Welcome to System 1 "Version 21.2" Document #: 125M6426





Version 21.2 [Nov 2021]



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Welcome

Bently Nevada is pleased to present System 1 version 21.2. This release delivers brand new capabilities to the Hydro Machine Monitoring and OT/IT System Integration use cases.



Hydro Machine Monitoring

• Air Gap Extractions



OT/IT System Integration

- Health Status Export through OPC DA
- OPC UA Hydro Waveform Export

Users upgrading to version 21.2 will benefit from the many capability enhancements to System I's **Connectivity**, **Analytics**, and **Visualization** pillars, which are summarized 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 System 1, please visit the <u>website</u>.

Thank you,

Falang

Tarannum Sarang – System 1 Product Manager

On behalf of your System 1 Leadership and Development Teams



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Document #: 125M6426



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1. SYSTEM 1 V21.2 FEATURE OVERVIEW

ALL 21.2 FEATURES ARE ONLY SUPPORTED WITH POSTGRESQL AS THE DATA HISTORIAN.

Table 1: System 1 v21.2 - Connectivity Capabilities

	Connectivity	
	Bently Devices	
3500/62 Custom Unit Support	Configure custom units for points from 3500/62 Process Monitor.	3.1.1
2300 Synchronous Sampling Support	Import synchronous waveform measurement data from 2300 device.	3.1.2
Ranger Pro Device Groups	Create custom Ranger Pro device groups to aid in device management. **Available with new version of Ranger Pro Plugin. Release to follow System 1 21.2**	3.1.3
	Interfaces	
Health Status Export through OPC DA	Export capability through OPC DA to enable health statuses (alarm and point statuses exported as Boolean tags) from System 1.	3.2.1
OPC DA Server Heartbeat	OPC DA server heartbeat export using the Heartbeat tag to indicate steady connection between OPC server and client.	3.2.2
OPC UA Hydro Waveform Export	Export Hydro Waveform data from System 1 to third party OPC UA client through the OPC UA Protocol.	3.2.3
	Data Management	
Seamless View of Data from Multiple Archives	Simultaneously join data from multiple audit files and display it in a seamless view, on a single client.	3.3.1



Table 2: System 1 v21.2 – Analytics Capabilities

Analytics										
Core Analytics										
Hydro Machinery Support –	Add a set of Air Cap extractions as Trended Variables	411								
Air Gap Extractions	Add d set of All Gdp extractions ds frended valiables.	4.1.1								
Spectral Band	Add Spectral band based on the computation using either the									
Computation Using	Highest Peak or Energy. System 1 also allows users to add Overall	4.1.2								
Highest Peak	Spectral measurement.									
	Decision Support									
Decision Support	Refer to the Decision Support Roadmap for more details.	-								

Table 3: System 1 v21.2 - Visualization Capabilities

Visualization										
	Plots									
Apply User-defined Plot Sets across all Machines	Apply user-defined plot sets across all machines from the Defined Plot Sets, Save Plot Sets, and Manage Plot Sets dialog box.	5.1.1								
Plot Enhancements	Enable plot view customization by providing the Add New Plot option button in the Plot Title Bar to add new plot of the same plot type. User preference to turn off Phase Roll-Over for vector measurements on Trend and Bode Plot.	5.1.2								
	Events									
Event Filtering	Filter Events within the Events workspace by Time Range, Activity, and Event Source.	5.2.1								

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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 4).

New Versions of System 1 benefit from:

- Compatibility with the latest Microsoft Client & Server Operating Systems
- Client backwards compatibility to previous versions under support (21.2 Client to 20.1 Server DB)
- Database upgrade from previous versions released within last 3 years (19.1 \rightarrow 21.2)
- Security patch and 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 type questions, but users are encouraged to update software to latest version to benefit from new features, OS compatibility, and bug fixes.

Syst	em 1 Version	s & Support		Win	ndows Serv		Windows Client OS (64bit)				
Version	Available	End of Support	2019	2016	2012 R2	2012	2008 R2	10**	8.1 U1	7 SP1	
21.2	Nov 2021	Nov 2023	×	✓	✓			~	~		
21.1	May 2021	May 2023	×	✓	✓			×	✓		
20.2	Nov 2020	Nov 2022	~	✓	✓			✓	~		
20.1	May 2020	May 2022	~	✓	✓	~		✓	~		
19.2	Nov 2019	Nov 2021	~	✓	✓	~	✓	✓	~	~	
19.1	May 2019	May 2021	×	✓	×	×	×	 Image: A second s	×	×	

Table 4: System 1 Version Support & OS Compatibility Matrix

**Windows 10 version compatibility will track Microsoft's published release and support model. System 1 will be tested and supported on all versions of Windows 10 under support at the time of release.

System 1 v21.2 (Windows 10 v21H1, v20H2, 2004) System 1 v21.1 (Windows 10 v20H2, 2004, 1909) 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)



3.CONNECTIVITY

3.1 Bently Devices

3.1.1 3500/62 Custom Unit Support

General Enhancement video located in Bently Nevada Tech Support Training Library <u>Valid M&S Agreement Required</u>

Prior to System 1 v21.2, custom units configured for 3500/62 Process Variable Monitor were imported as unknown and read-only.

With System 1 v21.2, users can configure the custom units from System 1 configuration for these Process Variable points (Figure 3-1 and Figure 3-2). Users can also replace these custom units with any standard unit available in System 1. The units configured in System 1 for the Process Variable points will then be exhibited in the Display environment i.e., Status List view, Bar graph, Plots, etc.

