgreSQL as the data historian

In System 1 v20.2, users can now add up to 5000 machine cases within a single System 1 Database (previous limit was 2000). This increased scalability will allow users to configure, monitor, and compare more machines across their facility within a single database.

3.3.3 Roll Section Asset Model

Roll Section Asset Model video located in Bently Nevada Tech Support Training Library
Valid M&S Agreement Required

In System 1 v20.2, users can configure Paper Machines, Conveyors, and Rolling Mills by utilizing the new Roll Section asset model (Figure 13). Many different roll types are available (Serpentine Rolls, Geared Rolls, Combination Rolls, Geared Pinion Couplings, Gear Stages), allowing the configuration to be customized for varying industrial applications.

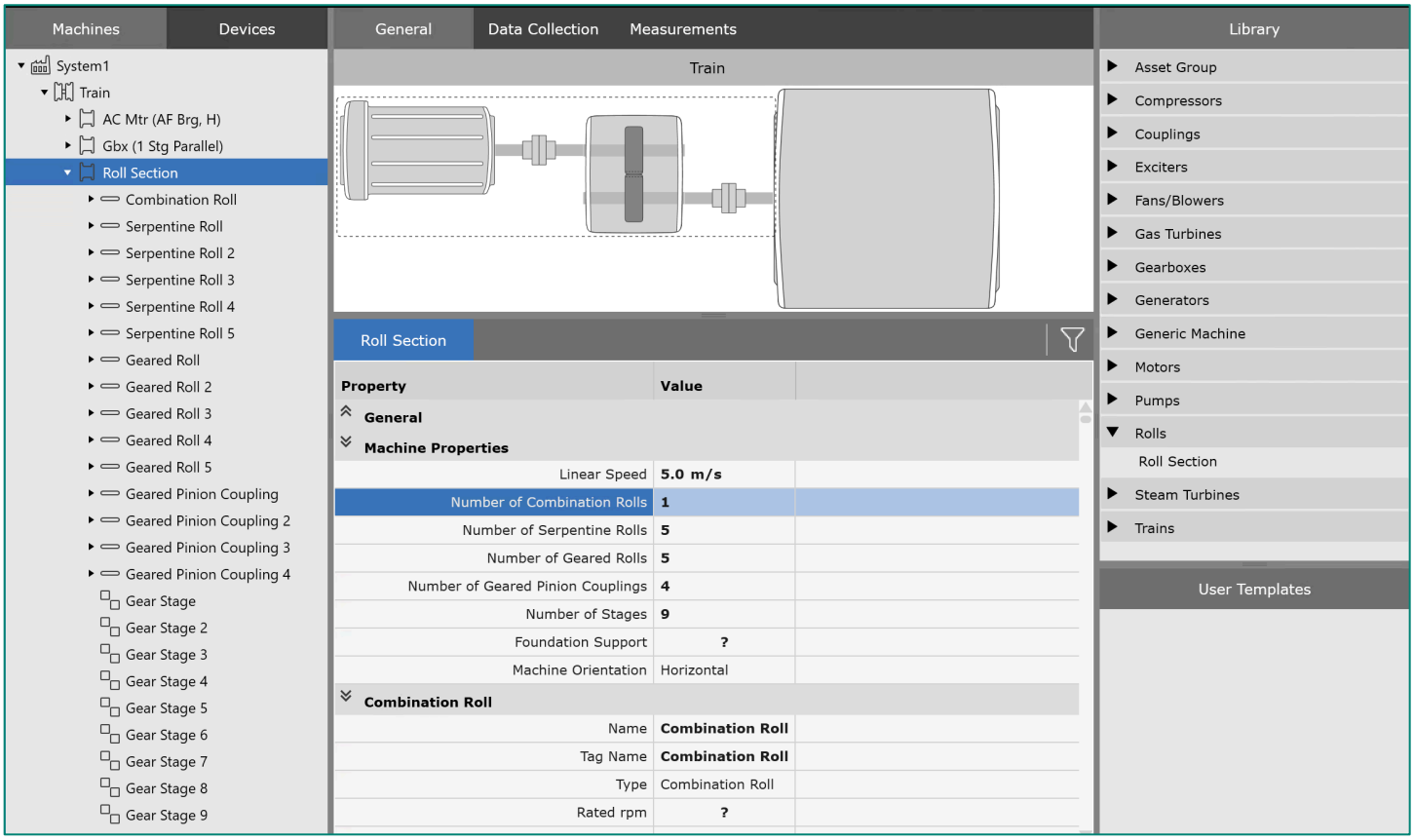


Figure 13: Roll Section Configuration and Library

Key features of the Roll Section asset are:

- Flexibility to configure types and counts of the rolls within the roll section
- Speed propagation based on both the linear speed and gear mesh properties
- Async waveform speed tagging from external speed tags
- New components in HMI library to create detailed HMI diagrams (Figure 14)

