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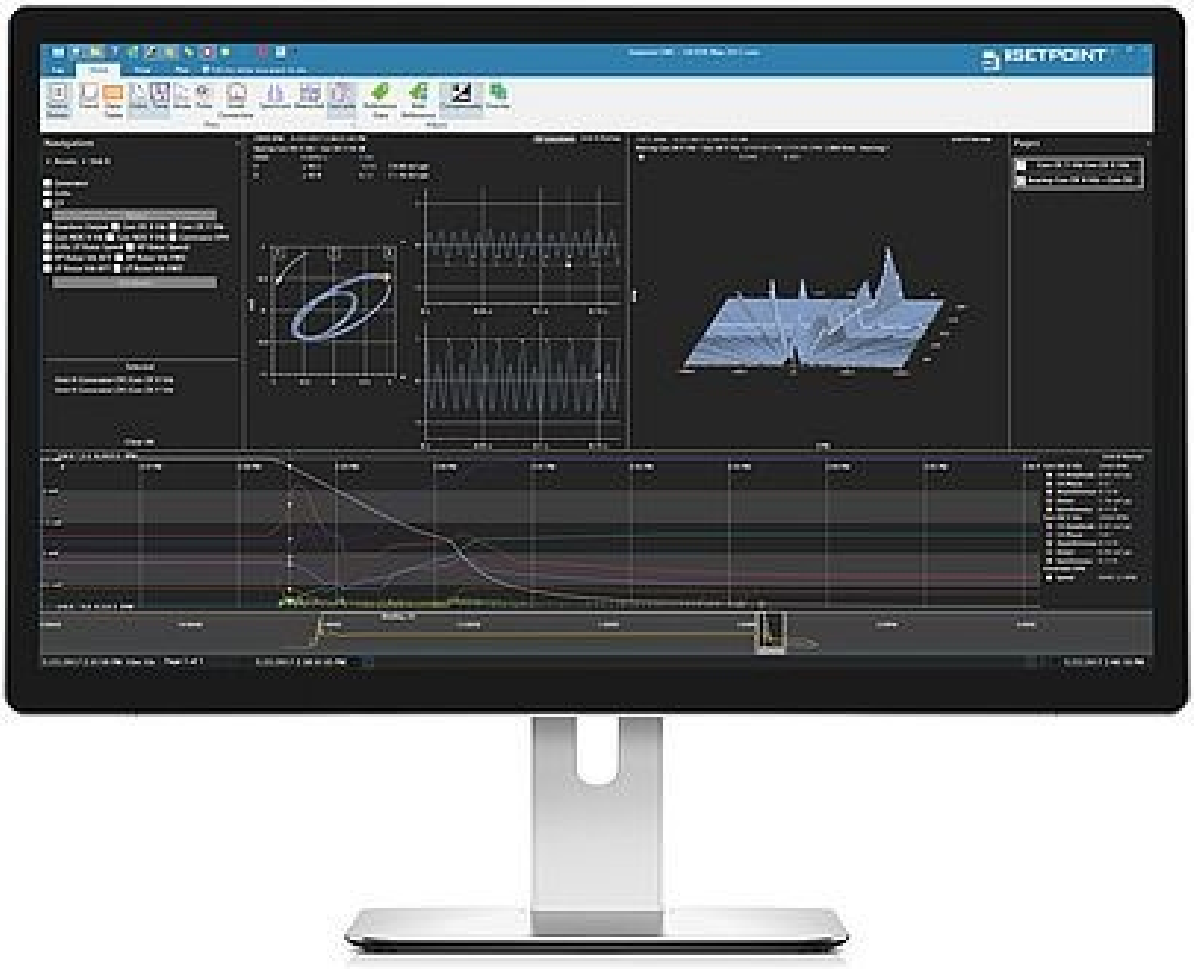

Release Notes

SETPOINT® CMS
Condition Monitoring Software

CMS 2025

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Release Notes - **SETPOINT® CMS**
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Brüel & Kjær Vibro GmbH
Wittichstrasse 6
64295 Darmstadt
Germany

Phone: +49 6151 428 0
Fax: +49 6151 428 1000

Brüel & Kjær Vibro A/S
Lyngby Hovedgade 94, 5 sal
2800 Lyngby
Denmark

Phone: +45 69 89 03 00
Fax: +45 69 89 03 01

BK Vibro America Inc.
1100 Mark Circle
Gardnerville NV 89410
USA

Phone: +1-775-552-3110

Hotline
Phone: +49 6151 428 1400
E-mail: support@bkvibro.com

Homepage
www.bkvibro.com

General e-mail
info@bkvibro.com

Table of Contents

1 CMS 2025 (v8.6.240) 7
1.1 CMS-XC Support for VCM-3 7
1.2 Autocorrelation Plot 8
1.3 Extended Difference Cursor Readout on Timebase Plots 8
1.4 Defects and Enhancements 9
1.5 System Compatibility 10

2 CMS 2024 R2 SP1 (v8.4.243) 11
2.1 Improved Usability for Polar and Shaft Centerline Plots 11
2.2 Adjustable Plot Font Size (Beta) 12
2.3 Corrected Default Compression Settings for Integrated Measurements 13
2.4 Further Improvements 14
2.5 Defects and Enhancements 14
2.6 System Compatibility 16

3 CMS 2024 R2 (v8.3.250) 17
3.1 Circular Magnetic Flux Profile Plot 17
3.2 Automatic Deployment of Default Bearing Database to PI-AF 18
3.3 Further Improvements 18
3.4 Defects and Enhancements 19
3.5 System Compatibility 20

4 CMS 2024 (v8.0.236) 21
4.1 Recommended Security Patch for AVEVA™ PI Server™ 21
4.2 Trend Experience 21
4.3 Unrolled Rotor Profile Plot 22
4.4 Unrolled Stator Profile Plot 22
4.5 Statistical Calculations for Hydroelectric Generators 23
4.6 Further Improvements 23
4.7 Defects and Enhancements 24
4.8 System Compatibility 25

5 CMS 2023 R2 (v7.18.337) 26
5.1 Extended Capabilities for Reciprocating Machinery 26
5.2 Improved Trend Experience 27
5.3 Easily Accessible Manual 27
5.4 Corrected Default Compression Settings for Integrated Measurements 28
5.5 Defects and Enhancements 29
5.6 System Compatibility 30

6 CMS 2023 SP1 (v7.16.215) 31
6.1 Defects and Enhancements 31

UNRESTRICTED DOCUMENT

7 CMS 2023 (v7.16.206) 33
7.1 Support for BKV Collect Wireless Sensors 33
7.2 SETPOINT® PI Adapter Renamed to SETPOINT® Connector 33
7.3 Performance and UI Improvements for VCM-3 and BKV Collect 33
7.4 Defects and Enhancements 34
7.5 System Compatibility 35

8 CMS 2022 R3 SP2 (v7.14.527) 36
8.1 Defects and Enhancements 36
8.2 System Compatibility 37

9 CMS 2022 R3 SP1 (v7.14.515) 38
9.1 Windows Update KB5020872 compatibility issues 38
9.2 Defects and Enhancements 38
9.3 System Compatibility 39

10 CMS 2022 R3 (v7.14.512) 40
10.1 New supported language: Chinese 40
10.2 Switching the SETPOINT® CMS Display Language 40
10.3 Multilingual installer for SETPOINT® PI Adapter 41
10.4 Defects and Enhancements 41
10.5 System Compatibility 42

11 CMS 2022 R2 (v7.13.205) 43
11.1 Quick Setup via Start Here 43
11.2 Improved Ribbon Workflow 44
11.3 Tree-based Navigation Pane 44
11.4 Plot Ordering 45
11.5 Improved Change Scales Pane 45
11.6 Redesigned Difference Cursor 45
11.7 Defects and Enhancements 46
11.8 System Compatibility 47

12 CMS 2022 (v7.11.114) 48
12.1 States and Filtered Trend Plot 48
12.2 Improved navigation in SETPOINT® CMS using Quick Views 49
12.3 Extended customization capabilities for improved AVEVA™ PI Vision™ integration 49
12.4 Simplified diagnostics of time-synchronization issues 50
12.5 Defects and Enhancements 50
12.6 System Compatibility 51

13 CMS 2021 R3 (v7.9.430) 52
13.1 Extended support for VCM-3 devices 52
13.2 Simplified configuration of data acquisition for VCM-3 devices 52
13.3 Defects and Enhancements 53
13.4 System Compatibility 54

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UNRESTRICTED DOCUMENT

14 CMS 2021 R2 (v7.8.412) 55
14.1 Enhanced Compressor Maps 55
14.2 Balance of Plant features 55
14.3 Enhanced support for VCM-3 devices 55
14.4 Defects and Enhancements 56
14.5 System Compatibility 56

15 CMS 2021 (v7.6.804) 57
15.1 Filtered Trend Plot (available in EXPERT Version only) 57
15.2 Improved Data Table 57
15.3 Casing Orbits 57
15.4 VCM-3 is a Supported Device in the SETPOINT® Solution 57
15.5 No AF Feature 57
15.6 Defects and Enhancements 58
15.7 System Compatibility 58

16 CMS 2020 R2 (v7.5.788) 59
16.1 States (available in EXPERT Version only) 59
16.2 Defects and Enhancements 60
16.3 System Compatibility 60

17 CMS 2020 (v7.3.423) 61
17.1 User Registration 61
17.2 Async Orbits 61
17.3 Defects and Enhancements 62
17.4 System Compatibility 62

18 CMS 2019 R2 (v7.1.689) 63
18.1 Defects and Enhancements 63
18.2 System Compatibility 64

19 CMS 2019 SP2 (v6.10.905) 65
19.1 Defects and Enhancements 65

20 CMS 2019 (v6.10.793) 66
20.1 Plot Scales 66
20.2 State Markers and State Displays 68
20.3 Air Gap 69
20.4 Pop Out Plot 70
20.5 Timeline Trend Selection 70
20.6 Channel Name Editing 71
20.7 Time Lock 71
20.8 Defects and Enhancements 71

UNRESTRICTED DOCUMENT

21 CMS 2018 (v5.0.3045) 72
21.1 Data Availability 72
21.1.1 CMS Database Upload 72
21.1.2 Backfilling CMS-HD Data 73
21.1.3 Exporting a CMS Database 73
21.1.4 Trouble Shooting Network Connections 74
21.2 PI Administrator Enhancements 75
21.3 Plots 76
21.4 Plot Cursors 76
21.5 Plot Headers 78
21.6 Polar Plot 79
21.7 AVEVA™ PI Vision™ 80
21.8 Defects and Enhancements 81

22 CMS 2017 (v4.0.1212) 82
22.1.1 AVEVA™ PI System™ 82
22.1.2 CMS Database 82
22.1.3 CMS Files 83
22.1.4 Overlays 83
22.1.5 Cursors 83
22.1.6 High Contrast Theme 84
22.1.7 Full Screen Plots 84
22.1.8 Recip Plot Enhancements 85
22.1.9 Trace Color Palette 86
22.1.10 Toggle Legends 86
22.1.11 Other Enhancements and Bug Fixes 87

23 Version v3.00 88
24 Version v2.52 93
25 Version v2.50 95

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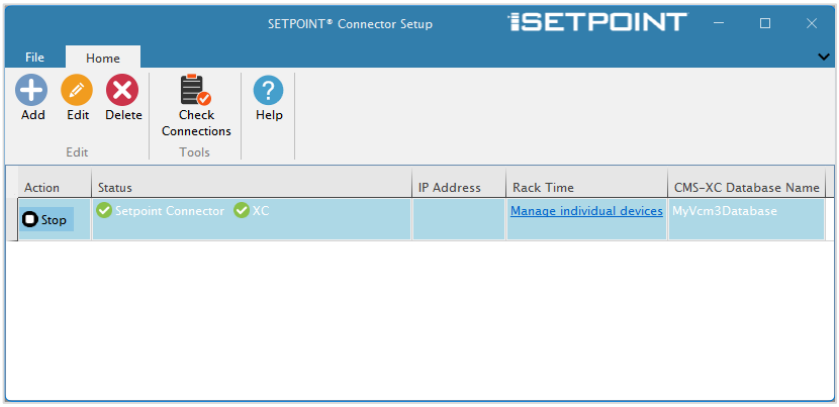
1 CMS 2025 (v8.6.240)

The main feature of the present release is the added VCM-3 support for CMS-XC. Additionally, it contains general usability improvements, bugfixes, and recommended security updates for SETPOINT® Connector.

1.1 CMS-XC Support for VCM-3

This release introduces support for VCM-3 devices within CMS-XC. Measurement data from VCM-3 can now be stored in CMS-XC databases, alongside data from VC-8000 systems.



Note: CMS-XC now also allows data storage for BKV Collect Wireless Sensors. Please note that this functionality is currently in Beta and offers limited capabilities.

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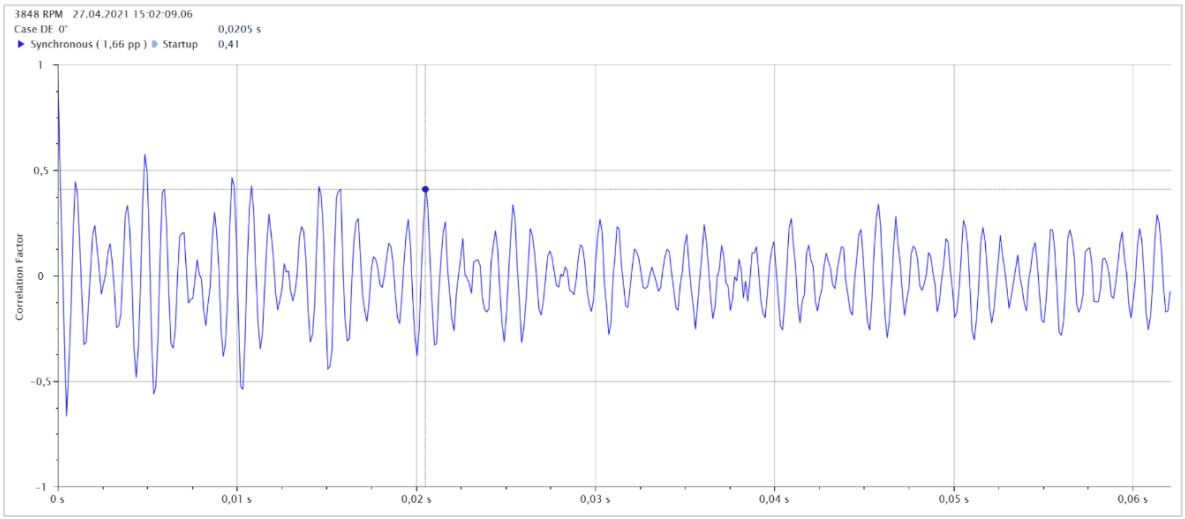
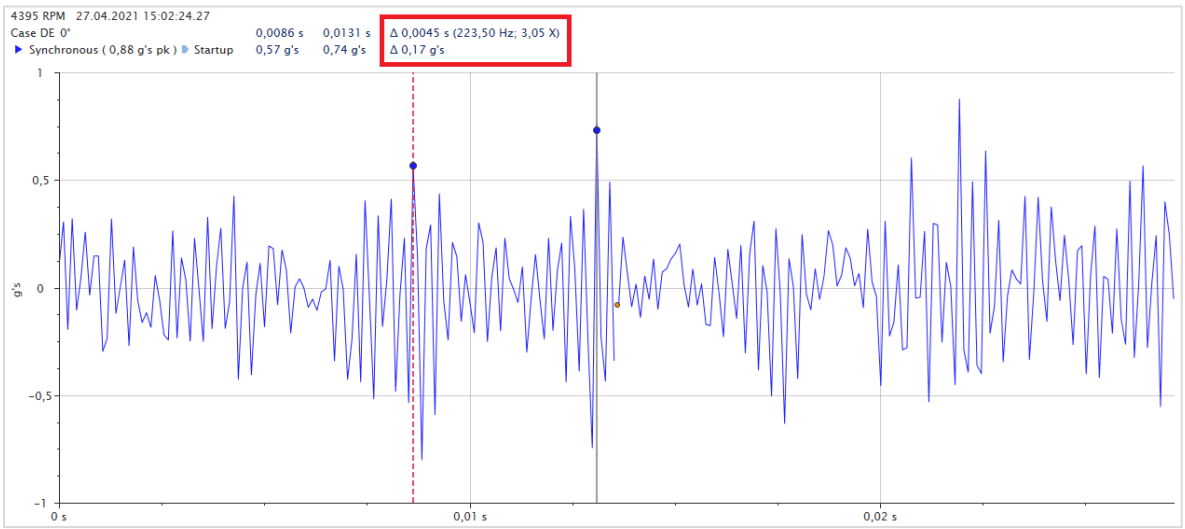
1.2 Autocorrelation Plot

The newly added Autocorrelation plot displays the normalized autocorrelation factor for a timebase waveform as a function of the time lag. Autocorrelation measures the correlation of a signal with a time-shifted copy of itself. It helps reveal periodic patterns with low energy and/or low frequency, which is especially useful for detecting synchronous and non-synchronous impacts on rolling element bearings and gears.



1.3 Extended Difference Cursor Readout on Timebase Plots

Cursor readouts on Timebase plots with activated difference cursor now additionally show the time difference in Hertz (Hz) and, if speed information is available, as multiples of running speed (X).