Active Active	Top Scale	Bottom Scale	Unit	Clamp Value
~ ~	20.0 Unknown	4.0 Unknown	Unknown	4.0 Unknown
ACTIN ✓	^{∕e} in ✓	ve in Top Scale ✓ 20.0 Unknown	Iop Scale Scale V 20.0 Unknown 4.0 Unknown	Ve I op Scale Scale Unit ✓ 20.0 Unknown 4.0 Unknown Unknown

Figure 3-1: Process Variable Imported with Custom Unit Showing "Unknown"

Name	Channel	Channel Type	Measurement	Active	Active in	Top Scale	Bottom Scale	Unit	Clamp Valu
Process Variable Channel	1	Process Variable Channel	Process Variable	~	~	20.0 Unknown	4.0 Unknown	~	4.0 Unknow
				Add	Custom l	Jnit	? X		
			Name:	Pascal					
			Description:						

Figure 3-2: Edit the Custom Unit



Points	Spectru	ms & Wav	eforms Trended Variab	les Setpoints							
▲ Name		Channel	Channel Type	Measurement	Active	Active in	Top Scale	Bottom Scale	Unit	Clamp Value	
Process Variable C	hannel	1	Process Variable Channel	Process Variable	~	~	20.0 Pascal	4.0 Pascal	Pascal	4.0 Pascal	

Figure 3-3: Custom Units Displayed for Process Variable

3.1.2 2300 Synchronous Sampling Support

2300 Enhancements video located in Bently Nevada Tech Support Training Library Valid M&S Agreement Required

System 1 v21.2 now enables users to import Synchronous Waveform measurements data from a 2300 device. Users need to add Synchronous Waveform and nX measurements to the following input channels under the 2300 device (Firmware version 3.3) in the BNMC version 6.6:

- Acceleration channel
- Velocity channel
- Radio Vibration channel

2300 Devices TIII 2300/20 Vibration Monitor	Points	Spect	rums 8	& Waveforms	Trended Variables Setpoints						9)• 🗶	$ \nabla$
Magnetic Pickup Speed Channel	Name		c		ent	Sampling Type	Unit	Active	Туре	Fmax	Sample Rate	Samples	Numb
Acceleration Channel 1 Acceleration Channel 2	Acceleration Char	nnel 1	1	. Demod Wf	(2000Hz)	Async	g	~	Waveform	2000 Hz	5,120 Hz	-	
Relay Channel 1 (empty)	Acceleration Char	nnel 1	1	Accl Wf(2	56X/32revs).Magnetic Pickup Speed Channel	Sync	g	\checkmark	Waveform	100 X	-	256	32

Figure 3-4: Spectrums & Waveforms Tab Showing Sync Measurement

3.1.3 Ranger Pro Device Groups

Ranger Pro Enhancement video located in Bently Nevada Tech Support Training Library Valid M&S Agreement Required

Available with new version of Ranger Pro Plugin. Release to follow System 1 21.2

System 1 v21.2 now enables users to create custom device groups within Ranger Pro gateways. Users can add device groups by right clicking a connected gateway and selecting "Add Device Group" (Figure 3-5). Users can then drag and drop Ranger Pro devices from the same gateway into device groups (Figure 3-6). Grouping related devices together helps users to better manage large numbers of devices. Users can group devices that are monitoring the same machine or machine train, which helps to quickly view only the channels and measurements of those devices in System 1. The ability to filter using these groups greatly improves the performance of System 1 workspaces, as less information is loaded to generate the views (Figures 3-7 and 3-8).



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RangerPro Wireless Gateways
 Downstream Gateway 1
 Copy
 Paste
 Paste
 Delete

• 8

WVI-0012

Figure 3-5: New "Add Device Group" Context-Menu Option for Ranger Pro Gateways

Add Device Group

Alarm Quick Configuration

Configure Alarm Setpoints

Synchronize Configuration



Figure 3-6: Ranger Pro Devices Nested Under Device Groups



File Portable Tools Help	😋 Display	X Configure								
Machines	General									Devices
▼ 🕍 INV_Kingston_Vib	A	vailable Machine Po	ints	⊕ 7•			Available Devi	ce Points		▼ 🛄 Downstream Gateway 1
 ● 田 CP ● 田 T13 	Path	Туре	Point Name	Source	Мар	Point Name	Unit	Transducer	Transducer	Decommissioned Group FII Pump 1 Group
Reaston Feed Plimp East	Decides Durne Midee	Devues				-	Group	Unentation	Orientation Angle	► E WVI-0001
Reactor Feed Rump West	Reactor Pump Motor	Casing Vib			-	2	Acceleration	None	0.0	B WA/L0002
(if) a set a set a	Reactor Pump Notor > Shaft	Speed				х	Acceleration	None	0 *	B
 [A] Flasher Feed Pump Nth 	Reactor Pump Motor->Shaft->NDE	Bearing Temp			←	Y	Acceleration	None	0 °	• [] WVI-0003
・ [月」 Flasher Feed Pump Sth	Reactor Pump Motor->Shaft->NDE	Casing Vib (Y/V)				Temperature	Temp	~	a	▶ [] WVI-0004
 [][] SEPERATOR WEST 	Reactor Pump Motor->Shaft->NDE	Casing Vib (X/H)			-	Health	None	-		🔹 🖽 Pump 2 Group
 []] SEPERATOR EAST 	Reactor Pump Motor->Shaft->NDE	Casing Vib (A)			-	7	Acceleration	None	0.0	 WVI-0005
III Finisher Feed Pump West	Reactor Pump Motor->Shaft->DE	Bearing Temp	Temperature	Downstream Gat.			Acceleration	Home		▶ [] wvi-0006
City Finisher Food Rump Fast	Reactor Pump Motor->Shaft->DE	Casing Vib (Y/V)	Y	Downstream Gat.		×	Acceleration	None	0.0	B WOULDOOZ
(in a set of the set of the set	Reactor Pump Motor->Shaft->DE	Casing Vib (X/H)	х	Downstream Gat.	-	Y	Acceleration	None	0 °	B
・ [月] Finisher Screw East	Reactor Pump Motor->Shaft->DE	Casing Vib (A)	Z	Downstream Gat.	←	Temperature	Temp		8	► [] WVI-000s
▶ [月] Finisher Screw West	Reactor Pump Motor->Shaft->DE	Custom	Health	Downstream Gat.	(Health	None			 WVI-0009
 [][] Transferline Pump East 	Reactor GB/Pump	Flow			-	7	Acceleration	None	0.0	 WVI-0012
 [][] Transferline Pump West 	Reactor GB/Pump	Discharge Bressure			-	v	Annelanation	Mana		▶ WVI-0013
• EEI CB8-1	Reactor GB/Pump	Casing Vib				<u>^</u>	Acceleration	None	0-	▶ Îl wvi-op14
• C C C A	Reactor GB/Pump->Shaft	Speed				Y	Acceleration	None	0 0	B 140/1 0015
- (Ch0-4	Reactor GB/Pump->Shaft->DF	Bearing Temp	Temperature	Downstream Gat	←	Temperature	Temp		2	· U wvi-ours
• 🖽 Salt	Reactor GB/Pump->Shaft->DE	Casing Vib (Y/V)	Y	Downstream Gat.	(←	Health	None	-		• [] WVI-0016
 H Power House 	Reactor GB/Pump->Shaft->DE	Casing Vib (X/H)	х	Downstream Gat.	←	Z	Acceleration	None	0 °	▶ [] WVI-0017
► 🖽 SPP	Reactor GB/Pump->Shaft->DE	Casing Vib (A)	z	Downstream Gat.		x	Acceleration	None	0.0	 WVI-0018
▶ 🖽 T-75	Reactor GB/Pump->Shaft->DE	Custom	Health	Downstream Gat.		N N	Asselection	Nees	0.0	▶ WVI-0019
• E ADE	Reactor GB/Pump->Shaft->NDE	Bearing Temp			-	Y	Acceleration	None	0.	 B wvL0020
	Reactor GB/Pump->Shaft->NDE	Casing Vib (Y/V)				Temperature	Temp			. B was once
	Reactor GB/Pump->Shaft->NDE	Casing Vib (X/H)			←	Health	None			• [] wvi-uu21
	Reactor GB/Pump->Shaft->NDE	Casing Vib (A)			←	Z	Acceleration	None	0 °	 WVI-0022
					←	x	Acceleration	None	0 °	▶ [] WVI-0023
					-	×	Acceleration	None	0.0	 WVI-0024
							Acceleration	NOTE	0	■ B wvi-0025
					-	Temperature	Temp	-		B W0// 0036
						Health	None	-	•	- B way 9927
					←	Z	Acceleration	None	0 °	• [] WVI-0027
					←	х	Acceleration	None	90 °	 WVI-0028
						Y	Acceleration	None	90.0	 WVI-0029
						Temperature	Tomp	1	10	► ☐ WVI-0030
						remperature	reinp	-		▶ II wvi⊧0031
					÷	Health	None	-	•	B war 0022
					←	Z	Acceleration	None	0 °	- U WVI-0052
					←	х	Acceleration	None	0 °	• [] WVI-0033
					←	Y	Acceleration	None	0 °	▶ 🗍 WVI-0034
					6	Temperature	Temp			 WVI-0036
	4			>			Temp	_	- FI	► 🕅 WVI-1000