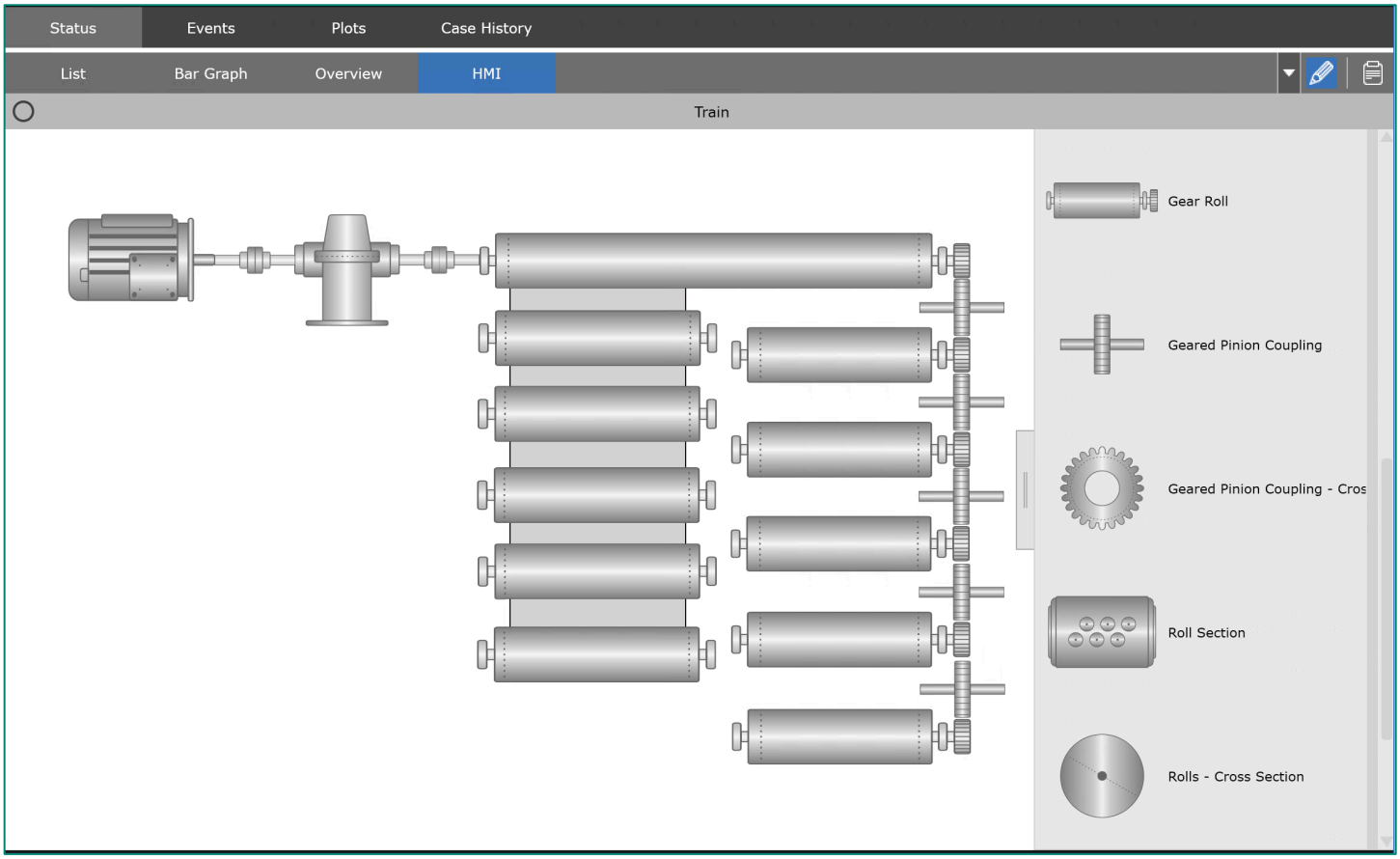


Figure 14: HMI Screen with Roll Section and the HMI Symbol Library

3.3.4 Configuration Overwrite

NOTE: This is only supported for databases with PostgreSQL as the data historian

Configuration Overwrite video located in Bently Nevada Tech Support Training Library
Valid M&S Agreement Required

In System 1 v20.2, users can restore a configuration only back up over an existing database. When a Configuration Only (*.S1cfg) file is selected for restore, the user will have the following options in the Restore tab of Database Manager (Figure 15):

1. Create New Database: To be used for creating a new database from back up
2. Create New Rx Database: To be used to restore a database on an Rx Server when setting up replication
3. *[New]* Restore Database: To be used to restore the database on a server to make offline changes
4. *[New]* Overwrite Database: To be used to overwrite the configuration of a database. This will enable the user to restore only the configuration database without losing collected data.

Configuration Overwrite will replace all configuration, including machine and device properties, defined plot sets, HMI views, and custom templates. The overwrite option is available on standalone databases, as well as Tx and Rx databases.

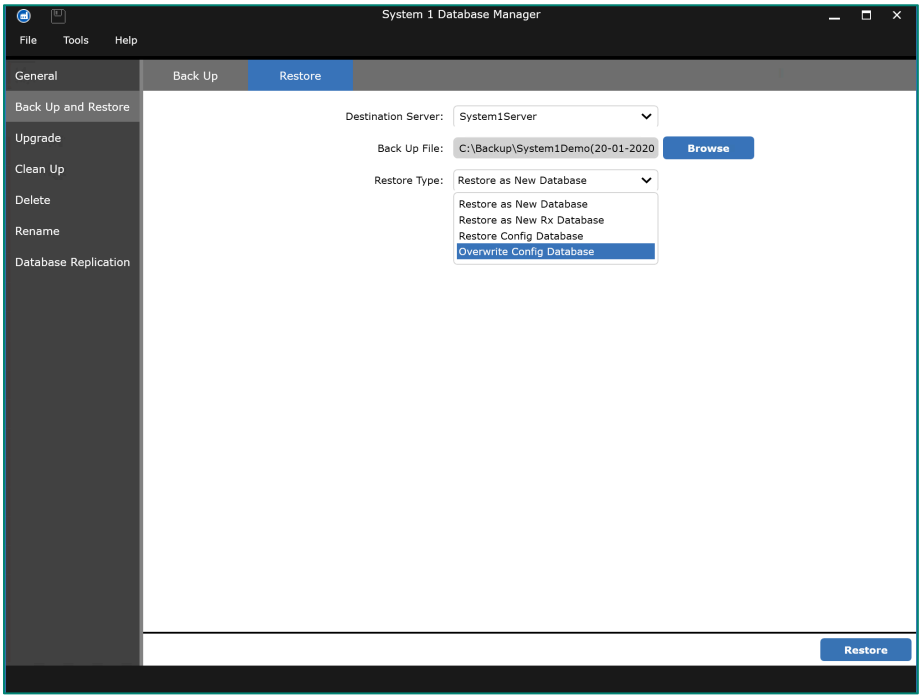


Figure 15: "Overwrite Config Database" addition to the Database Manager

3.3.5 User Template Upgrade

User Defined Template Export/Import was added as part of System 1 v20.1, enabling users to manage templates centrally. As part of v20.2, System 1 now supports upgrading user defined templates that were exported from a previous version of System 1.

When a template file ('*S1t') is imported via the Custom Component Manager dialog, System 1 will detect previous versions and ask the user to upgrade the file. If the user continues, the Database Manager will be launched, allowing the user to proceed with template upgrade (Figure 16). Once upgraded, the user can continue with the import process.