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1.4 Defects and Enhancements

The following defects were fixed with this release of the SETPOINT® CMS client:

- Addressed an issue in CMS 2024 R2 and CMS 2024 R2 SP1 where the Timeline plot did not consistently reload data when changing channel selections

The following defects were fixed with this release of the SETPOINT® Connector:

- Resolved multiple high-severity security vulnerabilities in 3rd party components included with the installer
- Fixed an issue where data collection could stall upon enabling Spectral Bands in environments with unstable network connections
- Reduced excessive "Updating component" log messages to prevent rapid rotation of log entries, thus losing information about older events
- Corrected a problem where, on slow networks, data recording for VCM-3 and BKV Collect devices could fail due to an unhandled timeout setting
- Fixed the display of nodes representing a **Throw** in the **Navigation Hierarchy** for reciprocating compressors when using CMS-XC data storage

Known issues with this release of the SETPOINT® CMS client:

- With auto scaling enabled, Data Annotations can be missing on Trend, Timeline and Zoom Timeline plots after changing a unit.
  Workaround: In Changes Scales pane, set the Maximum above the largest signal amplitude value.
- Data displayed on Orbit plot can lag time cursor during playback of boosted data.
- The segmented display sub-plot on the Crank Angle plot stops after 3 revolutions.
- Auto scaling with the Compare Plots option is supported for Crank Angle and Displaced Volume plots. Each plot will be scaled individually (*Normal*) instead.
- The **Unrolled Stator Profile** plot does not show data if any of the configured Air Gap channels have never sent data. Disable the channel from the rack configuration as a workaround.
- Using some Window 11 computers, **Circular Rotor Profile** and **Circular Magnetic Flux Profile** plots appear only after hovering the plot area with the mouse cursor.
- In rare cases, a **State** manually added from the Small Trend plot will not appear on the screen immediately. As a workaround, toggle the **State Based** option from the Advanced tab to reload affected plots.
- **Autocorrelation** plots cannot be created by selecting individual waveform nodes (e.g., **Synchronous**) in the **Point Navigation**. Please select the containing channel instead.

Known issues with this release of the SETPOINT® Connector:

- AF databases created for reciprocating machinery with **Dual Cylinder Throws** are partially incomplete. Data will be collected correctly, but manual interference is required to ensure that this data can be displayed correctly. XC databases are not affected. Please contact support@bkvibro.com for assistance on using **Dual Cylinder Throws** in combination with PI/AF.

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1.5 System Compatibility

This release was tested with:

- Microsoft Windows 10, Windows 11, Windows Server 2019, and Windows Server 2022
- AVEVA PI AF Server 2018 SP3 Patch 6
- VC-8000 firmware included in SETPOINT® MPS 2025
- VCM-3 firmware 1.27.0
- BKV Connect application layer 1.5.1, in combination with firmware 7.2.0
- BKV Collect firmware 2.16.0

PI System:

- The PI Data archive has no known compatibility issues back to PI 2012. Any archive older than that will not be performant enough.
- Minimum AF SDK: 2.5.0.5038 (AF 2012)
- Backfilling: 2.9.2.8185 (AF 2017)
- Spectral bands and hydro statistics calculations: 2.10.5.0 (AF 2018 R2)

AVEVA™ compatibility requirements:

- https://customers.osisoft.com/s/knowledgearticle?knowledgeArticleUrl=KB01601
- It is recommended to enable case-sensitive UOM abbreviations in AF. This is the default setting in PI AF 2017 R2 and above. Please refer to https://docs.aveva.com/bundle/pi-server-l-af-pse/page/1021698.html for more information

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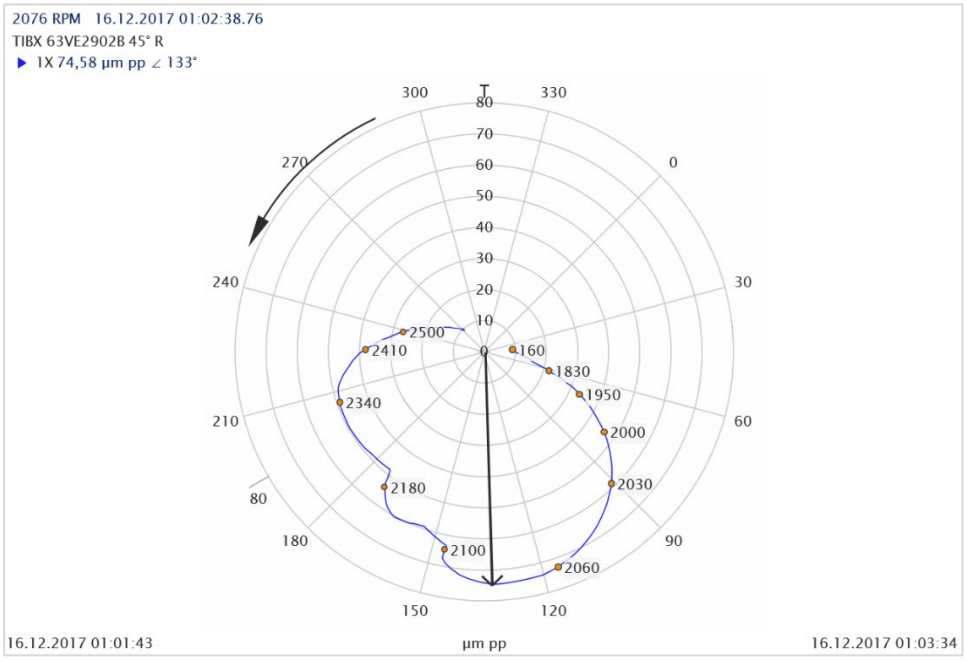
2 CMS 2024 R2 SP1 (v8.4.243)

This Service Pack release includes several bug fixes and recommended security updates for SETPOINT® Connector. Additionally, it enhances the user experience when working with Polar and Shaft Centerline plots in SETPOINT® CMS. Finally, it introduces the ability to adjust font sizes on plots. This feature is currently in *beta*, as some visual artifacts may still occur.

Note: CMS-XC may observe an incomplete navigation pane in SETPOINT® CMS after installing this upgrade. Please refer to section 2.5, sub-section “Known issues with this release of the SETPOINT® CMS client”, on how to resolve this known issue.

2.1 Improved Usability for Polar and Shaft Centerline Plots

This version of SETPOINT® CMS enhances the visual presentation of Polar and Shaft Centerline plots. Specifically, the placement of speed annotations has been adjusted to keep the main plot trace clearly visible:



Additionally, users can now quickly hide and unhide **Transient Annotations** from the **Transient** ribbon:

Finally, individual Polar traces including annotations can now be hidden by clicking on the trace name in the plot header. This is particularly useful when working with Overlay data.

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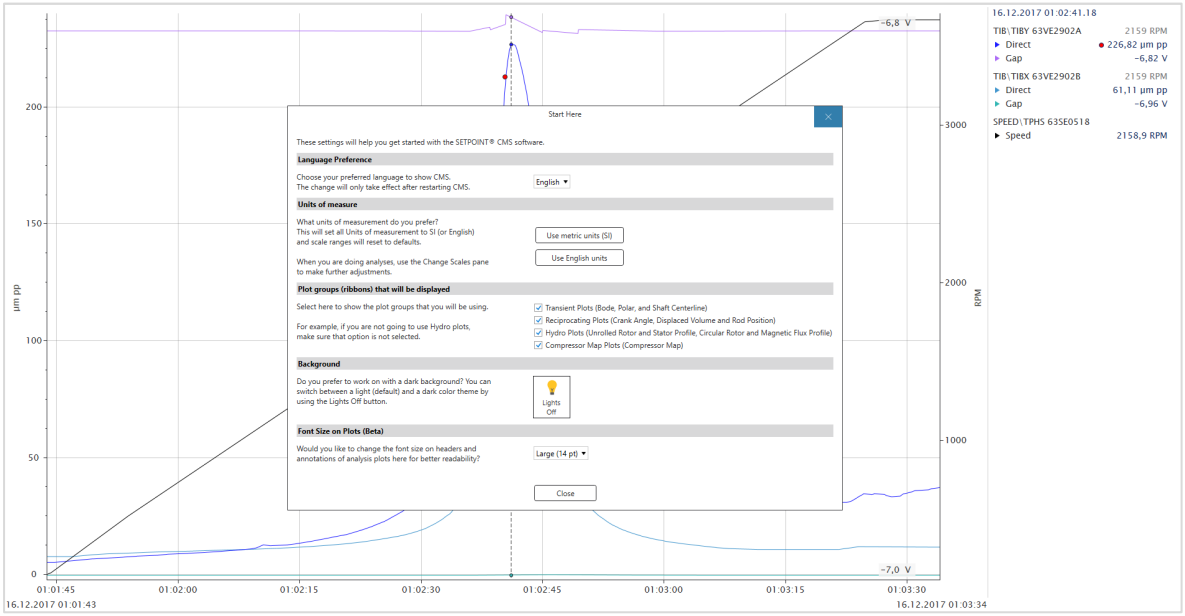
2.2 Adjustable Plot Font Size (Beta)

Users can now adjust the font size for plot headers and annotations from the **Start Here** dialog:



This setting affects the font size of plot headers, annotations, and tooltips. The feature is currently in *beta*, as some visual artifacts may still occur, particularly when using the largest font size. We welcome user feedback to help refine this functionality.

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2.3 Corrected Default Compression Settings for Integrated Measurements

With versions CMS 2023 R2 and higher, the *default* compression settings generated by SETPOINT® Connector for *integrated VC-8000 measurements* were potentially too high. This problem can negatively impact data resolution, thus impacting the diagnostic value of the stored data.

Please note that a related bug affected versions CMS 2023 and before (see section 5.4). We thus recommend that *all* PI/AF users should review and/or update compression settings stored in PI tags that correspond to integrated measurements. Note that the impact of this problem is significantly lower when the **Adaptive Exception Deviation** option is activated in SETPOINT® Connector.

XC users do not need to take action. The new compression settings will take effect immediately after performing an upgrade installation of SETPOINT® Connector.

SETPOINT® Connector offers two options to assist PI/AF users reviewing and updating the affected compression settings (cf. figure below):

- Option 1 (Automatic): Use the **Reset Compression** button from the **Options** tab to reset the compression settings of *all* PI tags of connected devices to the defaults recommended by Brüel & Kjær Vibro. Resetting the compression will not affect any historical vibration data or reset any PI tags customizations, except for the compression settings (*excdev* and *compdev*). This option is thus only recommended if no manual modifications of *excdev* and *compdev* have been performed in the past.
- Option 2 (Manual): Use the **Export Tags** button from the **Options** tab to export the recommended settings for *all* PI tags of connected devices into a .csv file. In the exported file, PI tags for integrated measurements contain the term *intgr* in the *engunits* column (e.g., *in/s intgr*). Users can then use this list to manually review and/or update the *excdev* and *compdev* settings of affected PI tags.

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2.4 Further Improvements

SETPOINT® CMS

- Styling of Overlay traces in in Bode, Polar and Shaft Centerline plots has been optimized for readability
- When changing the direction of rotation from the Attributes pane, Polar plots update their orientation as well as the displayed phase angle values immediately.

SETPOINT® Connector

- This update fixes a security issue with severity “High” in a 3rd party component supplied as part of the installer.

2.5 Defects and Enhancements

The following defects were fixed with this release of the SETPOINT® CMS client:

- Small Trend plot cursor could jump back and forth in playback mode.
- When using the Chinese language version, Gap and Bias voltages were not displayed in the Data Table.

The following defects were fixed with this release of the SETPOINT® Connector:

- Default compression settings for integrated measurements were potentially causing too much or too little data to be stored. For PI/AF databases that have been created using older versions of SETPOINT® Connector, manual steps may be required to take advantage of this bugfix. Please refer to section 2.3. for more information.
- In rare cases, restarting the main SETPOINT® Connector service could cause the SETPOINT® Connector Setup application to not show any rack configurations at the next startup, and thus interrupt data collection. Note that this bug had already been reported as fixed in the CMS 2024 release (see section 4.7), but further triggers were identified in the meantime. These have now been mitigated.
- When recording data for multiple VC-8000 racks with CMS-XC, certain asset path combinations could lead to missing elements in the CMS-XC database structure. As a result, the corresponding channels would not be visible in the SETPOINT® CMS client. The problem will be fixed automatically after upgrading to the present version of SETPOINT® Connector, but an additional action may be required before the navigation structure is displayed correctly in SETPOINT® CMS (see “Known issues with this release of the SETPOINT® CMS client”).

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Known issues with this release of the SETPOINT® CMS client:

- See section 7.4 for notes on upgrading from older versions (CMS 2022 R2 and before).
- When first loading a CMS-XC database after upgrading to the present version of SETPOINT® *Connector*, SETPOINT® CMS will show an incomplete navigation pane. Please load another data source (for example, a .cms file) and reconnect to the original CMS-XC database to resolve this issue. Users that to do not have access to another data source may load the *empty* file at the following location:
%PROGRAMFILES(x86)%\Setpoint\CMS\DISCONNECTED.cms
- With auto scaling enabled, Data Annotations can be missing on Trend, Timeline and Zoom Timeline plots after changing a unit.
Workaround: In Changes Scales pane, set the Maximum above the largest signal amplitude value.
- Data displayed on Orbit plot can lag time cursor during playback of boosted data.
- The segmented display sub-plot on the Crank Angle plot stops after 3 revolutions.
- Auto scaling with the Compare Plots option is not working for Crank Angle and Displaced Volume plots. Each plot will be scaled individually (*Normal*) instead.
- The **Unrolled Stator Profile** plot does not show data if any of the configured Air Gap channels have never sent data. Disable the channel from the rack configuration as a workaround.
- Using some Window 11 computers, **Circular Rotor Profile** and **Circular Magnetic Flux Profile** plots appear only after hovering the plot area with the mouse cursor.
- In rare cases, a **State** manually added from the Small Trend plot will not appear on the screen immediately. As a workaround, toggle the **State Based** option from the Advanced tab to reload affected plots.

Known issues with this release of the SETPOINT® Connector:

- See section 7.4 for notes on upgrading from older versions of SETPOINT® Connector or SETPOINT® PI Adapter (CMS 2022 R3 and before). Note that *downgrading* current versions of SETPOINT® Connector to versions CMS 2022 R3 and older is no longer supported.
- AF databases created for reciprocating machinery with **Dual Cylinder Throws** are partially incomplete. Data will be collected correctly, but manual interference is required to ensure that this data can be displayed correctly. XC databases are not affected. Please contact support@bkvibro.com for assistance on using **Dual Cylinder Throws** in combination with PI/AF.

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2.6 System Compatibility

This release was tested with:

- Microsoft Windows 10, Windows 11, Windows Server 2019, and Windows Server 2022
- AVEVA PI AF Server 2018 SP3 Patch 6
- VC-8000 firmware included in SETPOINT® MPS 2024 R2
- VCM-3 firmware 1.26.5
- BKV Connect application layer 1.5.1, in combination with firmware 7.2.0
- BKV Collect firmware 2.16.0

PI System:

- The PI Data archive has no known compatibility issues back to PI 2012. Any archive older than that will not be performant enough.
- Minimum AF SDK: 2.5.0.5038 (AF 2012)
- Backfilling: 2.9.2.8185 (AF 2017)
- Spectral bands and hydro statistics calculations: 2.10.5.0 (AF 2018 R2)

AVEVA™ compatibility requirements:

- https://customers.osisoft.com/s/knowledgearticle?knowledgeArticleUrl=KB01601
- It is recommended to enable case-sensitive UOM abbreviations in AF. This is the default setting in PI AF 2017 R2 and above. Please refer to https://docs.aveva.com/bundle/pi-server-l-af-pse/page/1021698.html for more information

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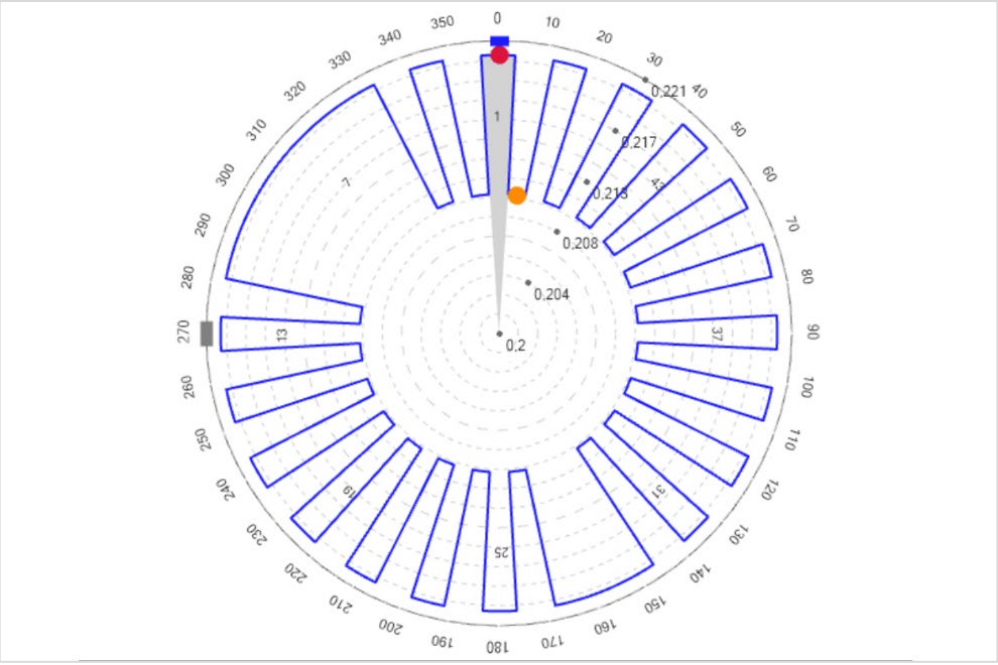
3 CMS 2024 R2 (v8.3.250)

The present release focuses on extended capabilities in the context of the monitoring and analysis of Hydroelectric Generators, but also contains improvements diagnosing Rolling Element Bearing (REB) faults. Finally, it contains general usability improvements and bugfixes.

3.1 Circular Magnetic Flux Profile Plot

The **Circular Magnetic Flux Profile** plot visualizes the magnetic flux between the rotor and the stator on a polar canvas. Data from Magnetic Flux sensors can thus be used to detect, monitor, and correct electrical faults at early stages.