Figure 3-7: System 1 Mapping Mode with Gateway Selection

ile Portable Tools Help				🗟 Display	*	Configure				Mapping Mod
Machines	General									Devices
iNV_Kingston_Vib	Δ	vailable Machine Poi	nts				Available Devi	ce Points		🔹 🎹 Downstream Gateway 1
• 🖽 CP										E Decommissioned Group
• 🎛 T13	Path	Туре	Point Name	Source	Map	Point Name	Unit Group	Transducer	Transducer Orientation Angle	🔹 🔛 Pump 1 Group
Reactor Feed Pump East	Reactor Pump Motor	Power			6	7	Acceleration	None	0.0	► 🗍 WVI-0001
[][] Reactor Feed Pump West	Reactor Pump Motor	Casing Vib				×	Assolate	Mana	0.0	► 🗍 WVI-0002
Fill Elasher Feed Pump Nth	Reactor Pump Motor->Shaft	Speed				<u>^</u>	Acceleration	None	0	► ☐ WVI-0003
Mill Flasher Fred Dump Sth	Reactor Pump Motor->Shaft->NDE	Bearing Temp			-	Y	Acceleration	None	0 °	B W04 0004
 [Jt.] Flasher Feed Pump Stn 	Reactor Pump Motor->Shaft->NDE	Casing Vib (Y/V)			(Temperature	Temp		-	• [] WVI-0004
▶ [月] SEPERATOR WEST	Reactor Pump Motor->Shaft->NDE	Casing Vib (X/H)			~	Health	None		1.5.1	▼ 🖽 Pump 2 Group
 ()() SEPERATOR EAST 	Reactor Pump Motor->Shaft->NDE	Casing Vib (A)				7	Acceleration	None	0.0	► 🗍 WVI-0005
[]] Finisher Feed Pump West	Reactor Pump Motor->Shaft->DE	Bearing Temp	Temperature	Downstream Gat.		-	Acceleration	Nene		WVI-0006
Finisher Feed Pump Fast	Reactor Pump Motor->Shaft->DE	Casing Vib (Y/V)	Y	Downstream Gat.		^	Acceleration	None	0.5	► E WVI-0007
	Reactor Pump Motor->Shaft->DE	Casing Vib (X/H)	X	Downstream Gat.		Y	Acceleration	None	0 °	- P unit coor
 [,H,] Finisher Screw East 	Reactor Pump Motor->Shaft->DE	Casing Vib (A)	Z	Downstream Gat.	←	Temperature	Temp	10	17.1	• [] WVI-DUDS
▶ [] Finisher Screw West	Reactor Pump Motor->Shaft->DE	Custom	Health	Downstream Gat.	(Health	None	2	122	 WVI-0009
 []] Transferline Pump East 	Reactor GB/Pump	Flow			-	7	Acceleration	None	0.0	 WVI-0012
[]] Transferline Pump West	Reactor GB/Pump	Suction Pressure					Receiveration			► 🕅 WVI-0013
GC CP0.1	Reactor GB/Pump	Cosing Ville				×	Acceleration	None	0.4	B W0/L0014
	Reactor GB/Pump > Shaft	Casing Vib				Y	Acceleration	None	0 °	
EE CR8-4	Reactor GB/Pump->Shaft->DE	Bearing Temp	Temperature	Downstream Gat		Temperature	Temp	2	12	► [] WVI-0015
E Salt	Reactor GB/Pump->Shaft->DE	Casing Vib (Y/V)	Y	Downstream Gat	←	Health	None	-		 WVI-0016
H Power House	Reactor GB/Pump->Shaft->DE	Casing Vib (X/H)	×	Downstream Gat	6	7	Acceleration	None	0.0	 WVI-0017
FH SPP	Reactor GB/Pump->Shaft->DE	Casing Vib (A)	Z	Downstream Gat			Acceleration	None		► 🗍 WVI-0018
	Reactor GB/Pump->Shaft->DE	Custom	Health	Downstream Gat		x	Acceleration	None	0 °	- B 1000 0010
	Reactor GB/Pump->Shaft->NDE	Bearing Temp			←	Y	Acceleration	None	0 °	• [] WVI-0019
H ADF	Reactor GB/Pump->Shaft->NDE	Casing Vib (Y/V)			←	Temperature	Temp	-		 WVI-0020
	Reactor GB/Pump->Shaft->NDE	Casing Vib (X/H)			6	Health	None	1		 WVI-0021
	Reactor GB/Pump->Shaft->NDE	Casing Vib (A)								▶ ☐ WVI-0022
					1					B WV/L0022
										- B war cool
										• [] WVI-0024
										 WVI-0025
										 WVI-0026
										► 🖞 WVI-0027
										FI WV/L0028
					1					8 10020
					1					► U_WVI-0029
										 WVI-0030
					1					WVI-0031
										► 🗍 WVI-0032
										- F 140/1 0033
										• [] WVI-0033
					1					 WVI-0034
										 WVI-0036
										- B Hay 1000