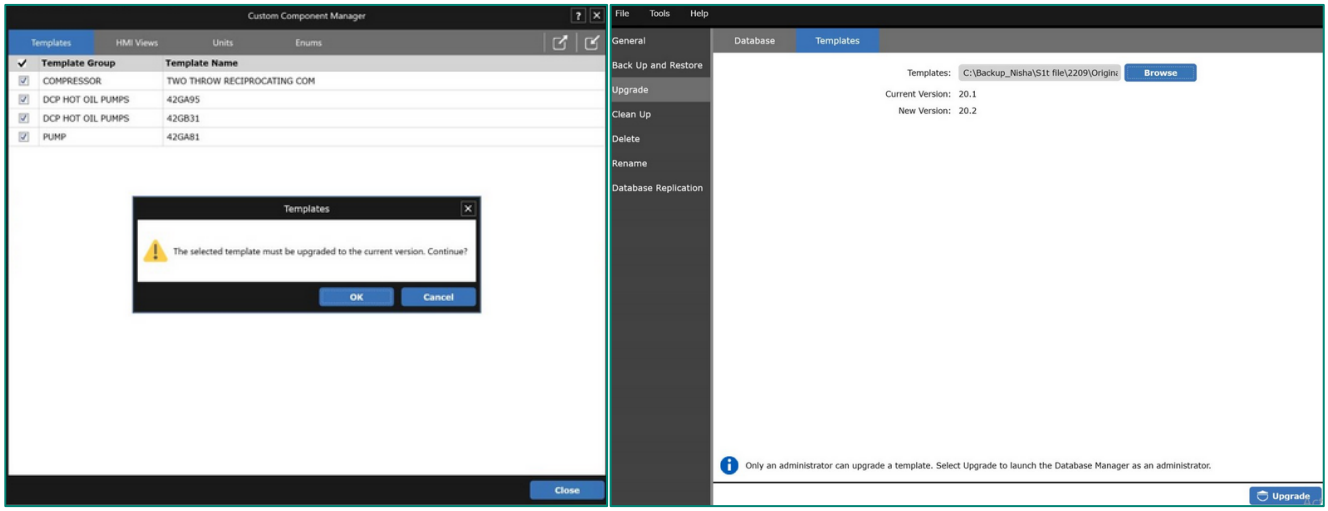


Figure 16: Template Upgrade Process

4. ANALYTICS

4.1 Core Alarming

Alarming video located in Bently Nevada Tech Support Training Library
Valid M&S Agreement Required

4.1.1 Shelve Status on Alarm Suppression

Suppression, introduced in System v19.2, allows users to manage nuisance events. However, the active status associated with suppressed alarms remained throughout the Display Workspace, giving the indication that all alarms had not been managed.

In v20.2, the option to Shelve Active Alarms has been added to the Suppress Events dialog and is selected by default (Figure 17). When this option is selected, active alarms will be shelved, and their associated status will no longer be propagated (Figure 18).

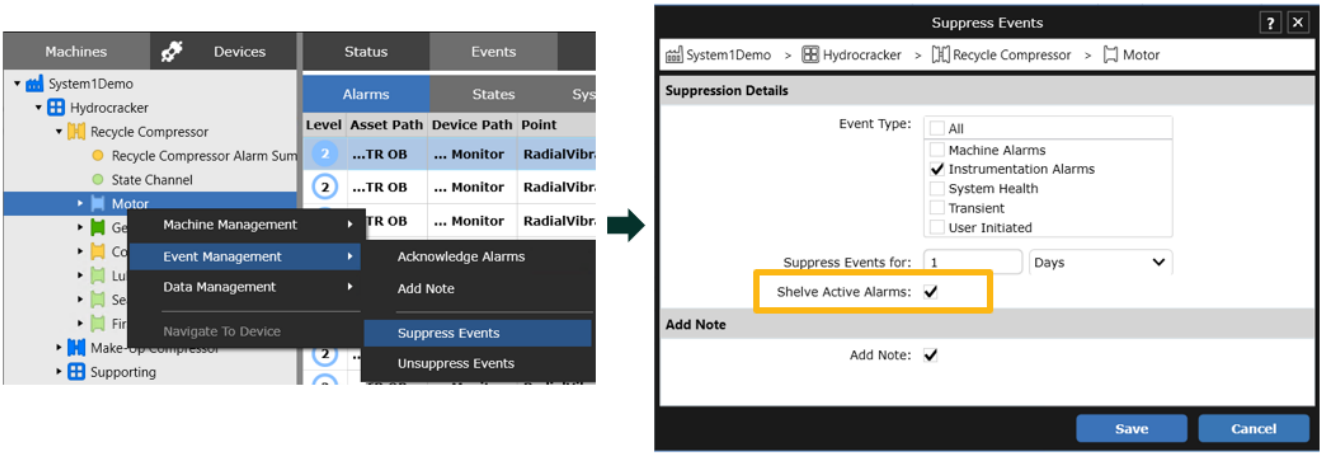


Figure 17: Suppress Events Dialog with Shelve Active Alarms Option

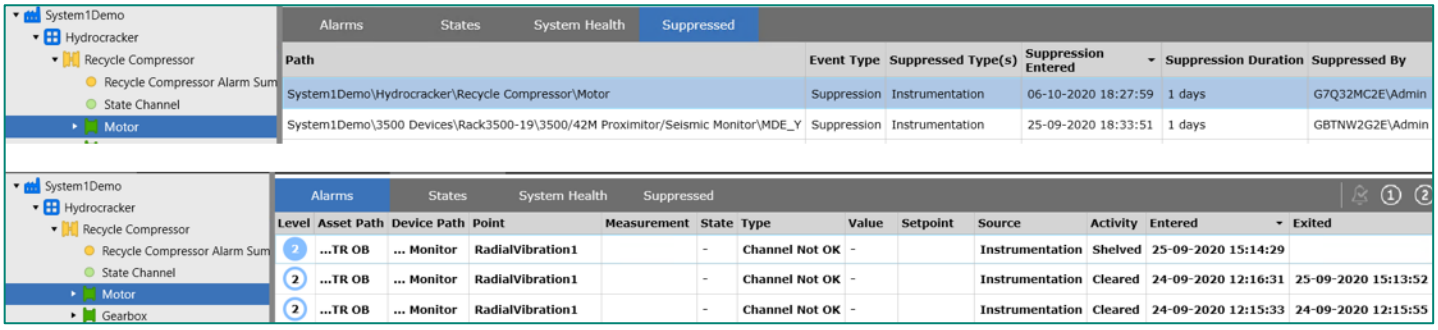


Figure 18: Not OK Instrumentation Alarm Suppressed and Shelved

When the Alarm is no longer suppressed, the associated status will begin propagating throughout the display workspace. Events are unsuppressed when:

- The suppression duration has elapsed
- User manually un-suppresses the event(s)

4.1.2 No Data Status

When System 1 stops receiving data from an instrument, a No Data state occurs. This No Data state can be triggered by *Device Not Communicating* or *Configuration Out-of-Date* System Health Events (Figure 19).

No Data Status is propagated throughout the Display workspace as an Instrumentation Level 3 Alarm. In addition, measurements within HMIs and Bar Graphs show a value of N/A (Figure 20).