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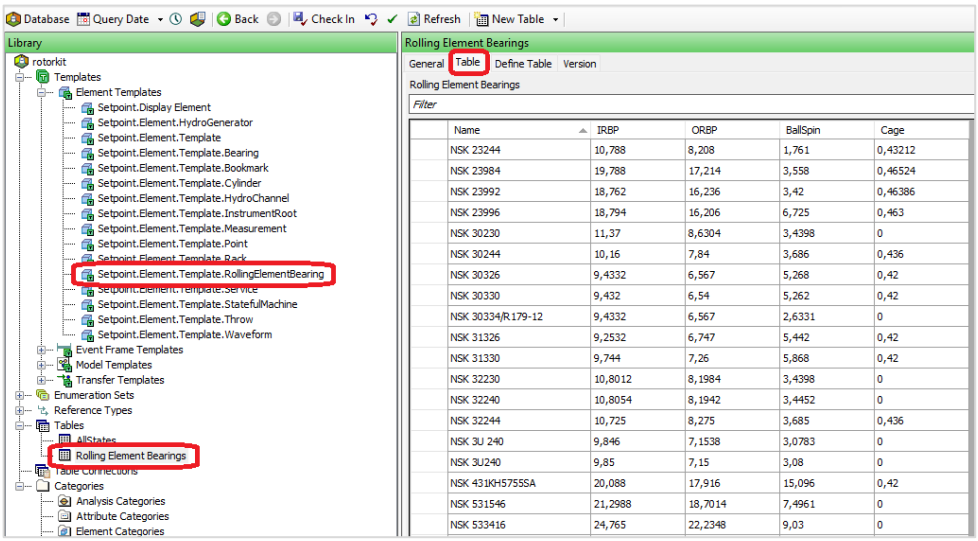
3.2 Automatic Deployment of Default Bearing Database to PI-AF

To simplify making using the Bearing Frequency Cursor functionality introduced as part of the CMS 2018 release (cf. section 21.4), SETPOINT® Connector now automatically deploys the corresponding AF element template, as well as a pre-populated bearing database. This deployment occurs when first initializing data collection to a given AF database.



Name	IRBP	ORBP	BallSpin	Cage
NSK 23244	10,788	8,208	1,761	0,43212
NSK 23984	19,788	17,214	3,558	0,46524
NSK 23992	18,762	16,236	3,42	0,46386
NSK 23996	18,794	16,206	6,725	0,463
NSK 30230	11,37	8,6304	3,4398	0
NSK 30244	10,16	7,84	3,686	0,436
NSK 30326	9,4332	6,567	5,268	0,42
NSK 30330	9,432	6,54	5,262	0,42
NSK 30334/R179-12	9,4332	6,567	2,6331	0
NSK 31326	9,2532	6,747	5,442	0,42
NSK 31330	9,744	7,26	5,868	0,42
NSK 32230	10,8012	8,1984	3,4398	0
NSK 32240	10,8054	8,1942	3,4452	0
NSK 32244	10,725	8,275	3,685	0,436
NSK 3U 240	9,846	7,1538	3,0783	0
NSK 3U240	9,85	7,15	3,08	0
NSK 431KH5755SA	20,088	17,916	15,096	0,42
NSK 531546	21,2988	18,7014	7,4961	0
NSK 533416	24,765	22,2348	9,03	0

Note that this operation does *not* require additional PI tags, and no existing data will be overwritten. Please refer to chapter 16 of the SETPOINT® CMS Installation and Operations Manual (Document S1176125) for more information about this functionality.

3.3 Further Improvements

SETPOINT® CMS

- **Small Trend** and **Large Trend** headers have been optimized for readability.
- **Overlay** traces on **Orbit**, **Time**, **Spectrum** and **Unrolled Rotor Profile** plots use a dashed line style to visually distinguish them from regular traces.
- The newly added option **Show Smax on Orbits** is available from the **Timebase** tab. It allows users to visualize the location and the amplitude of the maximum displacement of the displayed data on Orbit plots.
- On **Unrolled Rotor Profile** plots, the cursor can now be moved from pole to pole using the keyboard arrows.

SETPOINT® Connector

- Added support for channel type **Magnetic Flux**.
- SETPOINT® Connector behaves more gracefully when encountering unexpected system language setting and AF UOM settings.

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3.4 Defects and Enhancements

The following defects were fixed with this release of the SETPOINT® CMS client:

- Spectrum plots are no longer being displayed for channels of the type **Air Gap** and **Magnetic Flux**. The resulting plot has no diagnostic value due to the nature of the collected waveform.
- The alignment of rotor poles on **Unrolled Rotor Profile** plots for machines with clockwise rotation has been corrected. Note that machines with counterclockwise rotation were not affected by this bug.
- In rare cases, SETPOINT® CMS could crash when interacting with the **Crank Angle** plot.

The following defects were fixed with this release of the SETPOINT® Connector:

- The **Export Tags** functionality only exported a list of PI tags for the first configured VC-8000 rack.
- Surplus PI tags were created for measurements that were marked as inactive in the VC-8000 rack configuration.
- If multiple installations of SETPOINT® Connector were configured to write data to the *same AF database*, enabling **spectral bands and statistical calculations for hydro generators** *on more than one of these instances* could lead to a race condition. In that condition, a lot of surplus PI tags could be created. This race condition has been eliminated. Note that it is still *not* recommended to enable **spectral bands and statistical calculations for hydro generators** on more than one instance of SETPOINT® Connector writing to a given AF database.

Known issues with this release of the SETPOINT® CMS client:

- See section 7.4 for notes on upgrading from older versions (CMS 2022 R2 and before).
- With auto scaling enabled, Data Annotations can be missing on Trend, Timeline and Zoom Timeline plots after changing a unit.
  Workaround: In Changes Scales pane, set the Maximum above the largest signal amplitude value.
- Data displayed on Orbit plot can lag time cursor during playback of boosted data.
- The segmented display sub-plot on the Crank Angle plot stops after 3 revolutions.
- Auto scaling with the Compare Plots option is not working for Crank Angle and Displaced Volume plots. Each plot will be scaled individually (*Normal*) instead.
- The **Unrolled Stator Profile** plot does not show data if any of the configured Air Gap channels have never sent data. Disable the channel from the rack configuration as a workaround.
- Using some Window 11 computers, **Circular Rotor Profile** and **Circular Magnetic Flux Profile** plots appear only after hovering the plot area with the mouse cursor.
- In rare cases, a **State** manually added from the Small Trend plot will not appear on the screen immediately. As a workaround, toggle the **State Based** option from the Advanced tab to reload affected plots.

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Known issues with this release of the SETPOINT® Connector:

- See section 7.4 for notes on upgrading from older versions of SETPOINT® Connector or SETPOINT® PI Adapter (CMS 2022 R3 and before). Note that *downgrading* current versions of SETPOINT® Connector to versions CMS 2022 R3 and older is no longer supported.
- AF databases created for reciprocating machinery with **Dual Cylinder Throws** are partially incomplete. Data will be collected correctly, but manual interference is required to ensure that this data can be displayed correctly. XC databases are not affected. Please contact support@bkvibro.com for assistance on using **Dual Cylinder Throws** in combination with PI/AF.

3.5 System Compatibility

This release was tested with:

- Microsoft Windows 10, Windows 11, Windows Server 2019, and Windows Server 2022
- AVEVA PI AF Server 2018 SP3 Patch 6
- VC-8000 firmware included in SETPOINT® MPS 2024 R2
- VCM-3 firmware 1.26.5
- BKV Connect application layer 1.5.1, in combination with firmware 7.2.0
- BKV Collect firmware 2.16.0

PI System:

- The PI Data archive has no known compatibility issues back to PI 2012. Any archive older than that will not be performant enough.
- Minimum AF SDK: 2.5.0.5038 (AF 2012)
- Backfilling: 2.9.2.8185 (AF 2017)
- Spectral bands and hydro statistics calculations: 2.10.5.0 (AF 2018 R2)

AVEVA™ compatibility requirements:

- https://customers.osisoft.com/s/knowledgearticle?knowledgeArticleUrl=KB01601
- It is recommended to enable case-sensitive UOM abbreviations in AF. This is the default setting in PI AF 2017 R2 and above. Please refer to https://docs.aveva.com/bundle/pi-server-l-af-pse/page/1021698.html for more information

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4 CMS 2024 (v8.0.236)

The present release focuses on an improved Trend experience and extended capabilities in the context of the monitoring and analysis of Hydroelectric Generators.

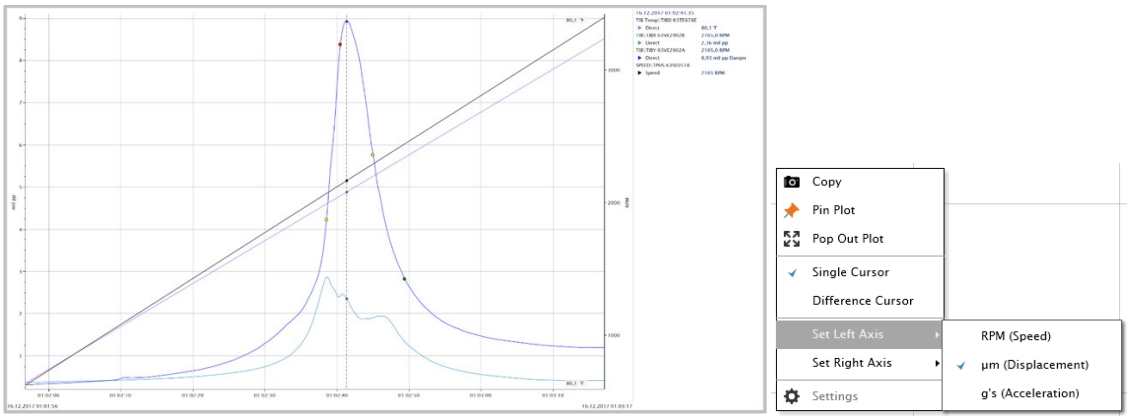
4.1 Recommended Security Patch for AVEVA™ PI Server™

On January 18, 2024, AVEVA™ published security bulletin with the title “AVEVA™ PI Server: Denial of Service vulnerabilities”. We strongly recommend all users of AVEVA™ PI Server™ 2018 SP3 P05 and prior to follow the instructions in the security bulletin (pdf download) to mitigate any potential security risks associated with the PI System.

4.2 Trend Experience

Small Trend and **Large Trend** have been restyled for improved readability. Changes to **Small Trend** focus and improved overview over the visible data range. **Large Trend**, on the other hand, is now tailored towards a detailed analysis of the same data. The following additional improvements have thus been implemented for the **Large Trend** plot**:**

- The plot now has an optional secondary y-axis.
- Units to be displayed on the primary (left) and secondary (right) y-axis can be selected from the context menu.



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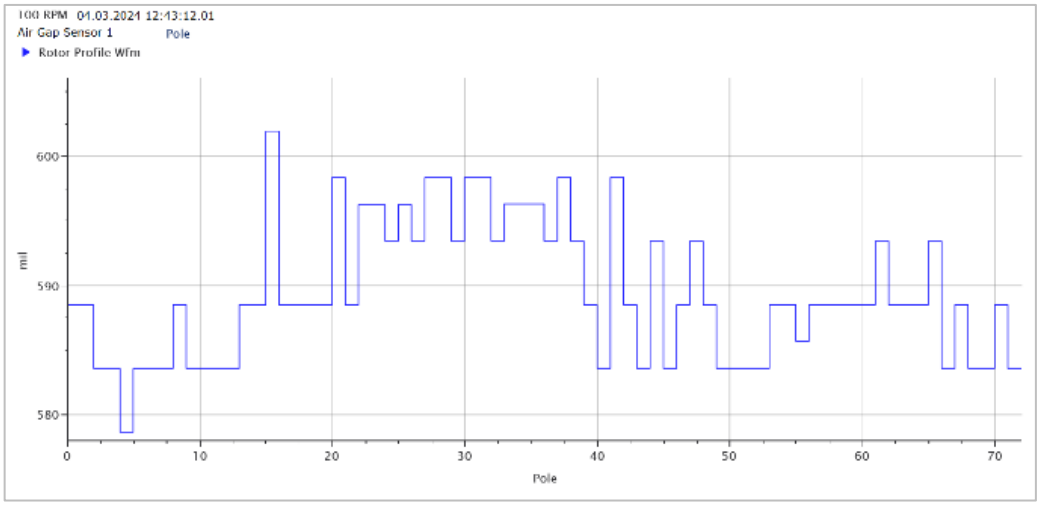
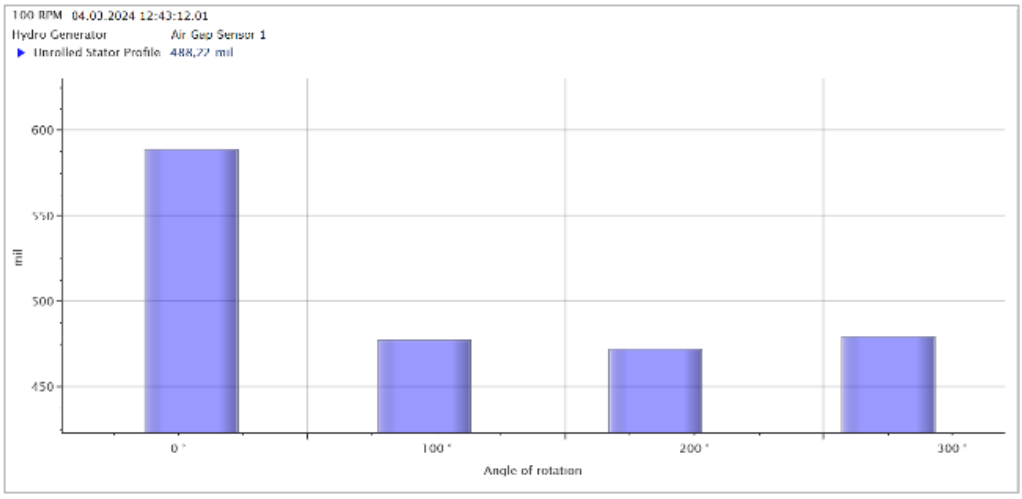
4.3 Unrolled Rotor Profile Plot

The Unrolled (or Linear) Rotor Profile plot displays the profile of the rotor based on the data from a single air gap sensor. Measurements are evaluated by the distance (gap) between the rotor and stator and are plotted versus pole numbers.



4.4 Unrolled Stator Profile Plot

The Unrolled (or Linear) Stator Profile plot visualizes deviations of the stator from a perfectly circular shape. To this end, it displays the distance (gap) of multiple Air Gap sensors to a reference pole.



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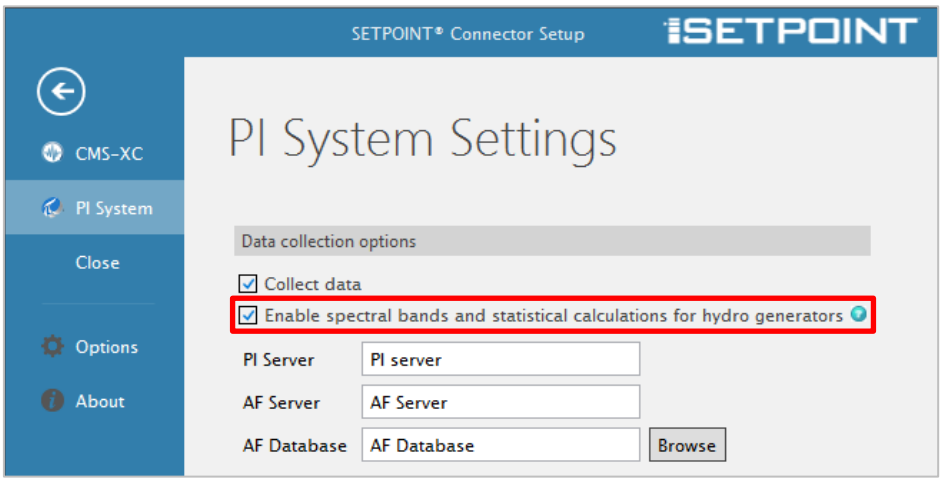
4.5 Statistical Calculations for Hydroelectric Generators

Large Hydroelectric Generators typically are typically equipped with four or more Air Gap sensors to monitor the Rotor and the Stator for common failure conditions. Statistical data computed from this detailed information is highly useful for detecting changes in the machine behavior without requiring manual analysis of the individual channel data sets. SETPOINT® Connector can now thus compute three statistical measurements across the Rotor Profile waveforms of all Air Gap channels associated with a particular Hydroelectric Generator:

- **Air Gap Minimum**: The minimum air gap value measured across all poles and channels.
- **Air Gap Maximum**: The maximum air gap value measured across all poles and channels.
- **Air Gap Average**: The average of all air gap values measured across all poles and channels.



4.6 Further Improvements

SETPOINT® CMS

- A new page layout called **Vertical Pair** is now available. It allows comparing two plots by displaying them one above the other. This is in contrast to **Horizontal Pair** (previously called **Two Plots**), which displays two plots side by side.
- The font size of all plots label has been increased slightly.
- Bar graphs displaying segmented vibration data on the **Crank Angle** plot (upper sub-plot) now follow the zoom level of the waveform part (lower sub-plot).

SETPOINT® Connector

- Racks entries are now sorted consistently by rack IP address.

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4.7 Defects and Enhancements

The following defects were fixed with this release of the SETPOINT® CMS client:

- None

The following defects were fixed with this release of the SETPOINT® Connector:

- In rare cases, restarting the main SETPOINT® Connector service could cause the SETPOINT® Connector Setup application to not show any rack configurations at the next startup.
- Spectral Band calculations for Peak Stretch waveforms (e.g., from REB Acceleration channels) have been corrected.
- SETPOINT® Connector Main Service would crash at startup if the configured service user does not have sufficient rights to access the registry.
- When using Chinese or Russian language settings, it was not possible to activate Spectral Band calculations from the SETPOINT® Connector Setup application.
- When using SETPOINT® Connector with BKV Collect sensors that intermittently established connections via different BKV Connect devices, the sensor configuration was not published to all BKV Connect devices.