Figure 3-8: System 1 Mapping Mode with Device Group Selection



3.2 Interfaces

3.2.1 Health Status Export through OPC DA

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

System 1 now extends the export capability through OPC DA to enable export of Health Statuses. These Health Statuses include alarm and point statuses exported as Boolean tags.

This Health Status information exported through OPC DA can be further fed to the DCS system. The figure below (Figure 3-9) shows the list of health statuses that System 1 exports.

Health Status Name	Health Status Type
Inactive	Alarm Status
Condition Monitoring Alarm	Alarm Status
New Alarm Status	Alarm Status
New Condition Monitoring Alarm	Alarm Status
New Protection Alarm	Alarm Status
No Data	Alarm Status
Not Ok	Alarm Status
Alarm Ok	Alarm Status
Protection Alert Alarm	Alarm Status
Protection Danger Alarm	Alarm Status
Alarm Latch	Alarm Status
Transient Mode	Point Status
Trip Multiply	Point Status
Alert Bypass	Point Status
Bypass	Point Status
Danger Bypass	Point Status
New Point Status	Point Status
Drive Rack Not OK Relay - Key switch change	Miscellaneous Status
Program Mode Enabled	Miscellaneous Status

Figure 3-9: Health Status Tags Exported over OPC DA Server





Generic Refinery(1)/Train 401 A1/RV11_X/0.08 X - 1.2 X/Status[10714]/Inactive(529) Float 1 17:31:16.594 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status[4560]/Aarm Latch(754) Float 0 16:49:24.483 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status[4500]/Aarm (Latch(754)) Float 0 19:07:33.391 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status[4560]/Netw(529) Float 1 19:07:33.391 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status[4550]/Netw(529) Float 1 19:07:33.391 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status[4550]/Netw(529) Float 0 16:49:34.843 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status[4500]/Netw Alarm Status[664) Float 0 19:09:13:39 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status[4500]/Netw Alarm Status[664) Float 0 19:09:13:39 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status[4500]/Netw Alarm Status[664) Float 0 19:09:13:39 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status[4500]/Netw Alarm Status[664) Float 0 19:09:50:39 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status[4500]/Netw Alarm Status[664) Float 0 19:09:30:39	Quality
Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/Alarm_Latch(754) Float 0 164/8234843 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/Alarm_Latch(754) Float 0 190733.391 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/Condition Monitoring Alarm(533) Float 1 190733.391 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/condition Monitoring Alarm(533) Float 0 1649234843 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/nextive(529) Float 0 1649234843 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/New Alarm Status(664) Float 0 1909511.839 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/New Alarm Status(664) Float 0 190951.039 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/New Alarm Status(664) Float 0 190951.039 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/New Alarm Status(664) Float 0 190955.0793 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/New Detarter Alarm(662) Float 0 190955.0793	Good
Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/Alarm_Ok(544) Float 0 19:07:33.391 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/Condition Monitoring Alarm(533) Float 1 19:07:33.391 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/Condition Monitoring Alarm(533) Float 0 16:49:34.843 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/Netw(520) Float 0 16:49:34.843 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/Netw Alarm Status(664) Float 0 19:09:11.839 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/Netw Alarm Status(664) Float 0 19:09:11.839 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/Netw Alarm Status(664) Float 0 19:09:11.839 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/Netw Alarm 562) Float 0 19:09:10:20	Good
Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/Condition Monitoring Alarm(533) Float 1 19:07:33.391 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/Nex Alarm Status(664) Float 0 16:49:34.843 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/Nex Alarm Status(664) Float 0 19:09:11.839 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/Nex Alarm Status(664) Float 0 19:09:13:03 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/Nex Alarm Status(664) Float 0 19:09:13:03 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/Nex Alarm Status(664) Float 0 19:09:13:03 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/Nex Alarm Status(664) Float 0 19:09:50:793 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/Nex Detaction Alarm(662) Float 0 19:09:50:793	Good
Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/Inactive(529) Float 0 16:49:34.843 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/New Alarm Status(664) Float 0 19:09:11.839 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/New Condition Monitoring Alarm(662) Float 0 19:09:10.839 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/New Condition Monitoring Alarm(662) Float 0 19:09:50.793 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/New Condition Monitoring Alarm(662) Float 0 19:09:50.793	Good
Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/New Alarm Status(664) Float 0 19:09:11.839 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/New Condition Monitoring Jarm(662) Float 0 19:09:303 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/New Condition Monitoring Jarm(662) Float 0 19:09:303 Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/New Condition Monitoring Jarm(662) Float 0 19:09:303	Good
Generic Refinery (1)/Train 401 A1/RV11_V/Direct/Status/5500/New Condition Monitoring Alarm(562) Float 0 19:08:50.793 Generic Refinery (1)/Train 401 A1/RV11_V/Direct/Status/5500/New Condition Monitoring Alarm(562) Float 0 19:08:50.793 Float 0 19:08:50.793	Good
General Refiner (1) (Train 401 A1/P)(11 V/Direct/Status (4560) (Alexy Restartion Alexy (653)) Float 0 10:00:11 930	Sood
readeneric Reinery(1)/ Train 401 A1/RV 11_A/ Direct/status(4500)/ New Protection Alarm(005) Ploat 0 19:09:11.859	Good
Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/No Data(528) Float 1 23:55:36.002	Good
Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status[4560]/Not OK(530) Float 0 17:01:46.747	Good
Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status(4560)/Protection Alert Alarm(531) Float 1 19:07:36.407	Good
Generic Refinery(1)/Train 401 A1/RV11_X/Direct/Status[4560]/Protection Danger Alarm(532) Float 1 19:07:36.407	Good