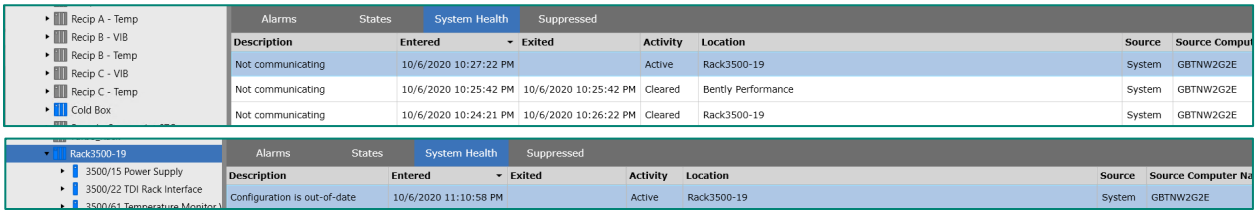


Figure 19: Not Communicating & Configuration Out of Date System Health Events

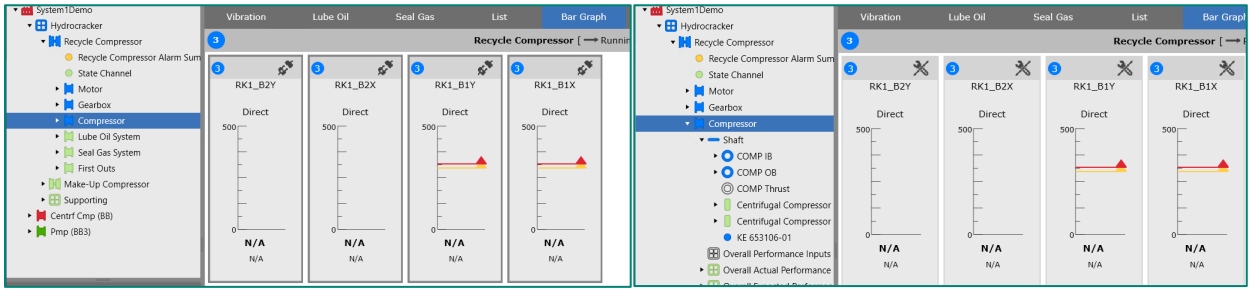


Figure 20: No Data Status in Bar Graphs

4.1.3 Setpoint Configuration on Rx Databases

In System 1 v20.2, users can now configure Condition Monitoring Setpoints on Rx databases. This allows users to better manage their assets and their alarm thresholds from the convenience of the Business Network. NOTE: Only condition monitoring setpoints that are unconfigured within the corresponding Tx database can be entered and adjusted. If a setpoint value is added on the Rx system, and later on, a setpoint value is entered for the same measurement and level on the Tx system, the previously added value on the Rx system will be overridden.

4.1.4 Alarm Summary Enhancements

The Alarm Summary Measurement Point was introduced in System 1 v20.1 release. Based on user feedback, enhancements have been incorporated into v20.2, including:

- Users can configure alarm setpoints on Status measurements (e.g., The “Have New Alarm” status measurement has values of True or False. To alarm when the status = True (1), the user can configure an associated setpoint with a value of 1).
- The alarm summary point considers Instrumentation Level 2 (Not OK) alarms as part of alarm summary measurement count
- When adding alarm summary points under a node (e.g., Machine Train, Group, Database), the hierarchy name will be added as a prefix by default

5. VISUALIZATION

5.1 HMI Builder

HMI Enhancements video located in Bently Nevada Tech Support Training Library
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5.1.1 HMI View Saving

Prior to this release, HMI views could be copy/pasted between hierarchy components within the same database or across different databases. With the release of System 1 v20.2, HMI views can be saved, enabling users to easily add them to other components as part of the Add New Tab workflow.

To save an HMI view, right-click on a created tab and select "Save as Template View" (Figure 21). In the Template View dialog, name the view (defaulted to the current view name), add a Description if desired, and Save (Figure 22).