Known issues with this release of the SETPOINT® CMS client:

- See section 7.4 for notes on upgrading from older versions (CMS 2022 R2 and before).
- With auto scaling enabled, Data Annotations can be missing on Trend, Timeline and Zoom Timeline plots after changing a unit.
  Workaround: In Changes Scales pane, set the Maximum above the largest signal amplitude value
- Data displayed on Orbit plot can lag time cursor during playback of boosted data.
- The segmented display sub-plot on the Crank Angle plot stops after 3 revolutions.
- Auto scaling with the Compare Plots option is not working for Crank Angle and Displaced Volume plots. Each plot will be scaled individually (*Normal*) instead.
- Unrolled stator profile plot does not show data if any of the configured Air Gap channels have never sent data. Disable the channel from the rack configuration as a workaround.

Known issues with this release of the SETPOINT® Connector:

- See section 7.4 for notes on upgrading from older versions of SETPOINT® Connector or SETPOINT® PI Adapter (CMS 2022 R3 and before).
- AF databases created for reciprocating machinery with **Dual Cylinder Throws** are partially incomplete. Data will be collected correctly, but manual interference is required to ensure that this data can be displayed correctly. XC databases are not affected. Please contact support@bkvibro.com for assistance on using **Dual Cylinder Throws** in combination with PI/AF.

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4.8 System Compatibility

This release was tested with:

- Microsoft Windows 10, Windows 11, Windows Server 2019, and Windows Server 2022
- AVEVA PI AF Server 2018 SP3 Patch 6
- VC-8000 firmware included in SETPOINT® MPS 2023 R2
- VCM-3 firmware 1.26.4
- BKV Connect application layer 1.5.0, in combination with firmware 7.2
- BKV Collect firmware 2.16.0

PI System:

- The PI Data archive has no known compatibility issues back to PI 2012. Any archive older than that will not be performant enough.
- Minimum AF SDK: 2.5.0.5038 (AF 2012)
- Backfilling: 2.9.2.8185 (AF 2017)
- Spectral bands and hydro statistics calculations: 2.10.5.0 (AF 2018 R2)

AVEVA™ compatibility requirements:

- https://customers.osisoft.com/s/knowledgearticle?knowledgeArticleUrl=KB01601

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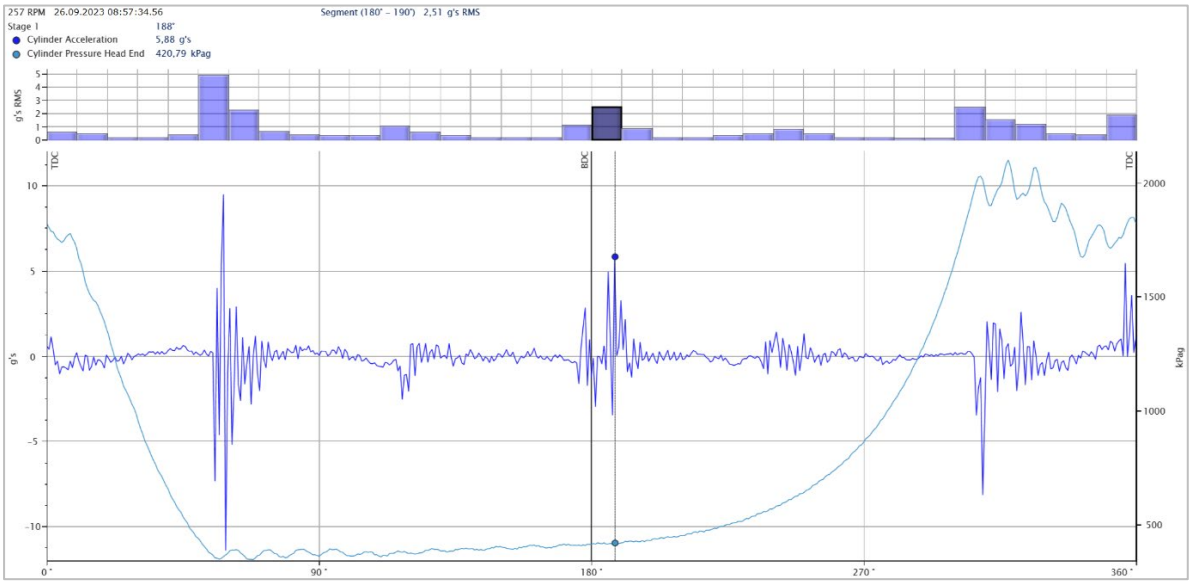
5 CMS 2023 R2 (v7.18.337)

The present release focuses on extending the condition monitoring and analysis capabilities of the SETPOINT® solution for reciprocating machinery. Additionally, it contains general usability improvements and bugfixes.

5.1 Extended Capabilities for Reciprocating Machinery

When using VC-8000 for monitoring reciprocating machinery, users can now take advantage of the following features:

- **Crank Angle** and the **Displaced Volume** plots have been reworked completely, with a focus on usability.
- With previous versions, the CMS Navigation Path had to satisfy a strict pattern to be able to plot **vibration data versus the crank angle**. This restriction has been lifted.
- Crank Angle plots of vibration data now automatically show **vibration segments** above the main plot. Segment values are computed on the fly, even for already collected data.
- Segmented vibration data can be combined with the existing **overlay** functionality such that changes in the vibration behavior can be analyzed in detail.
- **Gas Force**, **Inertial Force** and **Rod Load** traces plots are now optional.
- Setting up parameters required for using the **Adiabatic Curve** as a diagnostic tool has been simplified.



Note: Please make sure you are using the latest versions of VC-8000 firmware and software to be able to make use of the features listed above. Some features are not available using VC-8000 Setup software versions 7.15 (released in April 2023) and before.

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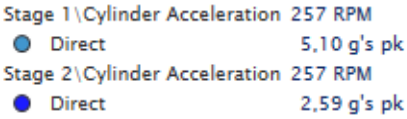
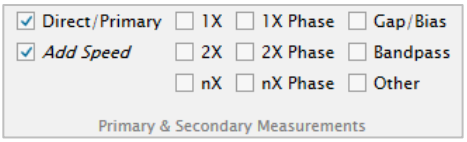
5.2 Improved Trend Experience

The following improvements have been implemented for the **Large Trend** and the **Small Trend**:

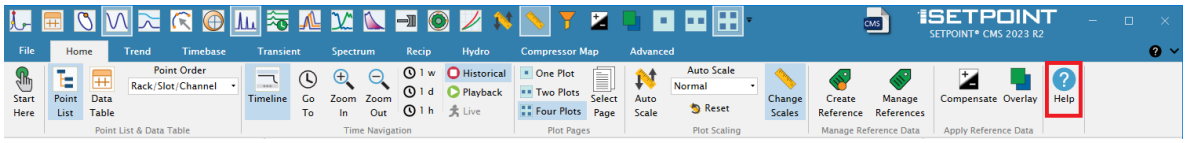
- Headers now show the name of the parent element of a channel next to the channel name. This helps understanding the context of the displayed data, especially in cases where channel names are very similar or even identical.
- Filtering options for measurements to be displayed on Trend plots have been simplified.
- The performance of Trend plots for data sources containing many channels has been improved significantly.

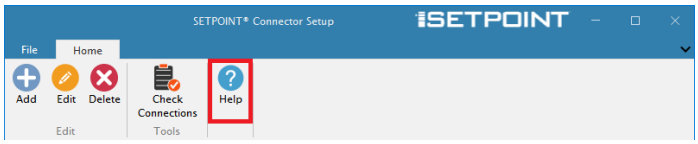




5.3 Easily Accessible Manual

SETPOINT® CMS and SETPOINT® Connector now offer a simple, consistent way of accessing the *SETPOINT Condition Monitoring Software - Installation and Operations Manual* (S1176125).





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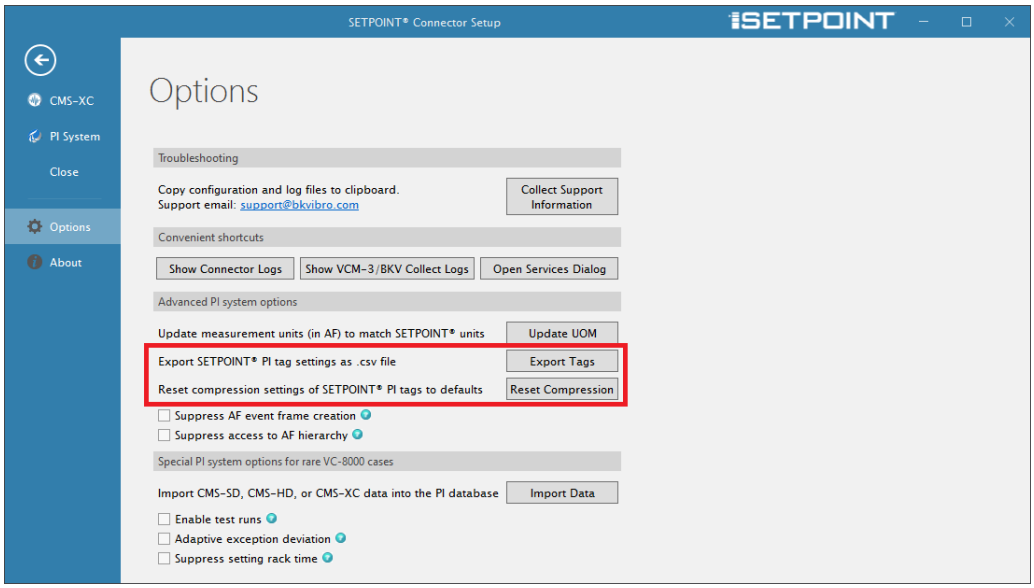
5.4 Corrected Default Compression Settings for Integrated Measurements

With all previous versions, the default compression settings generated by SETPOINT® Connector for *integrated VC-8000 measurements* were potentially too low. This problem *only* affects integrated measurements in channels where the channel scale factor was defined in units of *g* or *in/s*. This problem can lead to excessive amounts of data being stored, thus impacting performance, and required disk space. Note that the impact of this problem is significantly lower when the **Adaptive Exception Deviation** option is activated in SETPOINT® Connector.

XC users do not need to take action. The new compression settings will take effect immediately after performing an upgrade installation of SETPOINT® Connector.

PI/AF users should review and/or update compression settings stored in PI tags that correspond to integrated measurements, especially when *not* using adaptive exception deviation. SETPOINT® Connector offers two options to assist with this task (cf. figure below):

- Option 1 (Automatic): Use the **Reset Compression** button from the **Options** tab to reset the compression settings of *all* PI tags of connected devices to the defaults recommended by Brüel & Kjær Vibro. Resetting the compression will not affect any historical vibration data or reset any PI tags customizations, except for the compression settings (*excdev* and *compdev*). This option is thus only recommended if no manual modifications of *excdev* and *compdev* have been performed in the past.
- Option 2 (Manual): Use the **Export Tags** button from the **Options** tab to export the recommended settings for *all* PI tags of connected devices into a .csv file. In the exported file, PI tags for integrated measurements contain the term *intgr* in the *engunits* column (e.g., *in/s intgr*). Users can then use this list to manually review and/or update the *excdev* and *compdev* settings of affected PI tags.



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5.5 Defects and Enhancements

The following defects were fixed with this release of the SETPOINT® CMS client:

- When opening exported .cms files that contain data from BKV Collect sensors, the wrong units for temperature and battery voltage measurements were displayed.
- In rare cases, SETPOINT® CMS could show duplicated elements in the navigation hierarchy when connected to an AF database.

The following defects were fixed with this release of the SETPOINT® Connector:

- The compression settings for integrated measurements were inconsistent in all previous versions. For PI/AF databases that have been created using older versions of SETPOINT® Connector, manual steps may be required to take advantage of this bugfix. Please refer to section 5.4 for more information.
- After upgrading or restarting, SETPOINT® Connector Setup could show an empty list of data connections, suggesting that the configured data connections had been lost even though they were in fact still present.
- Within the **Check Connections** dialog, a wrong number of PI tags was displayed when using VCM-3 and/or BKV Collect devices.
- When using the Chinese version of SETPOINT® Connector, data collection could fail with the error message “No data is available for encoding 2052”.
- The path to SETPOINT® Connector log files has been corrected
  - Was: %PROGRAMDATA%\Setpoint\Collector.Service\Adapter Log Files
  - Is: %PROGRAMDATA%\Setpoint\Collector.Service\Logs

Known issues with this release of the SETPOINT® CMS client:

- See section 7.4 for notes on upgrading from older versions (CMS 2022 R2 and before).
- With auto scaling enabled, Data Annotations can be missing on Trend, Timeline and Zoom Timeline plots after changing a unit.
  Workaround: In Changes Scales pane, set the Maximum above the largest signal amplitude value
- Orbit displayed on Orbit plot can lag time cursor during playback of boosted data.

Known issues with this release of the SETPOINT® Connector:

- See section 7.4 for notes on upgrading from older versions of SETPOINT® Connector or SETPOINT® PI Adapter (CMS 2022 R3 and before).
- AF databases created for reciprocating machinery with **Dual Cylinder Throws** are partially incomplete. Data will be collected correctly, but manual interference is required to ensure that this data can be displayed correctly. XC databases are not affected. Please contact support@bkvibro.com for assistance on using **Dual Cylinder Throws** in combination with PI/AF.

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5.6 System Compatibility

This release was tested with:

- Microsoft Windows 10, Windows 11, Windows Server 2019, and Windows Server 2022
- AVEVA PI AF Server 2018 SP3 Patch 4
- VC-8000 firmware included in SETPOINT® MPS 2023
- VCM-3 firmware 1.26.1
- BKV Connect application layer 1.4.0, in combination with firmware 7.1.1
- BKV Collect firmware 2.16.0

PI System:

- The PI Data archive has no known compatibility issues back to PI 2012. Any archive older than that will not be performant enough.
- Minimum AF SDK: 2.5.0.5038 (AF 2012)
- Backfilling: 2.9.2.8185 (AF 2017)
- Spectral bands: 2.10.5.0 (AF 2018 R2)

AVEVA™ compatibility requirements:

- https://customers.osisoft.com/s/knowledgearticle?knowledgeArticleUrl=KB01601

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6 CMS 2023 SP1 (v7.16.215)

The present Service Pack (CMS 2023 SP1) fixes a problem with the generation PI tags for VC-8000 devices (see following section). Please refer to the following chapter for information about new features and bugfixes included in CMS 2023.

6.1 Defects and Enhancements

The following defects were fixed with this release of the SETPOINT® CMS client:

- None

The following defects were fixed with this release of the SETPOINT® Connector:

- When using releases CMS 2022 R3, CMS 2022 R3 SP1, or CMS 2023 in combination with VC-8000 rack configurations created using VC-8000 Setup & Maintenance Software 7.15.892 (MPS 2023), data recording to PI/AF can fail due to the creation of erroneous PI tags. Older VC-8000 configurations and XC connections are not affected. This behavior has been fixed in the present Service Pack.

Known issues with this release of the SETPOINT® CMS client:

- Windows Update KB5022083 (distributed as part of KB5020872) interferes with the “Search…” functionality. When this update is installed, SETPOINT® CMS will not be able to access the documentation via search results. Please refer to the corresponding knowledge base article for workarounds recommended by Microsoft. This issue will be fixed in a future version of SETPOINT® CMS.
- When performing an upgrade installation from an older version (CMS 2022 R2 and before), Windows will list the old *and* the new version of SETPOINT® CMS in “Apps & Features”. This is caused by an internal change in the installation process. The old version can safely be uninstalled without affecting the newly installed version of SETPOINT® CMS.
- With auto scaling enabled, Data Annotations can be missing on Trend, Timeline and Zoom Timeline plots after changing a unit.
  Workaround: In Changes Scales pane, set the Maximum above the largest signal amplitude value
- Orbit displayed on Orbit plot can lag behind time cursor during playback of boosted data.

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Known issues with this release of the SETPOINT® Connector:

- When performing an upgrade installation from a previous version while data collection is active, SETPOINT® Connector will show an additional dialog asking users to restart the "Setpoint - PI Adapter" service manually or automatically. This is caused by a change of to the service name to “Setpoint Connector Main Service”. Please use the “automatic” option to avoid being prompted for a reboot of the device.
- Due to the renaming to SETPOINT® Connector, a new AF element (with sub-elements) will automatically be created in the AF hierarchy. The element is located at *Setpoint Racks → SetpointConnector.MainService.$ComputerName*, where $ComputerName is the hostname of the computer where SETPOINT® Connector is installed. Old entries of this type can safely be deleted. Note that no additional PI Tags will be consumed due to this change.
- When performing an upgrade installation from an older version (CMS 2022 R2 and before), Windows will list the old *and* the new version of SETPOINT® Connector in “Apps & Features”. This is caused by an internal change in the installation process. The old version can safely be uninstalled without affecting the newly installed version of SETPOINT® Connector.
- Automatic configuration of PI compression settings for connected VCM-3 and BKV Collect devices is not supported. If an excessive amount of scalar data is collected for such a device, manual tuning of the compression settings for the corresponding tags within the AVEVA™ PI database is required.

System Compatibility

- This release was tested with:
  - Microsoft Windows 10, Windows 11, Windows Server 2019, and Windows Server 2022
  - AVEVA™ PI AF Server 2018 SP3 Patch 4
  - VC-8000 firmware included in SETPOINT® MPS 2023
  - VCM-3 firmware 1.26
- PI System:
  - The PI Data archive has no known compatibility issues back to PI 2012. Any archive older than that will not be performant enough.
  - Minimum AF SDK: 2.5.0.5038 (AF 2012)
  - Backfilling: 2.9.2.8185 (AF 2017)
  - Spectral bands: 2.10.5.0 (AF 2018 R2)

AVEVA™ compatibility requirements:
https://customers.osisoft.com/s/knowledgearticle?knowledgeArticleUrl=KB01601

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7 CMS 2023 (v7.16.206)

The present release focuses on adding support for data recording from BKV Collect 6 and BKV Collect 6 Ex wireless sensors.