3.2.2 OPC DA Server Heartbeat

System 1 OPC DA Server supports the export of OPC DA Server Heartbeat, which indicates steady OPC connection between OPC server and client using the Heartbeat tag. The OPC Heartbeat tag is a simple counter that goes from value 1 to 10 in steps of 1 per second, then resets back to value 1.

Users need to monitor this tag in the OPC client to detect failure of OPC connection between the OPC server and client.

Item ID	/ Data Type	Value	Timestamp	Quality	
Z 84-37_win2016(10.5.153.180)/Heartbeat	Float	1	00:15:21.656	Good	

Figure 3-11: Heartbeat Tag in OPC DA Client

3.2.3 OPC UA Hydro Waveform Export

System 1 v21.2 now supports export of Hydro Air Gap and Multimode Hydro Air Gap waveforms from a 3500/46M device mapped to a Hydro Machinery through System 1 OPC UA Protocol.

After the OPC UA server configuration is complete, System 1 begins exporting waveforms at 10minute intervals or the device storage rate intervals (NOTE: Each OPC UA client can further regulate the dynamic data subscription rate). The data is exported with a set of data properties, such as Unit, Data Status, Node Status, and RPM (Figure 3-12) that can be utilized to define the dynamic sample in external systems. Welcome to System 1 "Version 21.2"

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C Root	Name	Value
x 🔁 objette	~	AirGapProfileDataType
	MeasurementId	{5b4dad97-34e5-48b6-9e87-f9a0afe8c496}
🔰 💑 Server	SampleTypeID	2021-10-06112:40:00.5392
V 🛱 784-37 WINI2016/Generic Refinery	> Data	Float Arrav[2048]
	NumberOfSa	2048
Y 🦚 Generic Refinery (Machines)	UnitName	in
> 💑 Unit 401A	Unit	4804168
Linit 401P	Subunitivame	None
	DataStatus	0
> 💑 Group	NodeStatus	0
🗸 💑 Hydro Unit	RPM	0
Lhidro Turbino	Fmax	61440
rydro rurbine	FmaxUnit	4740186
🗡 🐝 Hydro Generator	SamplingPeri	0
> 📥 Shaft	SamplingPeri	s
	SamplingPeri	5457219
+ 🐢 HydroAirGap i	DCOffset	-2 82402
🔰 🖾 Avg Air Gap	AlgorithmTyp	0
👌 🥥 Air Gap Wf(2048X/1revs).Keyphasor Channel	KPHitIndices	UInt32 Array[0]
Corres Datas Chara Mr	RevolutionSp	Float Array[0]
Sensor Rotor Shape Wr	PistonAngle	-1 Guid Arroy[0]
Sensor Profile Set Wf	SensorThickn	0.13
🔪 🥥 Min Air Gan	NumberOfPol	20
	PoleCountDir	1
Min AG Pole	SensorPoleN	1
> 💷 Max Air Gap	ShaftRotation	0
May AG Pole	> AirGapAmplit	Float Array[20]
	NumberOfTe	-1
instant AG	ToothNumber	-1
> 🖾 Avg Profile Set Wf	Reference Ioo	-1 Float Array[20]
🔪 🧠 Min Air Gan Wf	> RotorAmplitu	Float Array[20]
	> PoleAngles	Float Array[20]
> 📾 Stator Snape wit	> StatorAmplitu	Float Array[4]
> 💷 Avg Rotor Shape Wf	TeethAngles RotorCircularity	Float Array[4]
🧳 Tag Name	RotorCentreR	6.68443e-17
	RotorCentreA	311.634
P 🙀 HydroAirGap2	StatorCircular	0
> 💑 HydroAirGap3	StatorCentreR	6.63441e-17 123.205
> 👶 HydroAirGap4	NominalAirGap	1
Tag Name		
Tao Name		Write Cance

Figure 3-12: OPC UA Client Hierarchy & Data Sample after Subscription

The format of the exported waveforms and its derived extractions is described in the figure below (Figure 3-13):

Property	Description
MeasurementId	Unique ID for the measurement (System 1 GUID)
UTCTimestamp	Spectrum/waveform time stamp in UTC format
Data	Raw data samples from Device
NumberOfSamples	Total number of waveform samples (e.g., 1024, 2048)
Fmax	FMax for the spectrum or waveform
RPM	Speed for the spectrum or waveform
SampleTypeID	Synchronous or Asynchronous
UnitName	Name of the spectrum/waveform Unit (e.g., mil, um)
Unit	OPC UA code for the Unit (OPC Foundation code)
SubunitName	Name of the spectrum Subunit (pk, rms, pp)