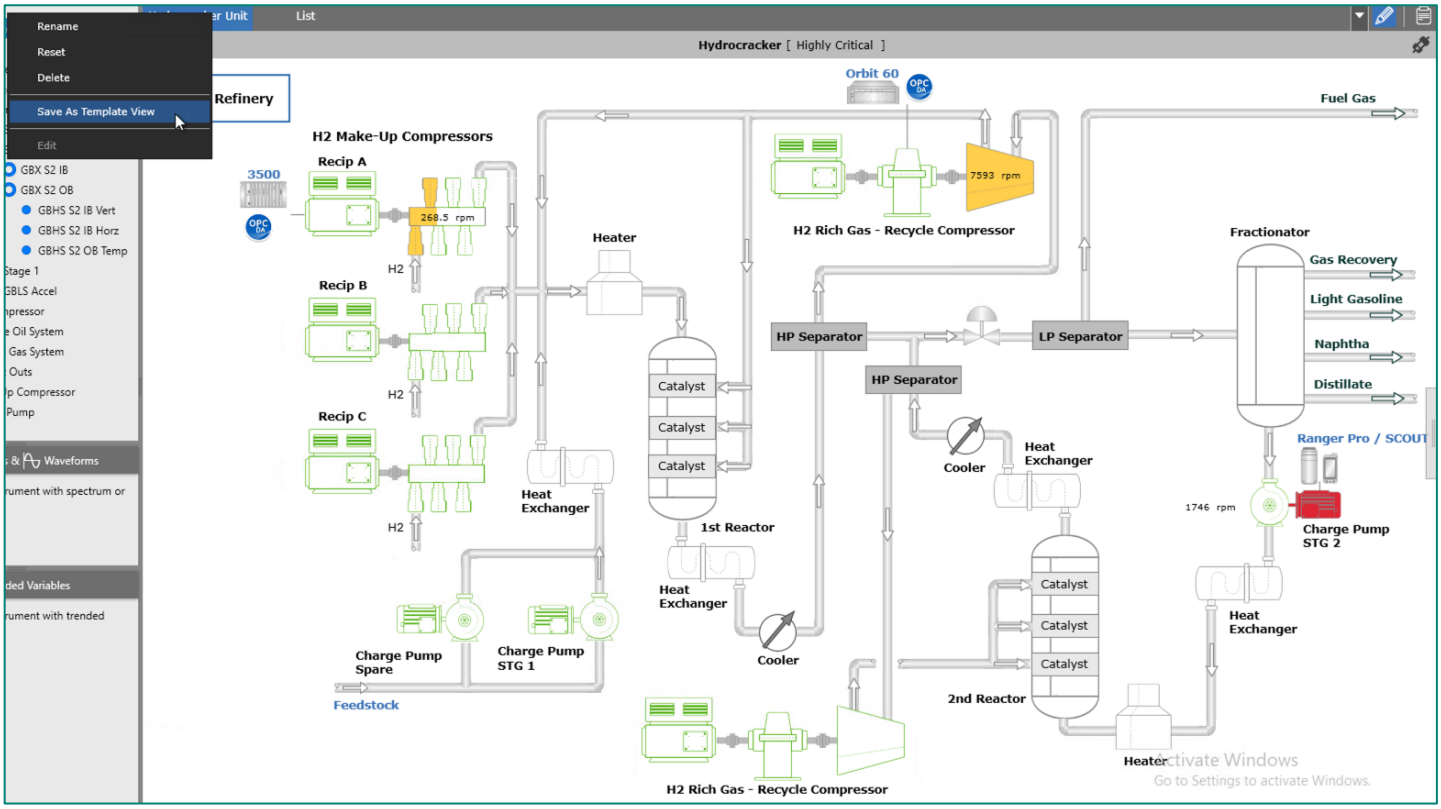

Figure 21: Save As Template View Option

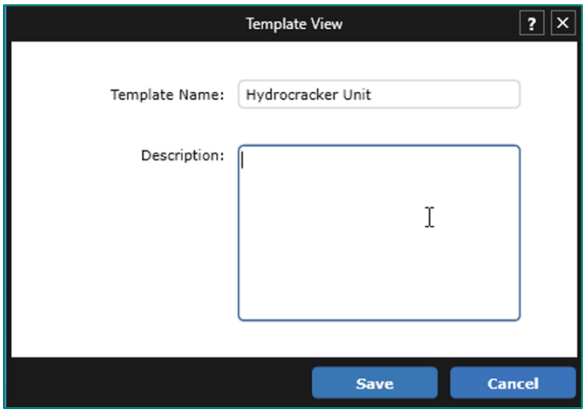

Figure 22: Template View Dialog

When adding new tabs from the dropdown in the top right of the workspace (Figure 23), select your templated view(s) and click Save (Figure 24). The view(s) will be added as new tabs.

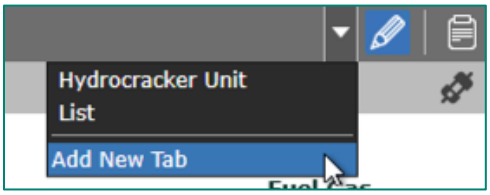

Figure 23: Add New Tab Option in HMI Workspace

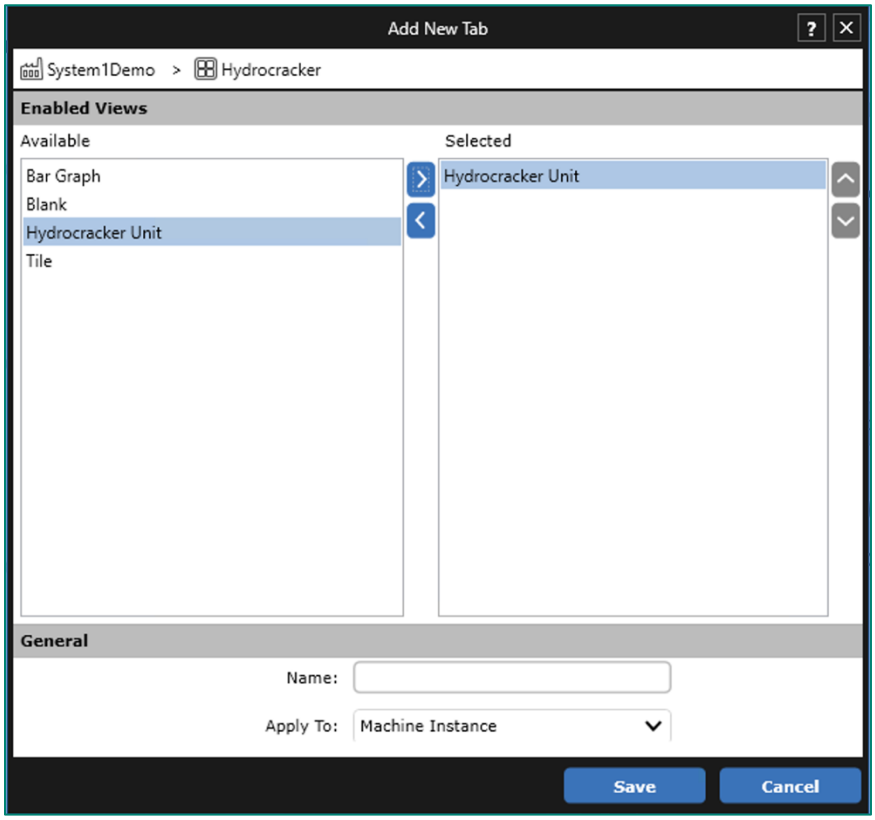

Figure 24: Add New Tab Dialog

5.1.2 HMI Export/Import

Saved HMI diagrams can be viewed in the Tools > Custom Components dialog (Figure 25). Users can select which views to export, then click the export icon in the top right of the dialog. A file browser is launched, allowing the user to select where to store the "*.S1Diagram" file.

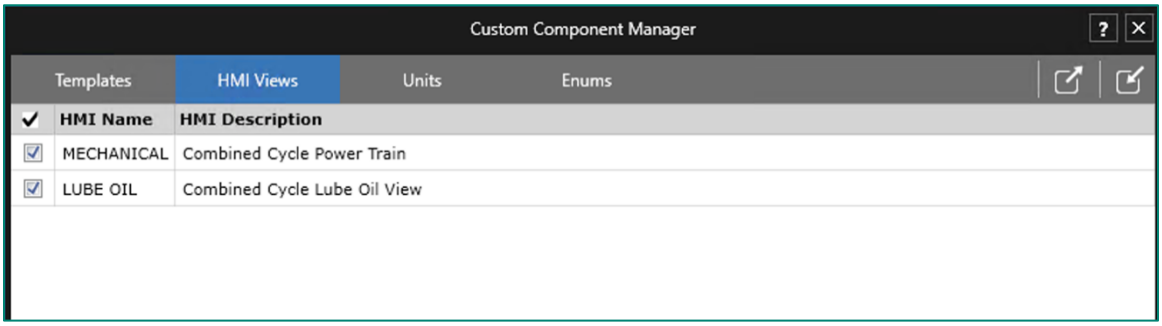

Figure 25: HMI Views in Custom Component Manager

To import views, launch the Custom Component manager in the target database and click on the Import icon. The user is asked to select the templates they would like to import (Figure 26). Once imported, the views will appear in the Add New Tab Dialog (Figure 24).