7.1 Support for BKV Collect Wireless Sensors

BKV Collect is a wireless battery-operated sensor for condition monitoring and predictive maintenance. It measures tri-axial vibration and surface temperature of rotating equipment, such as pumps, motors and compressors. Abnormal machine vibrations or high temperatures may give early signs of failure due to component imbalance, misalignment, wear or improper use of equipment.

BKV Collect sensors operate in a mesh network and transmit sensor data to a BKV Connect gateway. When there is a need for high density of connected devices, a mesh network is the perfect solution for connectivity. In a mesh network, devices transmit their own sensor data and act as a relay for other devices. Relays provide the best and most efficient communication path to a gateway.

Using this new version, you can setup a mesh network of up to 150 BKV Collect sensors per SETPOINT® Connector installation to store scalars and waveforms in the AVEVA™ PI System™. This data can then be visualized in AVEVA™ PI Vision™, and analyzed in detail using SETPOINT® CMS.

7.2 SETPOINT® PI Adapter Renamed to SETPOINT® Connector

The component previously known as “SETPOINT® PI Adapter” is now called SETPOINT® Connector. Note that in-place upgrades from previous versions are fully supported. Where applicable, please inform your users and IT administrators about this change to avoid confusion after completing the upgrade process.

7.3 Performance and UI Improvements for VCM-3 and BKV Collect

SETPOINT® Connector installations incorporating a large number of devices have become more common since support for VCM-3 devices has been added. With the introduction of support for BKV Collect, we expect such installations to become even more common. This release thus includes various changes that improve the user experience and the performance of SETPOINT® Connector when recording data from many devices in a single installations. Some highlights are:

- When (re-)starting data collection for a large number of devices, the AF configuration process will now complete significantly faster.
- The data collection status on the main screen of SETPOINT® Connector and **Check Connections** have been optimized such that error and warning conditions are indicated more succinctly and clearly.
- More information about individual VCM-3 and BKV Collect devices with a single click using the **Manage individual devices** button.

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7.4 Defects and Enhancements

The following defects were fixed with this release of the SETPOINT® CMS client:

- In previous versions of SETPOINT® CMS, the Timeline (time navigation at the bottom of the main display) could freeze and/or show no data at all. Several corresponding issues have been resolved with this release.
- SETPOINT® CMS now checks whether .NET Framework 4.8 is installed before starting the installation process.

The following defects were fixed with this release of the SETPOINT® Connector:

- With releases CMS 2022 R2 and CMS 2022 R3, the alert and danger status of VCM-3 devices were not correctly written to PI, and no corresponding AF event frames were being created. This has been corrected.
- Previous versions of SETPOINT® Connector used an excessive amount of system memory in certain VCM-3 application scenarios. Memory consumption for these cases has been reduced significantly.
- When multiple installations of SETPOINT® Connector recording data from many devices are writing into the same AF database, it was previously possible that the AF configuration process could deadlock. This has been fixed.
- Previously, VCM-3 templates containing activated envelope or synchronous waveforms on *de*activated channels were rejected. SETPOINT® Connector now accepts such templates. Note that still no waveform data will be recorded for the deactivated channels.
- SETPOINT® Connector now checks whether .NET Framework 4.8 is installed before starting the installation process.

Known issues with this release of the SETPOINT® CMS client:

- Windows Update KB5022083 (distributed as part of KB5020872) interferes with the “Search…” functionality. When this update is installed, SETPOINT® CMS will not be able to access the documentation via search results. Please refer to the corresponding knowledge base article for workarounds recommended by Microsoft. This issue will be fixed in a future version of SETPOINT® CMS.
- When performing an upgrade installation from an older version (CMS 2022 R2 and before), Windows will list the old *and* the new version of SETPOINT® CMS in “Apps & Features”. This is caused by an internal change in the installation process. The old version can safely be uninstalled without affecting the newly installed version of SETPOINT® CMS.
- With auto scaling enabled, Data Annotations can be missing on Trend, Timeline and Zoom Timeline plots after changing a unit.
  Workaround: In Changes Scales pane, set the Maximum above the largest signal amplitude value
- Orbit displayed on Orbit plot can lag behind time cursor during playback of boosted data.

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Known issues with this release of the SETPOINT® Connector:

- When performing an upgrade installation from a previous version while data collection is active, SETPOINT® Connector will show an additional dialog asking users to restart the "Setpoint - PI Adapter" service manually or automatically. This is caused by a change of to the service name to “Setpoint Connector Main Service”. Please use the “automatic” option to avoid being prompted for a reboot of the device.
- Due to the renaming to SETPOINT® Connector, a new AF element (with sub-elements) will automatically be created in the AF hierarchy. The element is located at *Setpoint Racks → SetpointConnector.MainService.$ComputerName*, where $ComputerName is the hostname of the computer where SETPOINT® Connector is installed. Old entries of this type can safely be deleted. Note that no additional PI Tags will be consumed due to this change.
- When performing an upgrade installation from an older version (CMS 2022 R2 and before), Windows will list the old *and* the new version of SETPOINT® Connector in “Apps & Features”. This is caused by an internal change in the installation process. The old version can safely be uninstalled without affecting the newly installed version of SETPOINT® Connector.
- Automatic configuration of PI compression settings for connected VCM-3 and BKV Collect devices is not supported. If an excessive amount of scalar data is collected for such a device, manual tuning of the compression settings for the corresponding tags within the AVEVA™ PI database is required.

7.5 System Compatibility

This release was tested with:

- Microsoft Windows 10, Windows 11, Windows Server 2019, and Windows Server 2022
- AVEVA™ PI AF Server 2018 SP3 Patch 4
- VC-8000 firmware included in SETPOINT® MPS 2023
- VCM-3 firmware 1.25

PI System:

- The PI Data archive has no known compatibility issues back to PI 2012. Any archive older than that will not be performant enough.
- Minimum AF SDK: 2.5.0.5038 (AF 2012)
- Backfilling: 2.9.2.8185 (AF 2017)
- Spectral bands: 2.10.5.0 (AF 2018 R2)

AVEVA™ compatibility requirements:

- https://customers.osisoft.com/s/knowledgearticle?knowledgeArticleUrl=KB01601

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8 CMS 2022 R3 SP2 (v7.14.527)

The present Service Pack fixes a problem with the generation PI tags for VC-8000 devices (see following section). Please refer to the corresponding chapter for information about new features and bugfixes included in CMS 2022 R3.

8.1 Defects and Enhancements

The following defects were fixed with this release of the SETPOINT® CMS client:

- None

The following defects were fixed with this release of the SETPOINT® PI Adapter:

- When using releases CMS 2022 R3 or CMS 2022 R3 SP1 in combination with VC-8000 rack configurations created using VC-8000 Setup & Maintenance Software 7.15.892 (MPS 2023), data recording to PI/AF can fail due to the creation of erroneous PI tags. Older VC-8000 configurations and XC connections are not affected. This behavior has been fixed in the present Service Pack.

Known issues with this release of the SETPOINT® CMS client:

- Windows Update KB5022083 (distributed as part of KB5020872) interferes with the “Search…” functionality. When this update is installed, all versions of SETPOINT® CMS will crash when trying to access the documentation via search results. Please refer to the corresponding knowledge base article for workarounds recommended by Microsoft. This issue will be fixed in a future version of SETPOINT® CMS.
- When performing an upgrade installation from an older version, Windows will list the old *and* the new version of SETPOINT® CMS in “Apps & Features”. This is caused by an internal change in the installation process. The old version can safely be uninstalled without affecting the newly installed version of SETPOINT® CMS.
- With auto scaling enabled, Data Annotations can be missing on Trend, Timeline and Zoom Timeline plots after changing a unit.
  Workaround: In Changes Scales pane, set the Maximum above the largest signal amplitude value
- Orbit displayed on Orbit plot can lag behind time cursor during playback of boosted data.

Known issues with this release of the SETPOINT® PI Adapter:

- When performing an upgrade installation from an older version, Windows will list the old *and* the new version of SETPOINT® PI Adapter in “Apps & Features”. This is caused by an internal change in the installation process. The old version can safely be uninstalled without affecting the newly installed version of SETPOINT® PI Adapter.

- Automatic configuration of PI compression settings for connected VCM-3 devices is not supported. If an excessive amount of scalar data is collected for such a device, manual tuning of the compression settings for the corresponding tags within the AVEVA™ PI database is required.

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8.2 System Compatibility

This release was tested with:

- Microsoft Windows 10, Windows 11, Windows Server 2019, and Windows Server 2022
- AVEVA™ PI AF Server 2018 SP3 Patch 4
- VC-8000 firmware included in SETPOINT® MPS 2023
- VCM-3 firmware 1.26

PI System:

- The PI Data archive has no known compatibility issues back to PI 2012. Any archive older than that will not be performant enough.
- Minimum AF SDK: 2.5.0.5038 (AF 2012)
- Backfilling: 2.9.2.8185 (AF 2017)
- Spectral bands: 2.10.5.0 (AF 2018 R2)

AVEVA™ compatibility requirements:

- https://customers.osisoft.com/s/knowledgearticle?knowledgeArticleUrl=KB01601

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9 CMS 2022 R3 SP1 (v7.14.515)

This Service Pack (CMS 2022 R3 SP1) fixes a problem with the mandatory registration of SETPOINT® CMS (see Defects and Enhancements). Please refer to the following chapter for information about new features and bugfixes included in CMS 2022 R3.

9.1 Windows Update KB5020872 compatibility issues

Windows Update KB5020872 causes compatibility issues with older releases of SETPOINT® CMS (releases CMS 2022 and older). This issue prevents users from accessing AF databases. Please upgrade to SETPOINT® CMS 2022 R2 or newer to restore this functionality.

Note that no compatibility issues with older releases of SETPOINT® PI Adapter have been reported so far. We still recommend upgrading to the latest version of SETPOINT® PI Adapter to avoid any unexpected side effects.

9.2 Defects and Enhancements

The following defects were fixed with this release of the SETPOINT® CMS client:

- With all previous versions of SETPOINT® CMS, online registration will fail due to a breaking change in the registration backend. Already registered installations are not affected. Please upgrade to the present version to be able to submit your registration information via the online process. If upgrading is not possible or desirable, please follow the instructions for the offline registration process and send the generated pdf file to support@bkvibro.com.

The following defects were fixed with this release of the SETPOINT® PI Adapter:

- None

Known issues with this release of the SETPOINT® CMS client:

- Windows Update KB5022083 (distributed as part of KB5020872) interferes with the “Search…” functionality. When this update is installed, all versions of SETPOINT® CMS will crash when trying to access the documentation via search results. Please refer to the corresponding knowledge base article for workarounds recommended by Microsoft. This issue will be fixed in a future version of SETPOINT® CMS.
- When performing an upgrade installation from an older version, Windows will list the old *and* the new version of SETPOINT® CMS in “Apps & Features”. This is caused by an internal change in the installation process. The old version can safely be uninstalled without affecting the newly installed version of SETPOINT® CMS.
- With auto scaling enabled, Data Annotations can be missing on Trend, Timeline and Zoom Timeline plots after changing a unit.
  Workaround: In Changes Scales pane, set the Maximum above the largest signal amplitude value
- Orbit displayed on Orbit plot can lag behind time cursor during playback of boosted data.

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Known issues with this release of the SETPOINT® PI Adapter:

- When performing an upgrade installation from an older version, Windows will list the old *and* the new version of SETPOINT® PI Adapter in “Apps & Features”. This is caused by an internal change in the installation process. The old version can safely be uninstalled without affecting the newly installed version of SETPOINT® PI Adapter.
- Automatic configuration of PI compression settings for connected VCM-3 devices is not supported. If an excessive amount of scalar data is collected for such a device, manual tuning of the compression settings for the corresponding tags within the AVEVA™ PI database is required.

9.3 System Compatibility

This release was tested with:

- Microsoft Windows 10, Windows 11, Windows Server 2019, and Windows Server 2022
- AVEVA™ PI AF Server 2018 SP3 Patch 4
- VC-8000 firmware included in SETPOINT® MPS 2022 R1
- VCM-3 firmware 1.24.2

PI System:

- The PI Data archive has no known compatibility issues back to PI 2012. Any archive older than that will not be performant enough.
- Minimum AF SDK: 2.5.0.5038 (AF 2012)
- Backfilling: 2.9.2.8185 (AF 2017)
- Spectral bands: 2.10.5.0 (AF 2018 R2)

AVEVA™ compatibility requirements:

- https://customers.osisoft.com/s/knowledgearticle?knowledgeArticleUrl=KB01601

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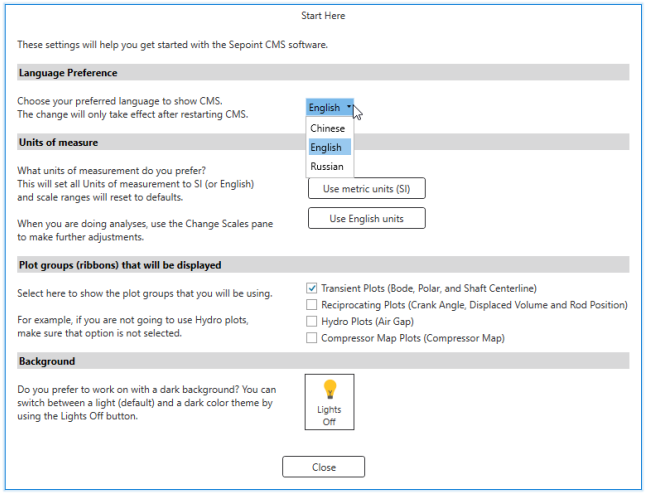
10 CMS 2022 R3 (v7.14.512)

10.1 New supported language: Chinese

Starting with the present release, the complete user interfaces for SETPOINT® CMS and SETPOINT® PI Adapter are available in the Chinese language. Moreover, the SETPOINT® PI Adapter can create AF databases that are properly localized for Chinese users.

10.2 Switching the SETPOINT® CMS Display Language

Users can now change the display language of SETPOINT® CMS from the **Start Here** dialog introduced in the CMS 2022 R2 release.



Changes take effect after restarting the software.

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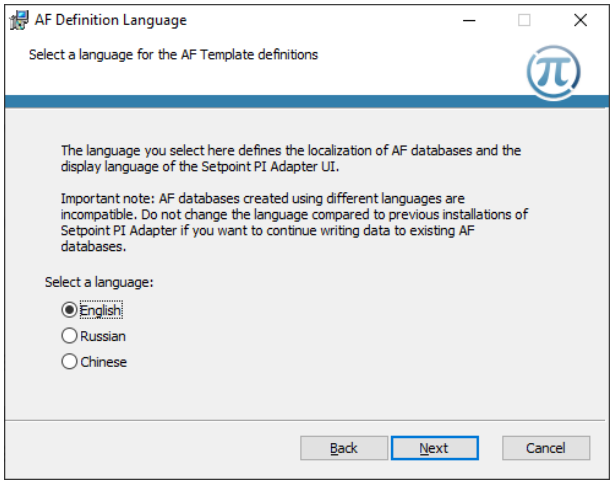
10.3 Multilingual installer for SETPOINT® PI Adapter

The SETPOINT® PI Adapter installer now includes localizations for all supported languages, and users can select their preferred language at installation time.



Note that the selected language defines both, the display language *and* the language of AF templates. That is, attributes within AF databases created by the SETPOINT® PI Adapter will be localized to the language selected here.

NOTE!

AF databases created using different languages for the AF templates are incompatible. Do not change the language compared to previous SETPOINT® PI Adapter installations if you want to continue writing data to already existing AF databases.

10.4 Defects and Enhancements

The following defects were fixed with this release of the SETPOINT® CMS client:

- Creating a PDF document for offline registration of SETPOINT® CMS was failing with the previous version.
- Depending on which channels were selected for display, Crank Angle and Displaced Volume plots could show an incomplete set of data traces with the previous version.
- In rare cases, the previous version of SETPOINT® CMS could stop reacting to selection changes in the navigation pane (until being restarted).
- When no speed information was found for a collected waveform, Orbit, Timebase and Spectrum plots would display a speed of “0 RPM”. This applies to all previous versions of SETPOINT® CMS. Missing speed information is now labeled as “No Data”.

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Known issues with this release of the SETPOINT® CMS client:

- When performing an upgrade installation from an older version, Windows will list the old *and* the new version of SETPOINT® CMS in “Apps & Features”. This is caused by an internal change in the installation process. The old version can safely be uninstalled without affecting the newly installed version of SETPOINT® CMS.
- With auto scaling enabled, Data Annotations can be missing on Trend, Timeline and Zoom Timeline plots after changing a unit.
  Workaround: In Changes Scales pane, set the Maximum above the largest signal amplitude value
- Orbit displayed on Orbit plot can lag behind time cursor during playback of boosted data.