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Subunit	OPC UA code for Subunit (OPC Foundation code)
Samplingperiod Unit	Delta time between two data values in a waveform
ACCoupled	Waveform AC Coupled (True or False)
DC Offset	DC Offset value
DataStatus	OPC UA code for the Data Status (OPC Foundation code)
NodeStatus	OPC UA code for the Node Status (OPC Foundation code)
AlgorithmTypeID	[Future] Applied algorithm type (e.g., Enveloping, Averaging)
KPHitIndices	Sample on which KPH hits occurred
RevolutionSpeeds	Speed in rpm for each revolution
PistonAngle	Piston angle for reciprocating compressor waveforms
PairedMeasuremendIDs	Paired channel ID -X or Y (System 1 GUID)
NumberOfPoles	Number of Poles on the Rotor
PoloCountDirection	Ascending or Descending as the number of poles pass a reference
FOIeCountDirection	point
SensorPoleNumber	Pole that is directly in front of the air gap probe
SonsorAnglo	Angle at which sensors are mounted with respect to reference
SensorAngle	plane
ShaftRotationDirection	Angular rotation direction of the Shaft for Hydro Units
AirGapAmplitudes	Air Gap Amplitude data values
NumberOfTeeth	Number of Teeth on the Stator
ToothNumberingDirection	Direction that the tooth numbering increases around the Stator
PeferenceToothNumber	Tooth on the Stator that is aligned in the same direction as the
	reference point
ToothNumberForPoles	Tooth on the Stator that is aligned in the same direction as the
	reference point
Nominal Air Gap	Designed Air Gap
RotorAmplitudes	Rotor Amplitude data samples
PoleAngles	Calculated Pole angle values
StatorAmplitudes	Stator Amplitude data samples
TeethAngles	Calculated Tooth angle values
RotorCircularity	Calculated value of ellipticity or out-of-roundness of the rotor
RotorConcentricityAmp	Calculated distance between the current location and defined
RetoreoneentheityAmp	location of the rotor center
RotorConcentricityAngle	Calculated angle between the current location and defined
	location of the rotor center
StatorCircularity	Calculated value of ellipticity or Out-of-roundness of the stator



StatorConcontricityAmp	Calculated distance between the current location and defined
StatoreoncentneityAmp	location of the stator center
StatorConcontricityAnglo	Calculated angle between the current location and defined
StatoreoncentricityAngle	location of the stator center
	Calculated value of ellipticity or Out-of-roundness of the rotor or
RotorStatorCircularity	the stator
PotorStatorCopcontricityAmp	Calculated distance between the current location and defined
RotorstatorConcentricityAmp	location of the rotor or the stator center
PotorStatorCopcontricityApalo	Calculated angle between the current location and defined
RotorstatorConcentricityAngle	location of the rotor or the stator center
AirGapShapeAmplitudes	Air Gap Shape Amplitude data samples
AirGanShanoAnglos	Air Gap Shape Angle corresponding to the Amplitude data
AlloupshupeAllgles	samples

Figure 3-13: OPC UA Data Properties for Hydro Waveform

3.3 Database Management

3.3.1 Seamless View of Data from Multiple Archives

Audit Files Enhancement video located in Bently Nevada Tech Support Training Library Valid M&S Agreement Required

System 1 v21.2 allows users to join data from multiple audit files and display it in a seamless view, on a single client. The audit files must belong to the same database. Users can choose to attach audit files to the database or another audit file. To create a seamless view, users need to follow the below steps:

- 1. Select the Display workspace
- 2. In the Machines or Devices hierarchy pane, select and right-click the Database node
- 3. Choose Data Management > Attach Audit File (Figure 3-14)

The Windows Open dialog box is displayed.





Figure 3-14: Attach Audit File

Navigate to the directory where the machine audit file is stored and select the file to attach it either to a database or an audit file.



Figure 3-15: Data from Older Audit File is Stitched with Existing Database Data on Plots Seamlessly

If users no longer want to view data from attached audit file(s), they can detach an audit file using below steps:

- 1. Select the Display workspace
- 2. In the Machines or Devices hierarchy pane, select and right-click on Database node
- 3. Choose Data Management > Detach Audit File
- 4. Choose an audit file to detach (Figure 3-16)



(SeamlessViev
File	Portable Tools	s Help						9
	Machines	Devices	St	atus	Events		Plots	Case Histor
ъ щ	SeamlessView_D	Event Management	•	ist	Bar Graph		Overview	
•	► 🕅 Unit1_Tra	Data Management		Mov	e Data From			
•	GroupA	Navigate To Device	•		e Data To		∇	Machi
•	Group	nA		Dele	te		upB	Unit1_TrainB
	• [H] Mtr-Gbx (1 Stg Parallel)-Pmp (OH1/		Exp	ort Data to CSV		upA	Unit1_TrainA
				Crea	ate Audit File		up	Mtr-Gbx (1 Stg Par
				Atta	ch Audit File			
				Det	ach Audit File	Þ	Auditfile	e2016set1
				Man	ual Input			

Figure 3-16: Detach Audit File

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4.ANALYTICS

4.1 Core Analytics

4.1.1 Hydro Machinery Support – Air Gap Extractions

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

System 1 provides the ability to add a set of Air Gap extractions as Trended Variables (Figure 4-1). The extractions are derived from the Average Air Gap Waveform and calculated in accordance with CEATI International guidelines. User can configure these Air Gap extractions for both upper and lower planes of the hydro generator to monitor changes in Air Gap, including Rotor and Stator Circularity and Concentricity. These Trended Variables are historized and available for trend plots, software alarms, and reports in System 1. They can also be exported through standard OPC protocols for analytical purposes, including rule development in Decision Support.

	Trended \	/ariable Type:	Air Gap Extractio	ons 🗸	
	Associated Spectrun Calculate Histor	n/Waveform : ical Samples:	Air Gap Extraction Crank Angle Bar Overall - Spectra Spectral Bands - Spectral Bands -	ns nd al Energy Peak	
Set Properties			Wf Pk-Pk	5)	
Name	Band Lower Freque.	. Band Upper Fr	eque 🕀	✓ All	
Min Air Gap (Ext)	N/A	N/A		✔ HydroAirGap1	
Max Air Gap (Ext)	N/A	N/A	ă.		
Minimum Air Gap %	N/A	N/A			
Maximum Air Gap %	N/A	N/A	Ì		
Avg Air Gap (Ext)	N/A	N/A			
Min Pole	N/A	N/A			
-					

Figure 4-1: Air Gap Extractions as Trended Variables





Figure 4-2: List of Air Gap Extractions

4.1.2 Spectral Band Computation Using Highest Peak

Peak Band Extraction video located in Bently Nevada Tech Support Training Library Valid M&S Agreement Required

System 1 v21.2 now enables users to add trended variable types, Overall – Spectral and Spectral Bands – Peak, in addition to the existing variable type, Spectral Bands – Energy (earlier known as Spectral Bands). These trended variable types are available on all devices.