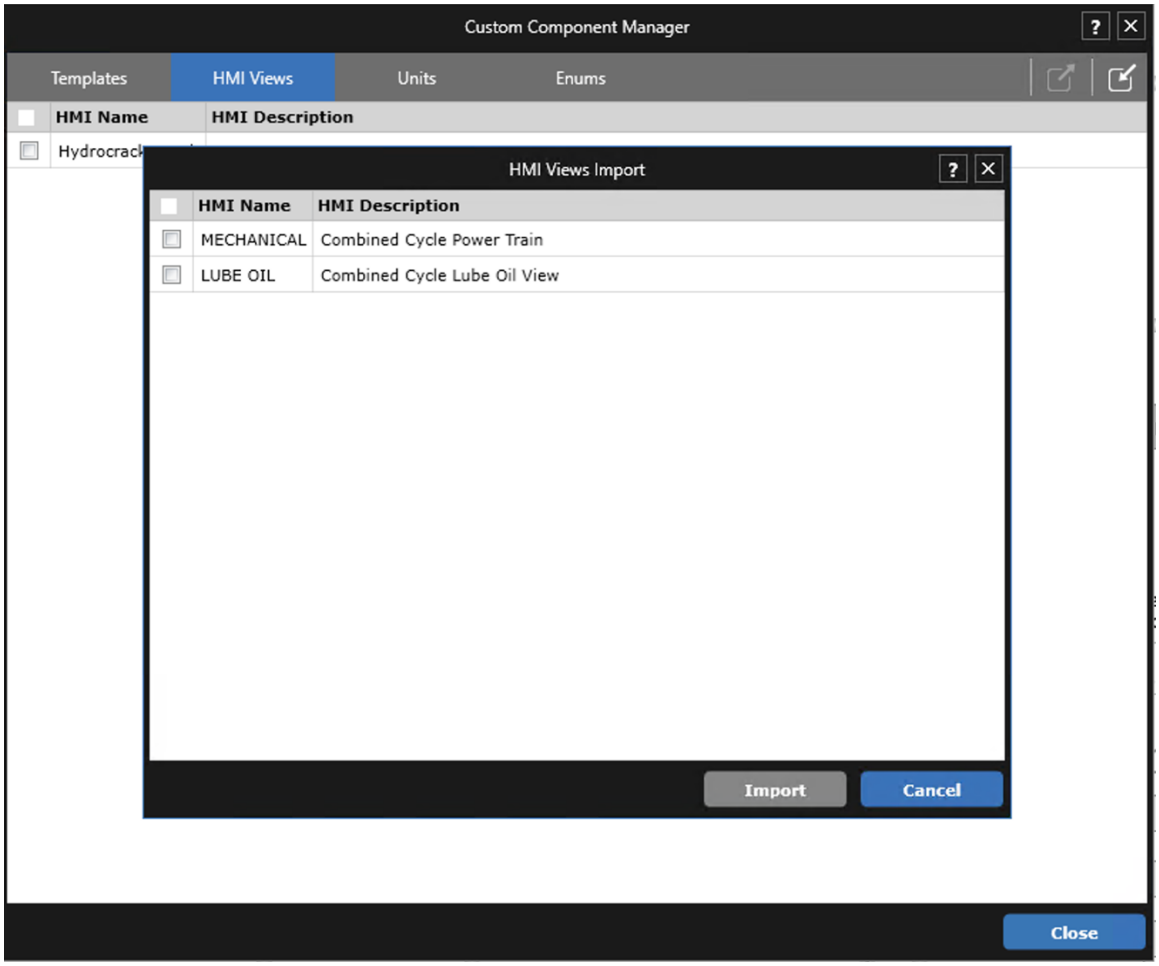

Figure 26: View Selection During HMI Import

5.1.3 HMI Grouping

In System v20.2, content can be grouped and ungrouped within the HMI building workspace. Simply select the content to group (by drag-selecting or CTRL+clicking), then use the context menu option Grouping > Group (Figure 27) or the shortcut key Ctrl+G.

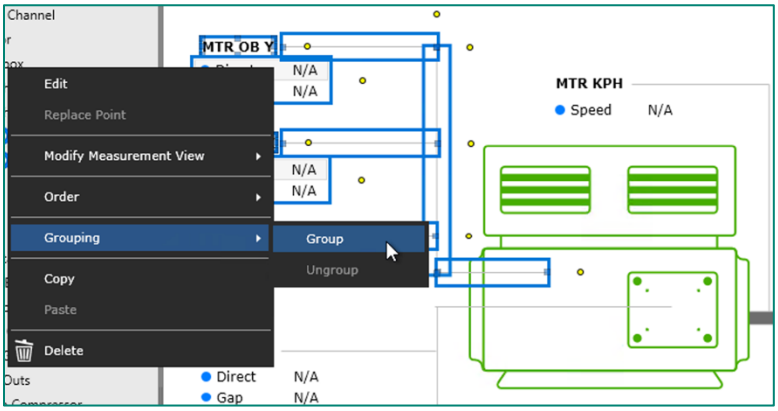

Figure 27: Grouping Options in Right-Click Context Menu

The resulting content is grouped together, with a border and default title "Group" (Figure 28). These settings can be modified by right-clicking and launching the "Edit" dialog, where the user can change or hide the border and replace the name with something more specific (or delete completely). The grouped content can be moved together throughout the view.

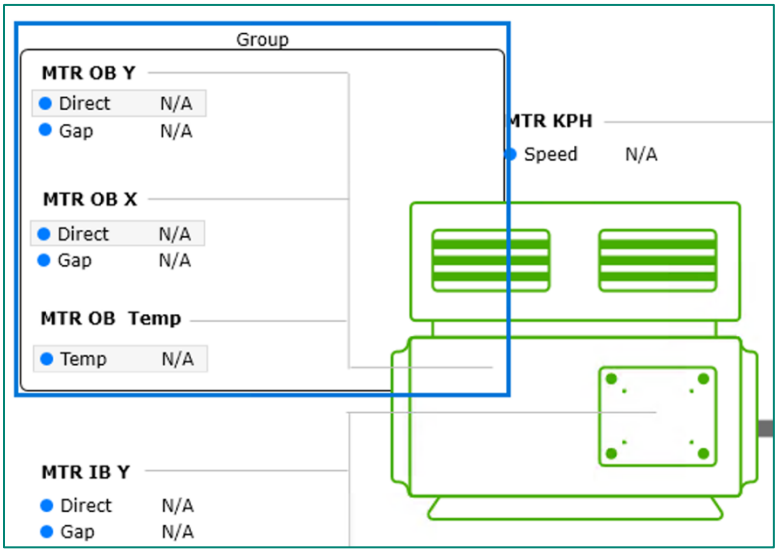

Figure 28: Grouped Content in HMI Workspace

Existing groups can be nested within parent groups by following the same flow as described above. To ungroup content, select a group (or a single component within a group) and use the context menu option Grouping > Ungroup or the shortcut key Ctrl+Shift+G. To ungroup all grouped content, right-click in the open workspace and select "Ungroup All" (Figure 29).