Known issues with this release of the SETPOINT® PI Adapter:

- When performing an upgrade installation from an older version, Windows will list the old *and* the new version of SETPOINT® PI Adapter in “Apps & Features”. This is caused by an internal change in the installation process. The old version can safely be uninstalled without affecting the newly installed version of SETPOINT® PI Adapter.
- Automatic configuration of PI compression settings for connected VCM-3 devices is not supported. If an excessive amount of scalar data is collected for such a device, manual tuning of the compression settings for the corresponding tags within the AVEVA™ PI database is required

10.5 System Compatibility

This release was tested with:

- Microsoft Windows 10, Windows 11, Windows Server 2019, and Windows Server 2022
- AVEVA™ PI AF Server 2018 SP3 Patch 4
- VC-8000 firmware included in SETPOINT® MPS 2022 R1
- VCM-3 firmware 1.24.2

PI System:

- The PI Data archive has no known compatibility issues back to PI 2012. Any archive older than that will not be performant enough.
- Minimum AF SDK: 2.5.0.5038 (AF 2012)
- Backfilling: 2.9.2.8185 (AF 2017)
- Spectral bands: 2.10.5.0 (AF 2018 R2)

AVEVA™ compatibility requirements:

- https://customers.osisoft.com/s/knowledgearticle?knowledgeArticleUrl=KB01601

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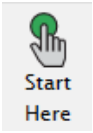
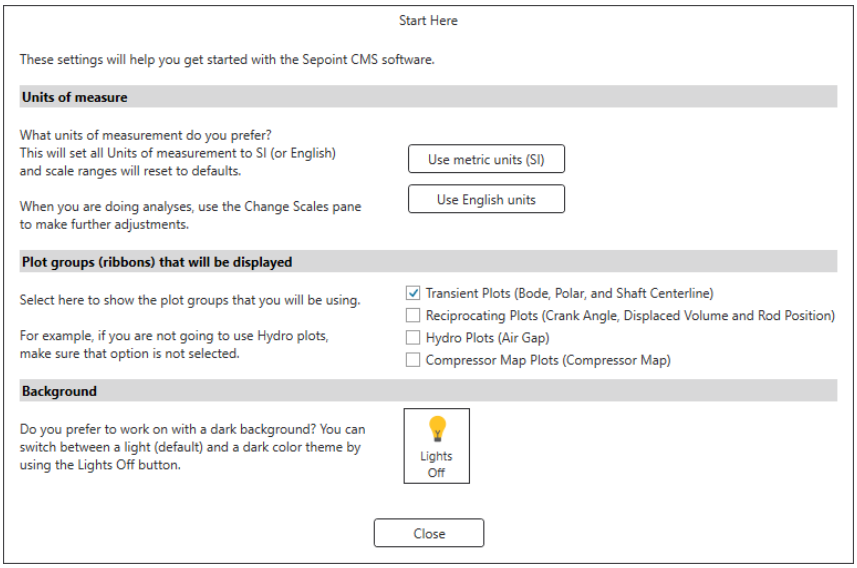
11 CMS 2022 R2 (v7.13.205)

The present release of SETPOINT® CMS focuses on user interface improvements and bugfixes. Many areas of SETPOINT® CMS have been redesigned such that especially new and intermittent users can discover and understand frequently used features without having to consult the manual. Individual features that support these improvements are listed below.

11.1 Quick Setup via Start Here



The new **Start Here** functionality allows customizing SETPOINT® CMS according to your needs. You can quickly select your preferred unit system, hide or show plot group ribbons, and choose the background color.



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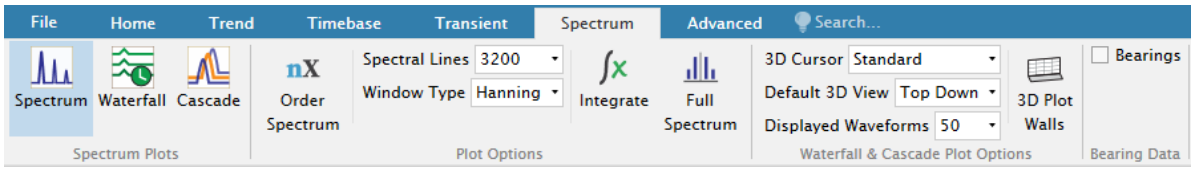
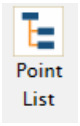
11.2 Improved Ribbon Workflow

The **Home** ribbon now holds controls that most users will use on a daily basis. Plot-specific controls, on the other hand, are organized around *plot groups* that combine plots of similar type and their corresponding options. For example, the **Spectrum** ribbon (see below) holds all controls that activate and/or configure **Spectrum**, **Waterfall** and **Cascade** plots.

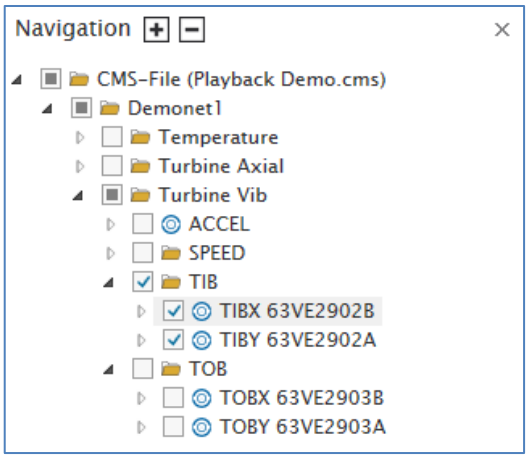


The improved **Quick Access Toolbar**, on the other hand, allows advanced users to quickly access the most frequently used features without having to switch between ribbons.

11.3 Tree-based Navigation Pane



This version of SETPOINT® CMS includes a completely redesigned, tree-based navigation pane that visualizes the hierarchical organization of your machines. You can select/deselect individual points or complete branches within the hierarchy, depending on your application.



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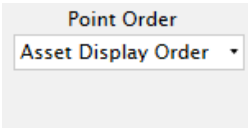
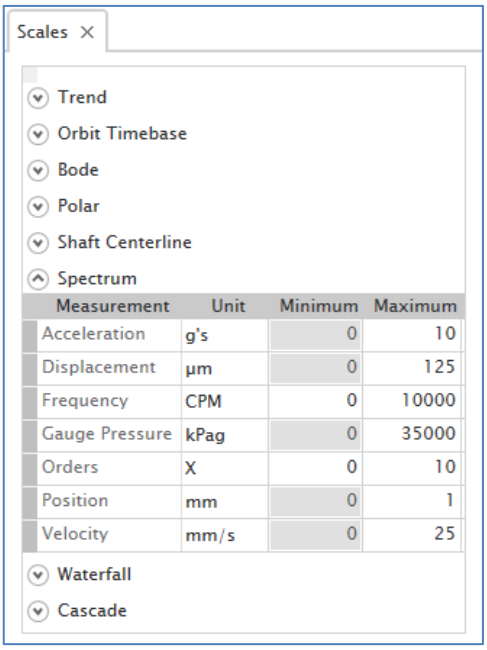
11.4 Plot Ordering



Plots displayed in the central plot area are sorted according the selected **Point Order**. That is, plots of the same type will appear in the order of your choice. The point order is thus consistent with plot headers of **Trend** type plots, and the **Data Table**.

11.5 Improved Change Scales Pane

The redesigned **Change Scales** pane clearly indicates which scales have which effect. Additionally, the frequency range of Spectrum, Waterfall and Cascade plots can now be configured such that a common range is used for all plots of type. This helps comparing spectrums from difference channels at a glance.



11.6 Redesigned Difference Cursor

The **Difference Cursor** (available on **Trend**, **Timebase** and **Spectrum** plots) has been modified such that it allows an easy detection of equidistant peaks. To that end, the cursor maintains the selected delta time/frequency while being moved.

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11.7 Defects and Enhancements

The following defects were fixed with this release of the SETPOINT® CMS client:

- Very short peaks in scalar measurement data could be hidden in Timeline and Trend plots, depending on the selected time range. SETPOINT® CMS now correctly displays these peaks.
- With XC connections to VC-8000 racks, configuration changes with respect to the CMS Navigation Path could be ignored by SETPOINT® CMS in some scenarios.
- With AF connections, Spectrum plots did not always show REB markers.

Known issues with this release of the SETPOINT® CMS client:

- With auto scaling enabled, Data Annotations can be missing on Trend, Timeline and Zoom Timeline plots after changing a unit.
  Workaround: In Changes Scales pane, set the Maximum above the largest signal amplitude value
- Orbit displayed on Orbit plot can lag behind time cursor during playback of boosted data.

The following defects were fixed with this release of the SETPOINT® PI Adapter:

- Configuration changes that affect the Direction of Rotation of Phase Trigger channels could not be forwarded correctly to all channels associated with the Phase Trigger. As a result, SETPOINT® CMS would continue to show the original Direction of Rotation. The new version of the SETPOINT® PI Adapter will propagate this information correctly. If you have been affected by this problem, the SETPOINT® PI Adapter will automatically correct the Direction of Rotation of the affected channels when the device configuration is changed.
- Backfilling large amounts of data (especially, waveforms) could overload the PI system such that the backfilling procedure never completed. The present version of SETPOINT® PI Adapter includes an improved backfilling algorithm that avoids this situation by putting less pressure on the PI system.
- Installing previous versions of the SETPOINT® PI Adapter would fail if Microsoft .NET Desktop Runtime 6.0.5 or newer was already installed on the target machine. Installation will now succeed with any version of Microsoft .NET Desktop Runtime pre-installed.
- Connecting to a VCM-3 device could fail if the installed Monitoring Template contained channels with active waveform collection for deactivated channels. SETPOINT® PI Adapter will now ignore waveforms collected for deactivated channels.
- When configuring a Setpoint Connector device to connect to VCM-3 devices, the Activity Panel could stop showing new updates if the corresponding log file was temporarily not available.
- When working with AF databases that contain *customized* element templates that are derived from *Setpoint.Element.Template.Point*, the SETPOINT® PI Adapter could erroneously overwrite the template of all elements whose template derives from *Setpoint.Element.Template.Point*. Note that no data was lost during this operation. The present version of the SETPOINT® PI Adapter avoids these unintentional modifications.

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Known issues with this release of the SETPOINT® PI Adapter:

- Automatic configuration of PI compression settings for connected VCM-3 devices is not supported. If an excessive amount of scalar data is collected for such a device, manual tuning of the compression settings for the corresponding tags within the AVEVA™ PI database is required

11.8 System Compatibility

This release was tested with:

- AVEVA™ PI AF Server 2018 SP3 Patch 4
- VC-8000 firmware included in SETPOINT® MPS 2022
- VCM-3 firmware 1.24

PI System:

- The PI Data archive has no known compatibility issues back to PI 2012. Any archive older than that will not be performant enough.
- Minimum AF SDK: 2.5.0.5038 (AF 2012)
- Backfilling: 2.9.2.8185 (AF 2017)
- Spectral bands: 2.10.5.0 (AF 2018 R2)

AVEVA™ compatibility requirements:

- https://customers.osisoft.com/s/knowledgearticle?knowledgeArticleUrl=KB01601

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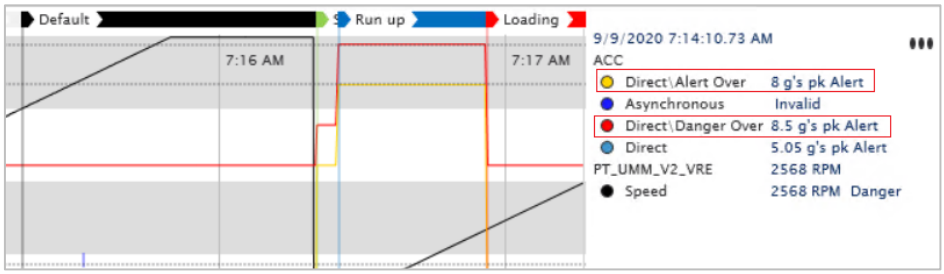
12 CMS 2022 (v7.11.114)

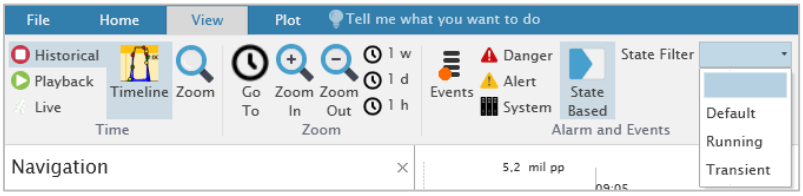
12.1 States and Filtered Trend Plot

Support for rack-based machine states (introduced in CMS 2020 R2 Expert) and Trend filtering (introduced in CMS 2021 Expert) is now available in the standard edition of SETPOINT® CMS. At the same time, the performance of these features has been increased significantly.

Requires: VC-8000 with the firmware included in SETPOINT® MPS 2021 (version 7.07) or higher.



- visualize the state in Zoom Timeline and Trend plot
- support trend of alarm and danger limits
- colored graphs according to the machine state for Bode, Polar, Waterfall and Cascade plot
- show state at cursor position for all relevant plots
- filter data being displayed on Trend and Zoom Timeline plot according to state



- see release notes for CMS 2020 R2 (v7.5.788) and CMS 2021 (v7.6.804) for more details

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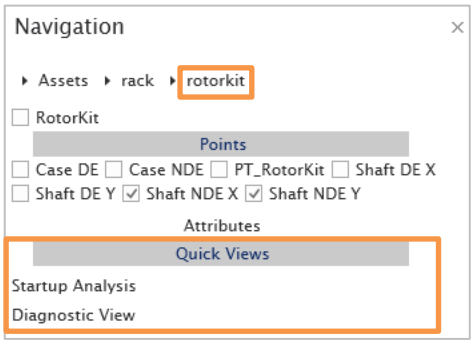
12.2 Improved navigation in SETPOINT® CMS using Quick Views

Requires: AVEVA™ PI/AF database

Quick Views have originally been introduced to allow AVEVA™ PI Vision™ users to easily access task-specific, customized views within SETPOINT® CMS. Such Quick Views can now be managed and easily accessed from within the software itself, thus allowing users to quickly switch between commonly used plot setups without having to return AVEVA™ PI Vision™.



Quick Views are automatically associated with the currently selected element at creation time (cf. breadcrumb at the top of the navigation pane). At the same time, the newly introduced **Quick Views** section of the navigation pane lists all Quick View links for this element. A user can thus open a selected Quick View by clicking on the corresponding entry.

12.3 Extended customization capabilities for improved AVEVA™ PI Vision™ integration

The SETPOINT® PI Adapter can automatically create and setup AVEVA™ AF databases that offer a great starting point for integrating vibration data into AVEVA™ PI Vision ™ displays. With this release, users gain more capabilities to extend and customize such an AVEVA™ AF database:

- The updated set of AVEVA™ AF templates included in this release allows users to add custom attributes and analyses that are then readily accessible in SETPOINT® CMS and/or AVEVA™ PI Vision ™.
- SETPOINT® PI Adapter includes an option to disable AF event frame creation (File → Options → Suppress AF event frame creation). This is useful for users that wish to make use of Analytics within the AVEVA™ AF database to implement a centralized alarm management.

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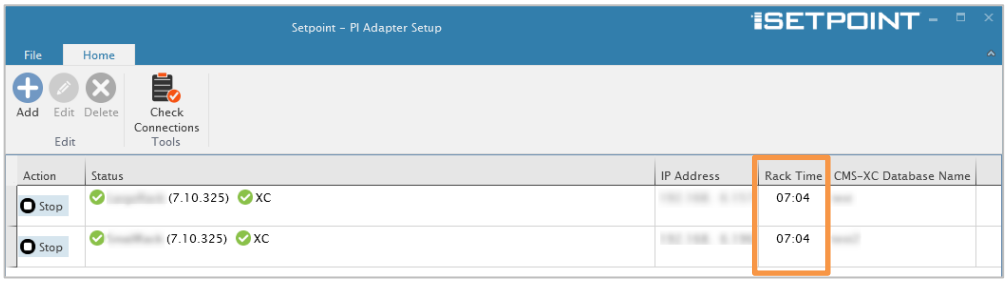
12.4 Simplified diagnostics of time-synchronization issues

Time synchronization issues between condition monitoring devices and the plant infrastructure are one of the most common problems encountered during commissioning and after maintenance activities. To allow users to diagnose this type of problem more quickly, the SETPOINT® PI Adapter thus now allows monitoring the internal device time of VC-8000 racks from the home screen. Similarly, VCM-3 users are guided to the corresponding device homepages to achieve the same goal.



12.5 Defects and Enhancements

The following defects were fixed with this release of the SETPOINT® CMS client:

- Increasing the number of points in an XC database (e.g., by adding racks, assets or channels) could cause a severe performance degradation. This behavior has been mitigated significantly.
- When recording data from multiple VC-8000 racks using XC mode, previous versions of SETPOINT® CMS (Expert) had problems displaying rack-based machine states if identical machine names were used. This will work correctly with this release.
- In rare cases, SETPOINT® CMS could close unexpectedly during the user registration process. This issue has been resolved.
- When selecting a channel with multiple asynchronous waveforms (e.g., a VCM-3 channel with an asynchronous and an envelope waveform), the Time plot will now show waveforms even if the “Asynchronous Orbit/Timebase” option is not checked.

Known issues with this release of the SETPOINT® CMS client:

- When upgrading from a previous version of SETPOINT® CMS *Expert*, the corresponding entry in Windows programs list will not be removed automatically. Users can safely uninstall the entry labelled “Setpoint CMS Expert”; the installation of the newer version of SETPOINT® CMS will remain unaffected.
- With auto scaling enabled, Data Annotations can be missing on Trend, Timeline and Zoom Timeline plots after changing a unit.
  Workaround: In Scales pane, set the Maximum above the largest signal amplitude value
- Orbit displayed on Orbit plot can lag behind time cursor during playback of boosted data.

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The following defects were fixed with this release of the SETPOINT® PI Adapter:

- When collecting data from multiple VC-8000 racks, time synchronization issues with one or more of these racks could disturb data collection for all connected racks. SETPOINT® PI Adapter will now continue to record data for all racks that do not have time synchronization issues.
- For connected VCM-3 devices collecting synchronous waveforms, an issue with the storage of waveforms that did not include 16 revolutions (which is the default setting) has been resolved.
- Collecting data from VCM-3 devices via very high latency connections could fail due to timeout issues. The SETPOINT® PI Adapter now tolerates longer latencies.