1. Overall – Spectral: Spectrum Overall displays the root mean square (RMS) value for FFT calculation

	Trended	Variable Type: m/Waveform :	Overall - Spectral Accl Wf(128X/166	vevs).K V	
et Properties	Calculate Histo	prical Samples:	✓ s	elect Point(s)	
Accl Wf O/All(128 X/1t	N/A	N/A		Acceleration CH1 (AC Mtr (AF I Keyphasor Channel (AC Mtr (A RV1 (Gbx (1 Stg Parallel) > Sha	3rg, H) > C F Brg, H)) ft 1 > IB)
Calculating historical	samples can take a	significant amour	at of time.	<	

Figure 4-3: Add Overall – Energy from Add Trended Variable Dialog

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 Spectral Bands - Peak: Users need to choose the spectrum/waveform measurement that they want associated with the trended variable. Then, configure the band lower and upper frequencies for the range that is needed for calculating spectral band using highest peak.

	Add Tre	nded Variable		? ×
Train1				
	Trended Variable Typ	e: Spectral Band	s - Peak 🗸	
	Associated Spectrum/Waveform Calculate Historical Sample	Bearing Fault Crank Angle B Overall - Spec SER GMF	Bands Jand tral	
Set Properties		Spectral Band Spectral Band Wf Pk-Pk	s - Energy s - Peak (s)]
Name	Band Lower Freque Band Uppe	r Freque	✓ All	
0.08 X - 1.2 X (Peak)	0.08 X V 1.2	x v 📷	Acceleration CH1 (AC I Keyphasor Channel (AC RV1 (Gbx (1 Stg Paralle	vtr (AF Brg, H) > : Mtr (AF Brg, H); 4) > Shaft 1 > IB)
			Add	Cancel

Figure 4-4: Add Spectral Bands – Peak from Add Trended Variable Dialog

System 1 v21.2 shows a Band Computation column in the Trended Variables tab, which shows whether Spectral band computation is performed using Energy or Highest Peak.

Points	Spectrums & Waveforms Trended Variables Setpoints							() ⊕•		
Machine Name	Name	Channel	Channel Type	▲ Measurement	Active	Active in	Integrated	Band Lower	Band Upper	Band Com
AC Mtr (AF Brg, H)	Acceleration CH1	3	Acceleration Channel	0.08 X - 1.2 X (Peak)	~			0.08 X	1.2 X	Peak
Gbx (1 Stg Parallel)	RV1	1	Radial Vibration Channel	0.08 X - 1.2 X (Peak)	~	-	-	0.08 X	1.2 X	Peak
AC Mtr (AF Brg, H)	Acceleration CH1	3	Acceleration Channel	120 Hz - 600 Hz (Peak)	~		-	120.0 Hz	600.0 Hz	Peak
Gbx (1 Stg Parallel)	RV1	1	Radial Vibration Channel	1X	\checkmark	\checkmark	-	-	-	
AC Mtr (AF Brg, H)	Acceleration CH1	3	Acceleration Channel	2 X - 3 X (Peak)	~	-	-	2.0 X	3.0 X	Peak
AC Mtr (AF Brg, H)	Acceleration CH1	3	Acceleration Channel	2 X - 3 X (Peak)	~	-	-	2.0 X	3.0 X	Peak
Gbx (1 Stg Parallel)	RV1	1	Radial Vibration Channel	2X	\checkmark	\checkmark	-	-	-	-
AC Mtr (AF Brg, H)	Acceleration CH1	3	Acceleration Channel	5 X - 10 X	~	-	-	5.0 X	10.0 X	Energy
AC Mtr (AF Brg, H)	Acceleration CH1	3	Acceleration Channel	Accl Wf O/All(1000 Hz)	~	-	-	-	-	-
AC Mtr (AF Brg, H)	Acceleration CH1	3	Acceleration Channel	Accl Wf O/All(128 X/16 revs)	~	-	-	-	-	-

Figure 4-5: Band Computation Column in Trended Variables Tab





Figure 4-6: Spectral Bands and Overall Displays in Spectrum Plot



5. VISUALIZATION

5.1 Plots

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

5.1.1 Apply User-defined Plot Sets across all Machines

System 1 now enables users to apply user-defined plot sets across all machines from the Defined Plot Sets, Save Plot Sets, and Manage Plot Sets dialog box.

This capability allows users to create global database-level plot sets and then apply them across all machines using the "Apply to All Machines" option (Figure 5-1). This option is helpful if the machines within the database are not created from same templates but rather individually configured.

	Defined Plot Set	2	×
🛗 Generic Refinery 🔸 🎢 Train 🔸 🗍 Steam Turbine (SF)			
Plot Set			
General			
Plot Set Name :	Plotset_1		
Analyst:	John		
Description:	First Line Analysis		
		Characters Remaining: 1	981
Details			
Time Setting:	Start/End of Mini-Trend Range		
Apply To:	All Machines		
	✔ Enable Plot Set on Applicable Machine	25	
	✔ Reset Plot Workspace		
To enable the new plot set immediately, select Res	et Plot Workspace. Otherwise, System 1	applies the new options next time you op	ben
- the database.			
		Save Cancel	

Figure 5-1: Define Plot Sets for All Machines



From the Manage Plot Sessions dialog box (Figure 5-2), users can rearrange the user-defined Plot Sets and choose to "Apply to All Machines", which creates the same Plot Set order for all machines within the database.

		Plot Session	? ×
📾 Generic Refinery > 🎛 Ur	nit 401A 🕞 []] 🕅 Train 401 A1		
Applicability			
	Apply To:	All Machines	
		Reset Plot Session	
Plot Session			
Available		Selected	
		Plotset_1	
		Voteview (BOP) Trend - Watefalls Trends & Dynamics Overview (Turbo) Bearing Health Rotor Health	
To enable the new plo the database.	t set immediately, select Rese	et Plot Workspace. Otherwise, System 1 applies the ne	w options next time you open
			Save Cancel

Figure 5-2: Manage Plots Sets for All Machines



5.1.2 Plot Enhancements

5.1.2.1 Add New Plot

System 1 now supports plot view customization by providing the Add New Plot button in the Plot Title Bar (Figure 5-3). This button generates a new Plot of the same Plot type and users can add measurements to that Plot from the Add Measurement dialog.