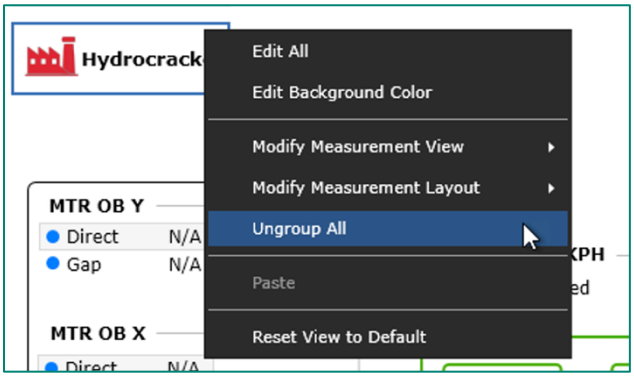

Figure 29: Ungroup All Option

5.1.4 HMI Enhancements

Additional enhancements have been added to the HMI Builder, including Undo/Redo of in-progress edits, navigation capability from any component (not just the navigation button), and new symbols for Rolls (Figure 30) and Gears (Figure 31).

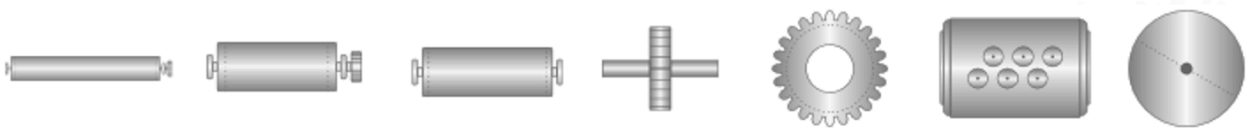

Figure 30: Rolls Symbols in HMI Library

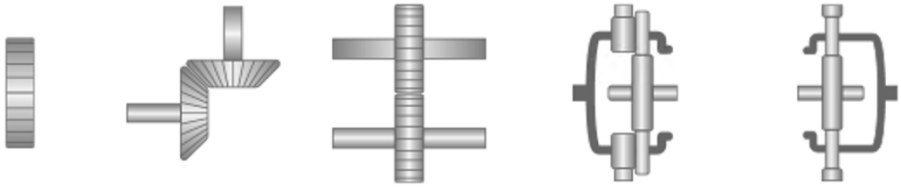

Figure 31: Gears Symbols in HMI Library

5.2 Plots

Plot Enhancements video located in Bently Nevada Tech Support Training Library
Valid M&S Agreement Required

5.2.1 Color Data by State

NOTE: This is only supported for databases with PostgreSQL as the data historian

In System 1 v20.2, users can now color code data from different machine operating states within the Plots workspace, enabling deeper analysis of machine condition and its changes over time. To enable, navigate to Plots Preferences and check the Color Data by State option (Figure 32). When Color Data by State is enabled, plot samples are color coded based on the state of the machine when they were stored (Figure 33). Feedback on color mapping is provided in the Cursor Readout Window, as well as the Select States dialog, accessed from the bottom tool area of the Plots workspace (Figure 34)