Known issues with this release of the SETPOINT® PI Adapter:

- Automatic configuration of PI compression settings for connected VCM-3 devices is not yet supported. If an excessive amount of scalar data is collected for such a device, manual tuning of the compression settings for the corresponding tags within the AVEVA™ PI database is required

12.6 System Compatibility

- The release was tested with the latest versions of PI data archive and AF server (PI AF Server 2018 SP3 Patch 2).
- The PI Data archive has no known compatibility issues back to PI 2012. Any archive older than that will not be performant enough.
- Minimum AF SDK: 2.5.0.5038 (AF 2012)
- Backfilling: 2.9.2.8185 (AF 2017)
- Spectral bands: 2.10.5.0 (AF 2018 R2)
- AVEVA™ compatibility requirements: https://customers.osisoft.com/s/knowledgearticle?knowledgeArticleUrl=KB01601

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13 CMS 2021 R3 (v7.9.430)

13.1 Extended support for VCM-3 devices

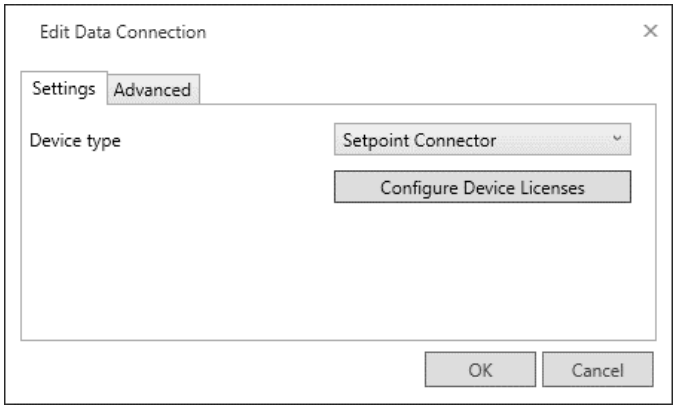
The present release adds support for displacement channels (proximity probes) and process channels (4–20 mA inputs) in VCM-3 devices. As a result, all major VCM-3 channel types are now supported:

- Acceleration (channels 1 to 12)
- Velocity (channels 1 to 12)
- Displacement (channels 1 to 12)
- Tachometer (channels 13 to 16)
- Process (channels 17 to 24)

In addition, VCM-3 channels may now contain either enveloped or synchronous waveforms in addition to the previously supported asynchronous waveforms.

13.2 Simplified configuration of data acquisition for VCM-3 devices

SETPOINT® PI Adapter (for storing data in XC and AVEVA™ AF/PI databases) and SETPOINT Connector (for ingesting data from VCM-3 devices) have been merged into a single user interface. Connections to VCM-3 devices can now be managed from within the SETPOINT® PI Adapter.



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13.3 Defects and Enhancements

The following defects were fixed with this release of the SETPOINT® CMS client:

- Improved live mode performance
- Slow loading times of Air Gap plots
- Deleting a Quick View could cause CMS to not show any points in the Navigation Pane
- In the Open Database menu, the listed Assets could contain duplicates

Known issues with this release of the SETPOINT® CMS client:

- With auto scaling enabled, Data Annotations can be missing on Trend, Timeline and Zoom Timeline plots after changing a unit.
  Workaround: In Scales pane, set the Maximum above the largest signal amplitude value
- Orbit displayed on Orbit plot can lag behind time cursor during playback of boosted data
- When selecting a channel with multiple asynchronous waveforms (e.g., a VCM-3 channel with an asynchronous and an envelope waveform), the Time plot will only show waveforms when the “Asynchronous Orbit/Timebase” option is checked.

The following defects were fixed with this release of the SETPOINT® PI Adapter:

- If the option "Backfilling" is activated after starting data collection, the service "Setpoint - PI Adapter" must be restarted for the change to take effect
- Data collection in SETPOINT® PI Adapter could fail to start after an upgrade installation when the target AF database used custom AF templates
- VCM-3 Sensor condition descriptors were labeled as gap instead of bias measurements

Known issues with this release of the SETPOINT® PI Adapter:

- Automatic configuration of PI compression settings for connected VCM-3 devices is not yet supported. If an excessive amount of scalar data is collected for such a device, manual tuning of the compression settings for the corresponding tags within the AVEVA™ PI database is required
- VCM-3 devices push data to the SETPOINT® PI Adapter at regular intervals (defined by the Scalar Update Rate configured in the device; default is 10 minutes). As a result, it can take quite some time before the SETPOINT® PI Adapter can establish or re-establish a successful corresponding connection (in extreme cases, up to two times the Scalar Update Rate). For example, this delay applies in the following scenarios: Restart of the SETPOINT® PI Adapter PC, restart of the corresponding services (e.g., when upgrading the SETPOINT® PI Adapter), first connection of a new VCM-3 device, and restart of a VCM-3 device

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13.4 System Compatibility

- The release was tested with the two latest versions of PI data archive and AF server.
- The PI Data archive has no known compatibility issues back to PI 2012. Any archive older than that will not be performant enough.
- Minimum AF SDK: 2.5.0.5038 (AF 2012)
- Backfilling: 2.9.2.8185 (AF 2017)
- Spectral bands: 2.10.5.0 (AF 2018 R2)
- AVEVA™ compatibility requirements: https://customers.osisoft.com/s/knowledgearticle?knowledgeArticleUrl=KB01601

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14 CMS 2021 R2 (v7.8.412)

14.1 Enhanced Compressor Maps

- Fixed Scales per Compressor map
- Improved compressor map cursor visibility

14.2 Balance of Plant features

- Calling the CMS viewer from PI-Vision has been speeded up considerably.
- Furthermore, the previously selected time range of the quick view is now restored when it is called later. Previously, a fixed range of 24h was opened.

14.3 Enhanced support for VCM-3 devices

- The handling for the error states "invalid" and "not ok" has been adapted to obtain an equivalent user experience as with the VC-8000.
- With this new version, Tacho channels of the VCM-3 are now also supported. Therefore, the plots are now supplemented with speed information and more plot types like Cascade Plot are available.
- Together with the tacho data come also Vector Measurements (1X, 2X, NX)
- Velocity channel data is stored and available in CMS
- Furthermore, the alarms from the VCM-3 are also imported to PI and therefore also supported in the CMS viewer.

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14.4 Defects and Enhancements

The following defects were fixed with this release for the SETPOINT® CMS client:

- Export of Compressor Map data was not possible.
- The performance problems when exporting data from PI data as .cms file were corrected.
- The settings for unit and scaling were not always correctly considered for the Rotor Profile Waveform Plot.
- In the Air gap Plot, the Leading Pole was not displayed correctly for unusual sensor angles.
- In the combination PI database and Air-Gap Plots, limit values for alarms were not displayed correctly.

The following enhancements are included with this release:

- When installing the SETPOINT® CMS Viewer, we provide useful components and instructions in the `C:\Program Files (x86)\Setpoint\Addons` directory (example: CMS button for integration into PI-Vision).
- Release was tested under Windows 10, Windows Server 2016 and 2019

Known issues:

- If the option "Backfilling" is subsequently activated, the service "Setpoint - PI Adapter" (or alternatively the computer) must be restarted for the change to take effect.

14.5 System Compatibility

- The Release (CMS-Viewer and PI Adapter) was tested with the two latest versions of the PI data archive and AF server.
- The PI Data archive has no known compatibility issues back to PI 2012. Any archive older than that will not be performant enough.
- Minimum AF SDK: 2.5.0.5038 (AF 2012)
- Backfilling: 2.9.2.8185 (AF 2017)
- Spectral bands: 2.10.5.0 (AF 2018 R2)
- AVEVA™ compatibility requirements: https://customers.osisoft.com/s/knowledgearticle?knowledgeArticleUrl=KB01601

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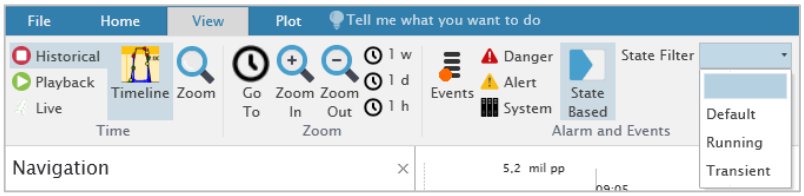
15 CMS 2021 (v7.6.804)

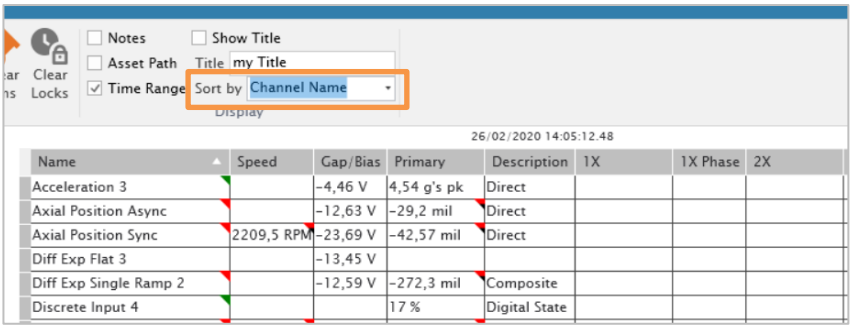
15.1 Filtered Trend Plot (available in EXPERT Version only)

Rack-based states can be used to filter for data being displayed on Trend plot and the Zoom Pane. Use the state filter option on the view ribbon to activate this feature.



15.2 Improved Data Table

Primary measurement description is added.
Several options to sort the data table are now available.
The traces in Trend plot are following this new order rules.



Name	Speed	Gap/Bias	Primary	Description	1X	1X Phase	2X
Acceleration 3		-4,46 V	4,54 g's pk	Direct			
Axial Position Async		-12,63 V	-29,2 mil	Direct			
Axial Position Sync	2209,5 RPM	-23,69 V	-42,57 mil	Direct			
Diff Exp Flat 3		-13,45 V					
Diff Exp Single Ramp 2		-12,59 V	-272,3 mil	Composite			
Discrete Input 4			17 %	Digital State			

15.3 Casing Orbits

In combination with the firmware included in SETPOINT® MPS 2019 SP1 (version 7.03) or higher, the CMS Viewer now also supports orbits with the channel types "Acceleration Channel" and "Velocity Channel". The User can compare the direct XY bearing orbit (displacement) with the casing orbit (acceleration or velocity) to determine if there is looseness in the bearing housing.

15.4 VCM-3 is a Supported Device in the SETPOINT® Solution

The installation of SETPOINT® PI Adapter includes the optional component "SETPOINT Connector". This component enables the transfer of scalar measurement values and waveforms into the AVEVA™ PI Data Historian and enables the visualization of the measurement data in AVEVA™ PI Vision™ and the CMS Viewer.

15.5 No AF Feature

In the option settings of the PI Adapter the forwarding of configuration parameters to the AF framework can now be prevented. Please refer to the application note “SETPOINT No AF Support S000023” for this option.

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15.6 Defects and Enhancements

The following defects were fixed with this release for the SETPOINT® CMS client:

- When exporting data (many waveforms with high density), it could happen that not all waveforms could be displayed in the exported database.
- With a compensated orbit plot it could happen that the application crashed when navigating to a reference point.
- The scaling has not always selected the optimum settings for the measuring range end value.

The following issues were fixed with the SETPOINT® PI - Adapter:

- The installation of the PI-AF client is no longer necessary when working exclusively with the XC data source (This was a problem of the last release).

The following enhancements are included with this release:

- When installing the SETPOINT® CMS Viewer, we provide useful components and instructions in the `C:\Program Files (x86)\Setpoint\Addons` directory (example: CMS button for integration into PI-Vision).
- Release was tested under Windows 10, Windows Server 2016 and 2019 (no longer tested with Windows Server 2012 R2 and older)
  Status bar readability improvements
  Measurement precision for copy & paste from data table follows the defined accuracy.

Known issues:

- If the option "Backfilling" is subsequently activated, the service "Setpoint - PI Adapter" (or alternatively the computer) must be restarted for the change to take effect.

15.7 System Compatibility

- The Release (CMS-Viewer and PI Adapter) was tested with the two latest versions of the PI data archive and AF server.
- The PI Data archive has no known compatibility issues back to PI 2012. Any archive older than that will not be performant enough.
- Minimum AF SDK: 2.5.0.5038 (AF 2012)
- Backfilling: 2.9.2.8185 (AF 2017)
- Spectral bands: 2.10.5.0 (AF 2018 R2)
- AVEVA™ compatibility requirements:
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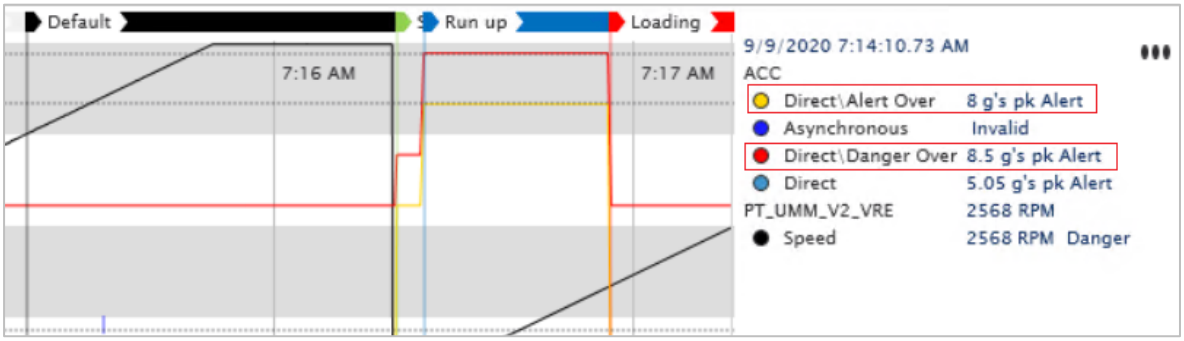
16 CMS 2020 R2 (v7.5.788)

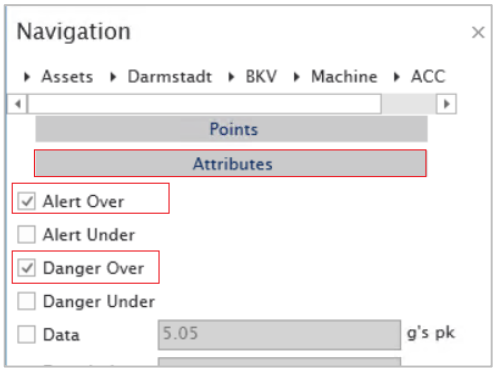
16.1 States (available in EXPERT Version only)

The CMS-Viewer supports rack-based machine states from VC-8000 and visualize the state and the corresponding alarm Limits in plots.

Requires: VC-8000 with firmware included in SETPOINT® MPS 2021 (version 7.07)



- Visualize the state in zoom timeline and trend plot (data annotation enabled).
- Support trend of alarm and danger limits (enable corresponding checkbox in section Attributes).



- colored graphs according to the machine state for bode, polar, waterfall and cascade plot (state based enabled)
- show state at cursor position for all relevant plots
- if the selected data points include different machines, the first two machine states are visualized in the trend plot. This helps you to view the correct comparison values of a second identical machine.

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16.2 Defects and Enhancements

The following enhancements are included with this release:

- Release was tested under Windows Server 2016 and 2019 (no longer tested with Windows Server 2012 R2 and older)
- Manual states are shown with state color

The following defects were fixed with this release for the SETPOINT® CMS client:

- Newly added reference data is not presented in plot (Spectrum, Time, etc.) as overlay
- Cascade plot not displaying all spectrums

The following issues were fixed with the SETPOINT® PI - Adapter:

- New XC Database Scenario - Old Points Accessible

The following enhancements are included with this release:

- Release was tested under Windows Server 2016 and 2019 (no longer tested with Windows Server 2012 R2 and older)

Known issues:

- If the option "Backfilling" is subsequently activated, the service "Setpoint - PI Adapter" (or alternatively the computer) must be restarted for the change to take effect.

16.3 System Compatibility

- The Release (CMS-Viewer and PI Adapter) was tested with the two latest versions of the PI data archive and AF server
- The PI Data archive has no known compatibility issues back to PI 2012. Any archive older than that will not be performant enough
- Minimum AF SDK: 2.5.0.5038 (AF 2012)
- Backfilling: 2.9.2.8185 (AF 2017)
- Spectral bands: 2.10.5.0 (AF 2018 R2)
- AVEVA™ compatibility requirements: https://customers.osisoft.com/s/knowledgearticle?knowledgeArticleUrl=KB01601

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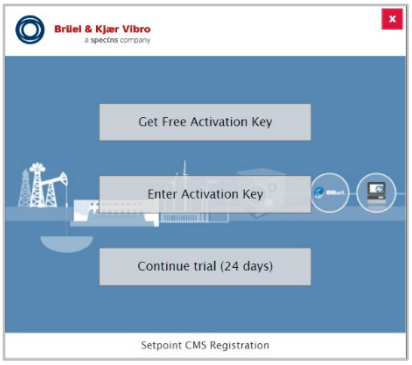
17 CMS 2020 (v7.3.423)

17.1 User Registration

The free available SETPOINT® CMS viewer now contains a user registration. We want to inform our users (customers) about software updates and products enhancements respectively new products. For this purpose, every user has to register with his e-mail address. If the computer is not connected to the internet, it is also possible to display a QR code.

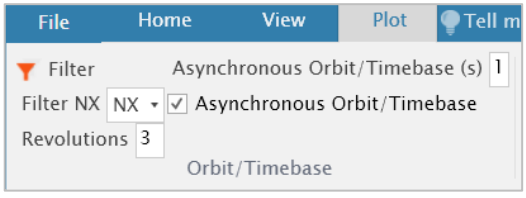
The QR code can then be sent to Brüel & Kjær Vibro or the registration can be carried out with an internet enabled mobile phone.



If the registration is not completed, the CMS Viewer runs without restrictions in trial mode (30 days). The registration can be completed in the About dialog.

17.2 Async Orbits

The Orbit and Orbit/Time base plots now also support asynchronous Orbits. This means that the dynamic display of the shaft movement is also possible without an existing phase reference trigger.