Figure 5-3: Add New Plot

5.1.2.2 Turn off Phase Roll-Over

System 1 now allows users to disable Phase Roll-Over on the Trend and Bode Plots from the Preferences window. This helps to lock the Phase scale at 0-359 when analyzing two ends of rotor to find mode shape (Figure 5-4).

Phase Roll-Over is turned on by default. When turned on, Phase is displayed continuously in an unwrapped form (Figure 5-5).







Figure 5-4: Phase Roll-Over Turned Off

Figure 5-5: Phase Roll-Over Turned On

Users can turn off Phase Roll-Over from Plot Preference > General Tab (Figure 5-6), which applies to all Trend and Bode Plots in the Plot workspace or the individual plot through context menu.

		Prel	ferences		? ×
General	General	Spectrum W	/aveforms		
Units	General				
Configure		Plot Environment:	Standard 🗸	·	
Plots		Color Data By State:			
Instruments	Display m	illiseconds in timestamps:			
Theme	Group M	leasurements by Location:			
		Include Invalid Data:			
		Phase Rollover:	✓		
	1	Plot Time Synchronization:	Recommended for Recip Only		
				Save	Cancel

Figure 5-6: Phase Displayed Continuously in Unwrapped Form

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5.2 Events

Bently Nevada

5.2.1 Event Filtering

Event Filtering video located in Bently Nevada Tech Support Training Library <u>Valid M&S Agreement Required</u>

System 1 v21.2 supports filtering of Events within the Events workspace. The different filtering options are:

- 1. Filter by Time Range
- 2. Filter by Activity
- 3. Filter by Event Source

These filtering options apply to both Alarm and System Health Tabs.

Time Range filter (Figure 5-7) allows users to view Events generated during the selected time period.

f	Marms	States	Sys	tem Health Suppre	essed								8 1 2 3 4	0 7 . 0
Level	Asset Path	Device Path 🔺	Point	Measurement		State	Туре	Value	Setpoint	Source	Activity	Entered	Exited	Acknowledged
3	F)>0B	ic Monitor	RV11_X	Direct			Over	16.9983 mil pp	15.0000 mil pp	SW Alarm	Active	10/4/2021 4:16:21 PM		
3	SF)>OB	mic Monitor	RV11_X	Direct		-	Over	-	16.0000 mil pp	HW Alarm	Cleared	9/27/2021 7:07:34 PM	10/4/2021 4:14:16 PM	Z84-37_WIN201
9	SF)>OB	mic Monitor	RV11_X	Direct			Foloct Time Pa		00 mil pp	SW Alarm	Latched	9/27/2021 7:07:32 PM		Z84-37_WIN201
4	SF)>OB	mic Monitor	RV11_X	Direct			бенест піпе ка	lige L	00 mil pp	HW Alarm	Cleared	9/27/2021 7:07:32 PM	10/4/2021 4:14:16 PM	Z84-37_WIN201
2	F)>OB	ic Monitor	RV11_X	St	tart Time		End T	īme		Instrumentation	Cleared	9/27/2021 5:01:35 PM	9/27/2021 5:01:55 PM	
4	B)>OB	S/N: 43963	COB_A	Vel Spec O/All(10	/9/2021 5	:31:37	PM 🗧 - 9/30	/2021 15 9:31:37 P	2 in/s rms	SW Alarm	Active	3/27/2021 5:30:22 AM		
4	B)>OB	S/N: 43963	COB_V	Vel Spec 0/All(10					2 in/s rms	SW Alarm	Active	3/27/2021 5:30:20 AM		
4	B)>OB	S/N: 43963	COB_H	Vel Spec O/All(10			S	elect Cano	el 2 in/s rms	SW Alarm	Active	3/27/2021 5:30:18 AM		
4	B)>IB	S/N: 43963	CIB_A	Vel Spec O/All(1000 H	Hz/800 lines)	100	Over	8.6379 in/s rms	0.1772 in/s rms	SW Alarm	Active	3/27/2021 5:30:16 AM		
4	B)>IB	S/N: 43963	CIB_V	Vel Spec O/All(1000 H	Hz/800 lines)		Over	8.6379 in/s rms	0.1772 in/s rms	SW Alarm	Active	3/27/2021 5:30:14 AM		
4	B)>IB	S/N: 43963	CIB_H	Vel Spec O/All(1000 H	Hz/800 lines)	-	Over	8.6379 in/s rms	0.1772 in/s rms	SW Alarm	Active	3/27/2021 5:30:12 AM		
4	H)>IB	S/N: 43963	MIB_A	Vel Spec O/All(1000 H	Hz/800 lines)	-	Over	8.6379 in/s rms	0.1772 in/s rms	SW Alarm	Active	3/27/2021 5:30:10 AM		

Figure 5-7: Filter by Time Range



Activity filter (Figure 5-8) allows users to view Events based on activity of the Events such as Active, Cleared, Latched, and Shelved.

	Select Event Activity	? ×			
Generic Refinery >	Generic Refinery > 🞛 Unit 401A				
Event Activity:	Active Cleared Latched Shelved				
	Apply	Cancel			

Figure 5-8: Filter by Event Activity

Event Source filter (Figure 5-9) allows users to view Events based on the following criteria:

- 1. HW Alarm
- 2. SW Alarm
- 3. External Alarm
- 4. Instrumentation
- 5. System Health
- 6. User Initiated
- 7. Transient



Figure 5-9: Filter by Event Source



ONLY APPLICABLE WHEN UPGRADING FROM VERSIONS PRIOR TO 20.2

Installation

Before installing System 1 21.2, users must <u>uninstall</u> any System 1 versions below 20.2.

• 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. To **maintain data collection from OPC connections**, please take the following actions:

Property	Prior Versions	Versions 20.2 & Up	Required Action
Program ID	GE.BentlyNevada.Sys1OPCServer.2	System10PCServer.1	Change Program ID in client to "System10PCserver.1"
DCOM Config Name	System 1 OPC Server	System 1 OPC DA Service	 Before uninstalling System 1: Take a screenshot of DCOM setting for "System 1 OPC Server" for the following tabs: General Security (Launch and Activation / Access / Config Permissions) Identity After installing System 1 v20.2 and above: 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 "System10PCServer.1" (as shown in below image).

Bently Performance	Performance 0.6.0
Input OPC Server	System10PCServer.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.



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