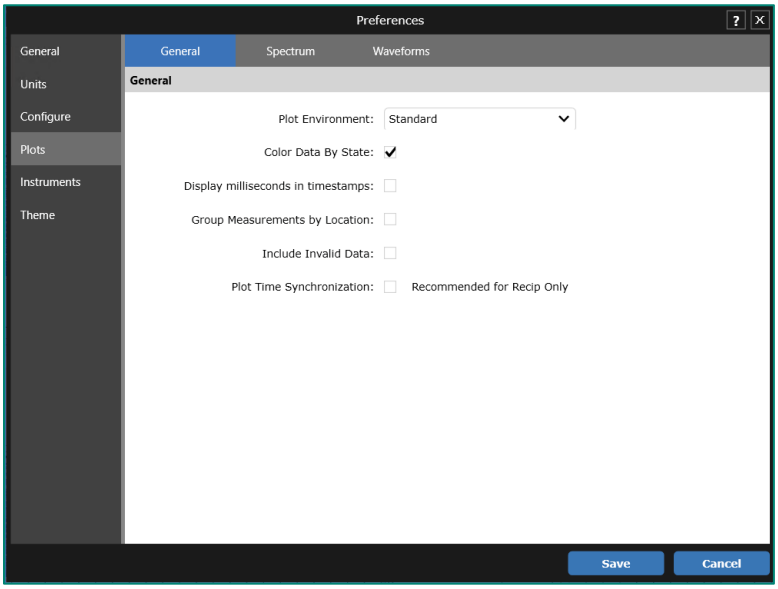

Figure 32: Color Data by State Preference

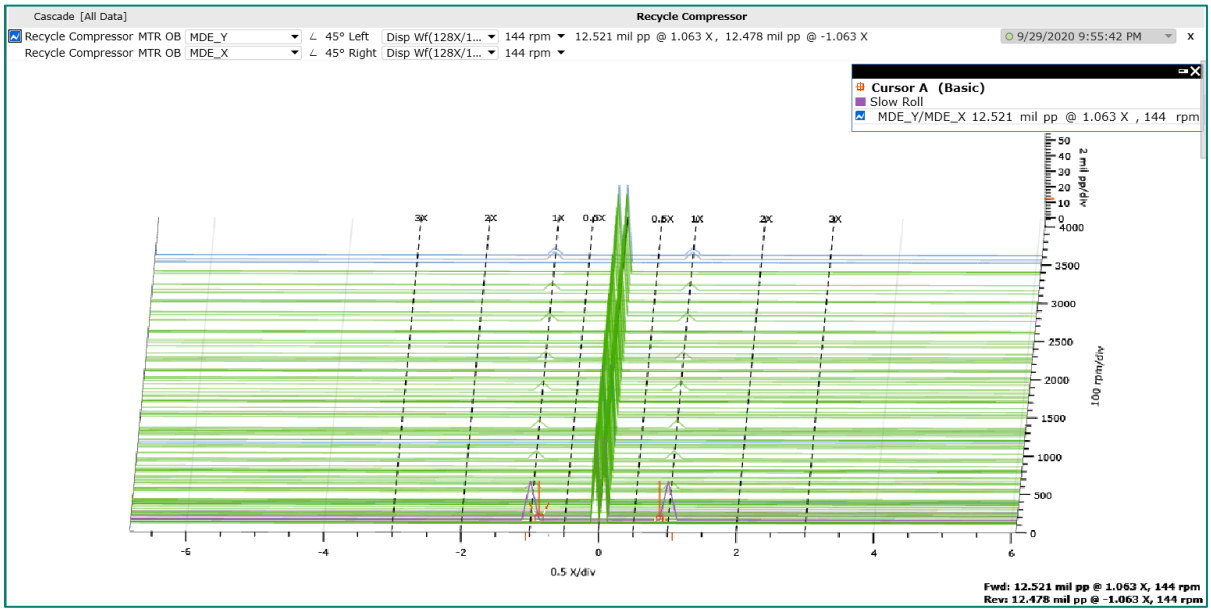

Figure 33: State Coloring on a Cascade Plot

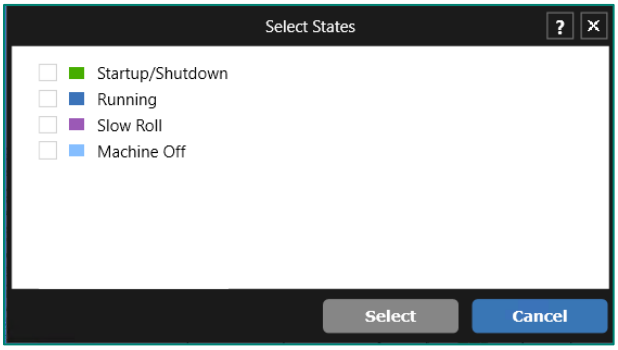

Figure 34: Select States Dialog, with Color Legend

The state color mapping can be customized from the Theme tab of the Preferences dialog (Figure 35).

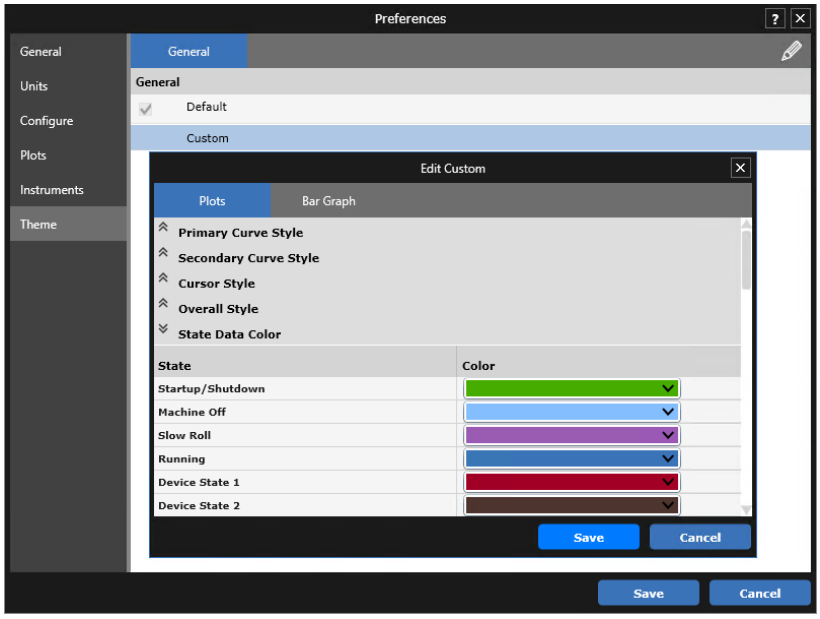

Figure 35: State Data Customization

5.2.2 Enhanced Waveform Readout

With System 1 v20.2, the Cursor Readout for Waveform plots has been enhanced to include (Figure 36):

1. Cursor Difference in Frequency unit
2. Crest Factor
3. Waveform Overall (rms)

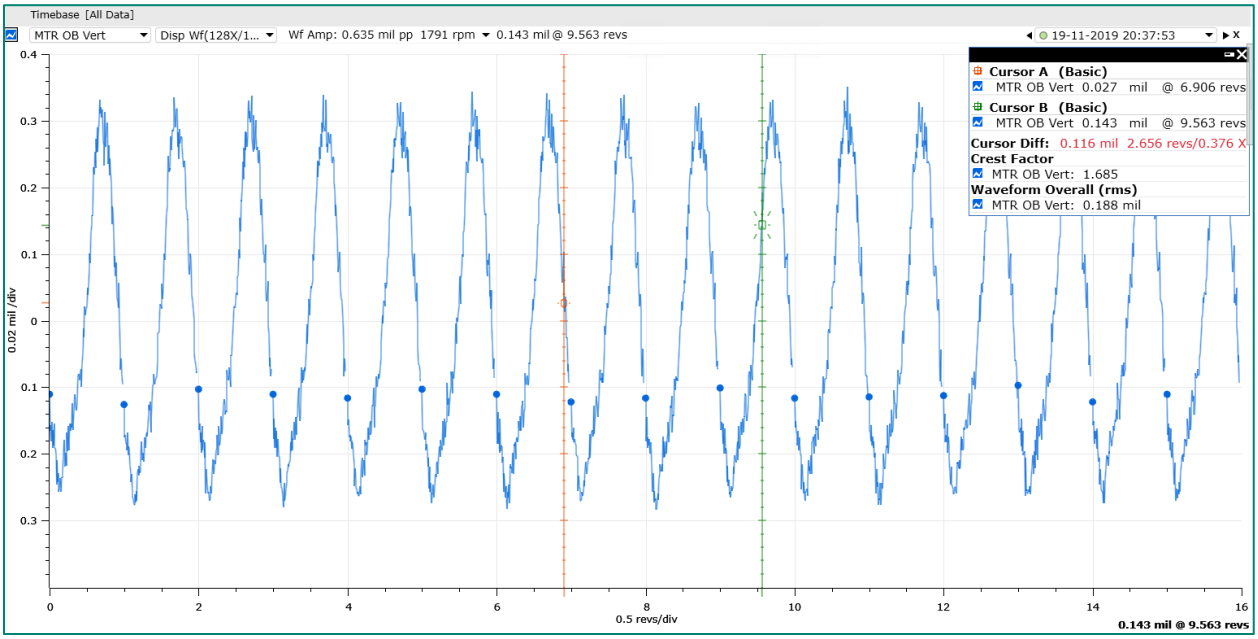

Figure 36: Enhanced Readout on Timebase Plot

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