Note: Without a phase reference trigger mark, it is not possible to indicate the trigger position on the Orbit plot. Moreover, NX-filtering the Orbit is not possible.

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17.3 Defects and Enhancements

The following enhancements are included with this release:

- Improve performance when working with large databases (.cms files)
- Improve performance when using the zoom timeline with much data (time wave form and static data)
- The control (especially of the trend plot) via the cursor keys has been optimized
- The column headings of the data table have been revised to make them easier to understand
- If a machine runs through the resonances when starting up or stopping, the values of the phase can add up (rolled over). The cursor-read out now shows a phase unrolled (±180°) phase and the rolled over value in brackets.
  Compressor map plot: The plot starts now with “scan time” = 1s as default. Before the plot was showing all data (scan time” = none) which confused sometimes. These option (none) is now added as an entry in the plot settings.

The following defects were fixed with this release for the SETPOINT® CMS client:

- Fix data table values when displaying differential expansion
- Time-based plots do not always show RPM

The following issues were fixed with the SETPOINT® PI - Adapter:

- Adapter does not create the complete AF hierarchy when multiple racks are configured

17.4 System Compatibility

- The Release (CMS-Viewer and PI Adapter) was tested with the two latest versions of the PI data archive and AF server
- The PI Data archive has no known compatibility issues back to PI 2012. Any archive older than that will not be performant enough.
- Minimum AF SDK: 2.5.0.5038 (AF 2012)
- Backfilling: 2.9.2.8185 (AF 2017)
- Spectral bands: 2.10.5.0 (AF 2018 R2)
- AVEVA™ compatibility requirements:
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18 CMS 2019 R2 (v7.1.689)

18.1 Defects and Enhancements

The following enhancements are included with this release:

- Spectral lines are supported up to 12,800 lines
  Requires: VC-8000 with firmware included in SETPOINT® MPS 2019 (version 7.01) or higher, and corresponding configuration for waveforms in the rack setup.
- Spectral band measurements to allow trending of additional spectral components beyond what VC-8000 machine protection system provides natively. The Spectral band measurement are only supported for PI Server/AF mode and is not available on CMS-XC mode.
- “Bookmarks” now include selected points in addition to selected plots. This allows the timeline and trend to be restored to the same set of data that was included when the bookmark was created.
- Preconfigured SETPOINT® CMS displays can be linked from PI Vision, PI ProcessBook, or a web display through the newly developed “Quick Views” feature.
- Selectable plots per page and improved plot layout with MS Word exports

The following defects were fixed with this release for the SETPOINT® CMS client:

- Fix measurement values to display appropriate digits of precision
- Fix scaling of multiple process variable measurements on a trend plot
- AF Attribute trends identify channels data label
- Setpoints are trended with subunits
- Allow peak stretch spectrums to be integrated
- Provide an error message when opening a corrupt CMS file
- Fix issue with some compensated spectrums improperly parsing and displaying data
- Fix non-orthogonal probe adjustments for spectrum plots
- Fix keyboard input Left/Right keys do progress in sequence
- Correctly plot step values in CMS
- Fix bookmarked plots to scale according to user settings. Previously bookmarks were always auto scaled.
- Improved default compression settings
- Allow second login for PI server when default credentials are not accepted
- Changing direction of rotation was not updating plot
- Trend displaying gap in data when waveforms are also trended. This has been fixed to set the correct time ranges for data displayed.
- Resolve issue with reciprocating data being display on duplicate plots

The following issues were fixed with the SETPOINT® PI - Adapter:

- Fix SETPOINT® PI Adapter does to reconnect to remote AF Server after AF Server restart
- Fix Adapter to update attributes in AF
- Improve data collection to better compress noisy phase measurements

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18.2 System Compatibility

- The Release (CMS-Viewer and PI Adapter) was tested with the two latest versions of the PI data archive and AF server
- The PI Data archive has no known compatibility issues back to PI 2012. Any archive older than that will not be performant enough.
- Minimum AF SDK: 2.5.0.5038 (AF 2012)
- Backfilling: 2.9.2.8185 (AF 2017)
- Spectral bands: 2.10.5.0 (AF 2018 R2)
- AVEVA™ compatibility requirements: https://customers.osisoft.com/s/knowledgearticle?knowledgeArticleUrl=KB01601

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19 CMS 2019 SP2 (v6.10.905)

19.1 Defects and Enhancements

The following enhancements and defects were changed for this CMS 2019 Service Pack 2 (SP2) release:

- Defect with slow application load and response times
- Some users experienced a slow CMS performance for PI/AF Connection
- Adaptive Exception deviation will now filter out noise better for small signals
- Defect with compensating data for multiple machines
- Defect with CMS files opening with incorrect data range
- Defect with display of integrated acceleration or velocity spectrum data with SI units
- Waterfall drawing outside the grid
- General Performance Issue - XC - Exception Deviation is calculated each request
- Backfilling with multiple racks is error prone
- Backfilling algorithm to find ranges is not finding end range
- Many CMS-XC databases displayed in open database menu
- Phase roll over not working with AF trend data
- Defect with memory consumption for waterfall and cascade plots
- Slow roll compensation references values were incorrectly displayed for filtered orbit time base (actual data was compensated correctly)
- Incorrect speed value displayed for compensated waveform
- Timeline is not populating with data when user does not have full write privileges on AF Database
- Audit performance issue with CMS-XC
- I-Factor trend displayed incorrectly
- X Y channel pairs for hydro radial vibration channels

NOTE!

In connection with this SP2 release there is also an updated SETPOINT-PI Adapter Setup software version (same v6.10.905) available. Please update the Adapter application too while running the SETPOINT® CMS 2019 SP2 software!

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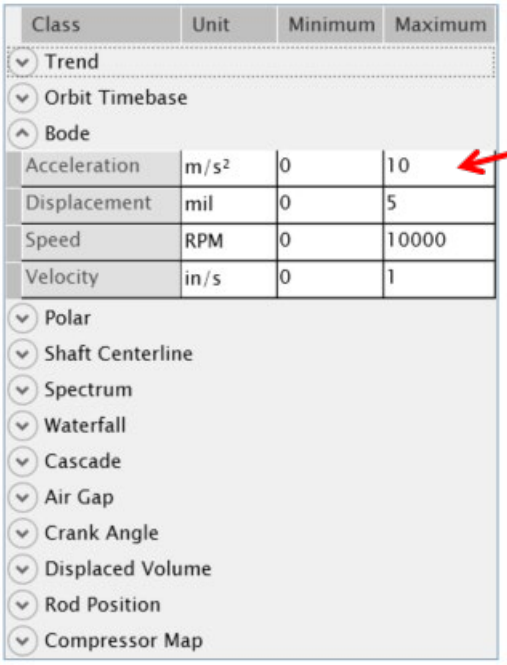
20 CMS 2019 (v6.10.793)

20.1 Plot Scales

From the view tab, click the **Change Scales** button to open the Scales Pane.
Use the Scales Pane to manually scale plots to the set value.
Expand each plot type in the scales pane to adjust scale values for a given plot type.



Set the full scale range for each unit. When Auto Scale is turned off, plots using the given unit will scale to the set value.

Minimum values are used only on the Trend and Reciprocating Compressor plots.

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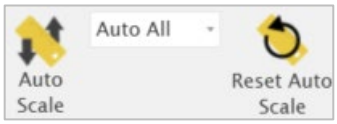
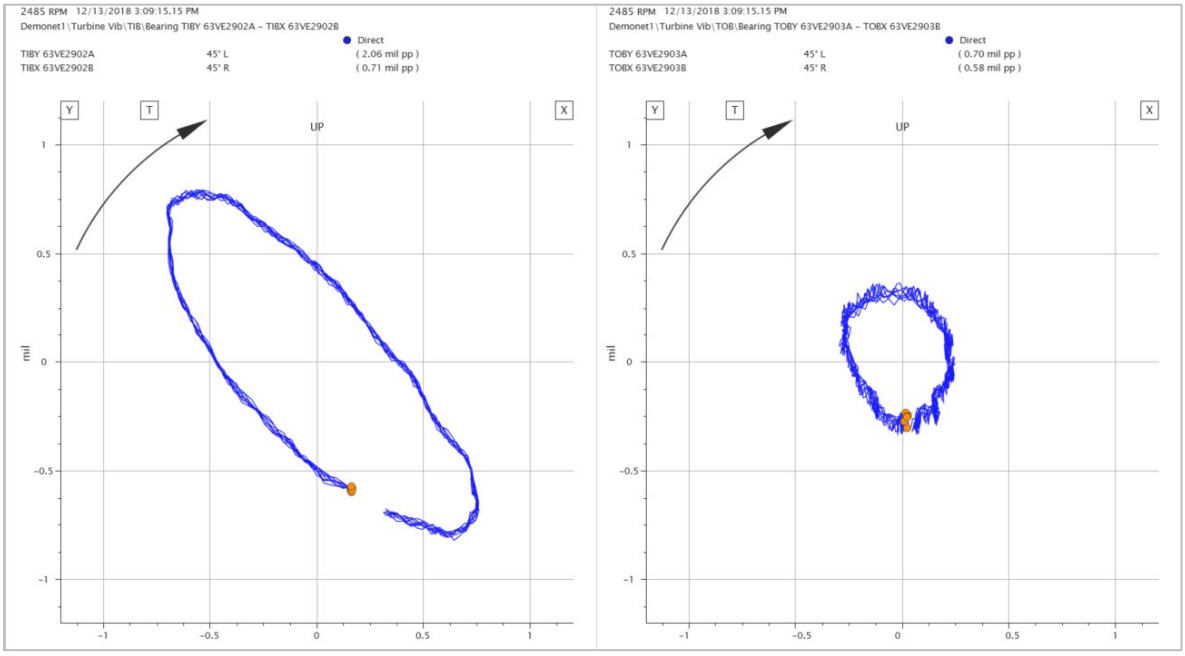


You can scale plots automatically according to the data using the Auto Scale button on the View Tab. Auto Scale selects the best full scale to optimize the data presentation for each individual plot. Toggle the Auto Scale button off to return the plots to the configured scale.

Auto scale can either scale each plot independently (Auto Each) or all plots of the same type together (Auto All). When scaling in auto all mode the scale will automatically adjust to the size of the largest values viewed in the plot. As data grows smaller the scale will stay at the largest values seen. To reset the scale use the Reset Auto Scale button on the view tab.



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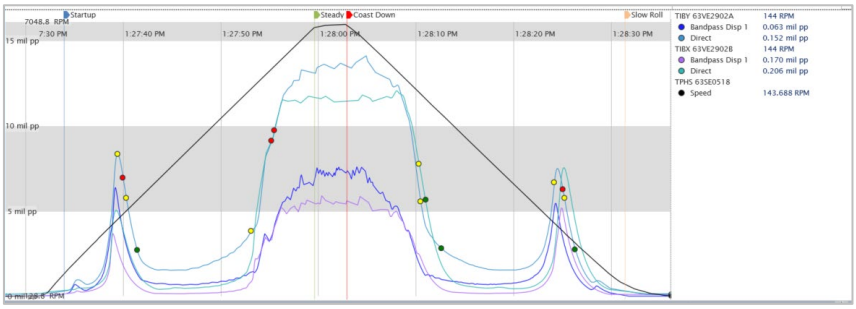
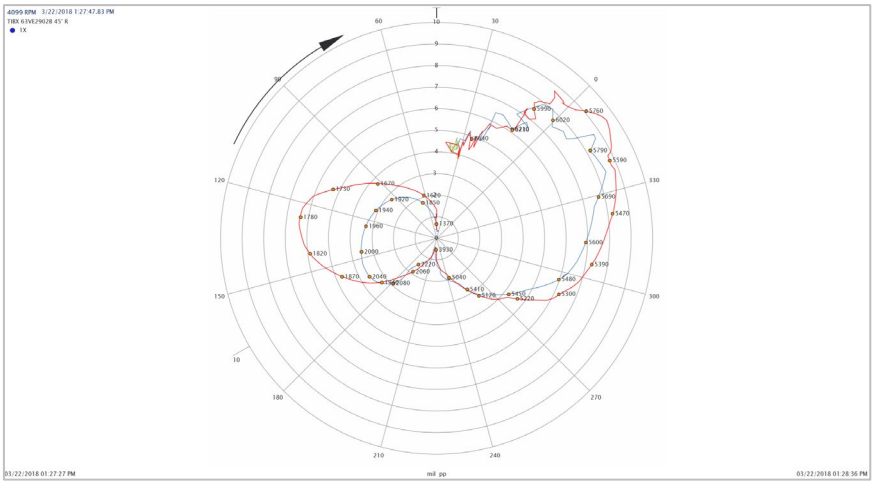
20.2 State Markers and State Displays

State markers may be added to the trend to annotate when machine state changes occur. This helps put the data in context when analyzing faults.



States can be used to color plot data based on state. This allows data to be taken in context so that it is not incorrectly diagnosed. For example a bode plot can visually show what data is in startup and what is in coastdown.



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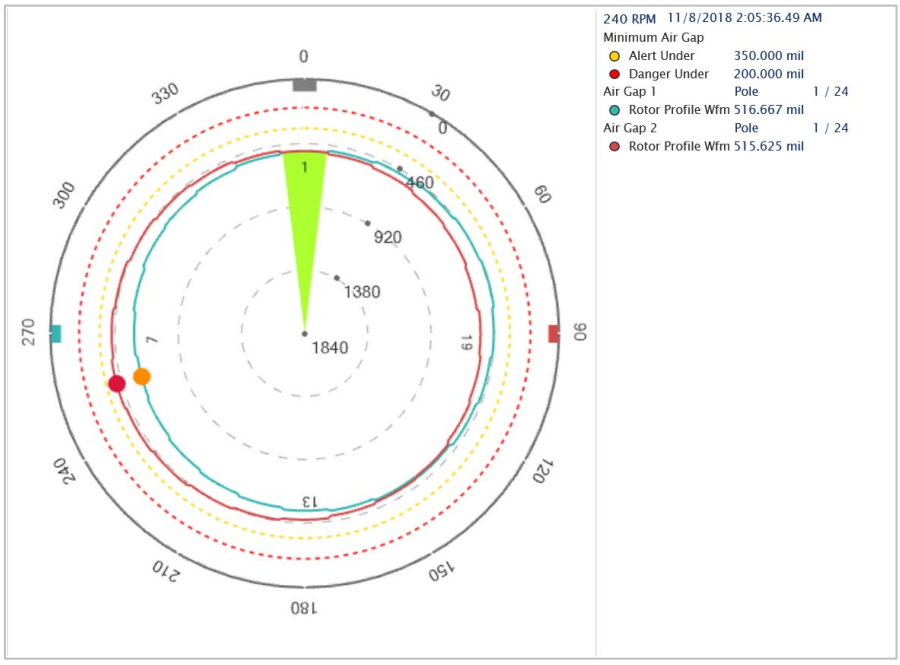
20.3 Air Gap

The Air Gap plot may be used to show the space between the rotor and stator. The minimum and maximum poles are labelled to identify which poles should be monitored. Sensor locations are marked around the outside to orientate the data. Alert and danger lines are drawn on the plot to visually track how close a pole is to a setpoint.



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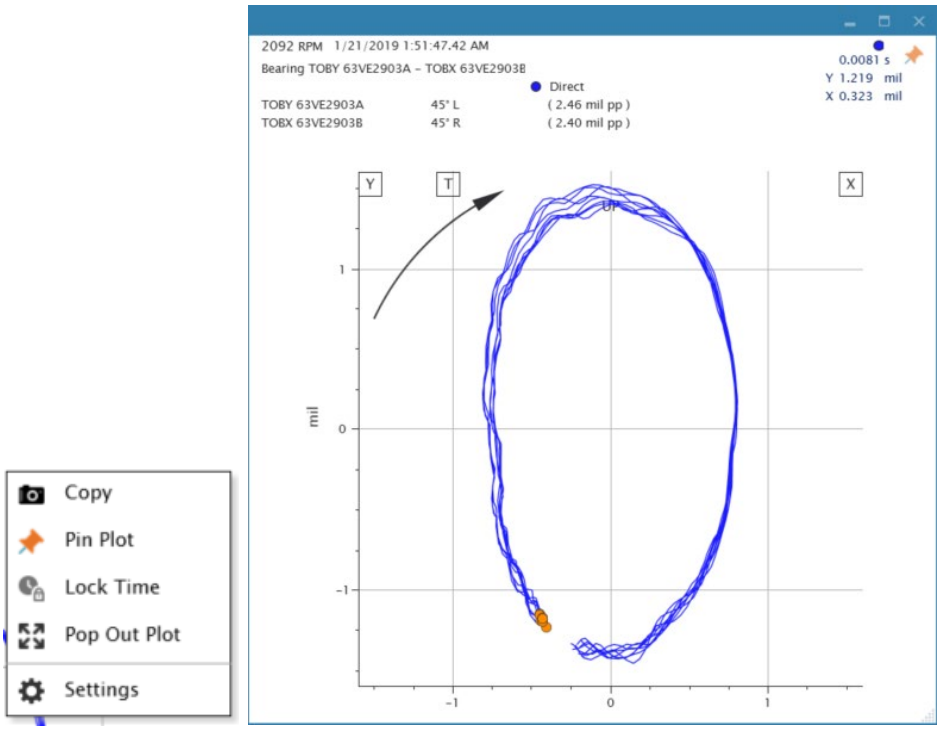
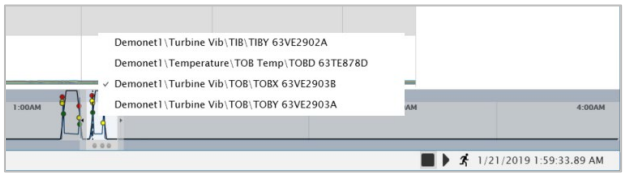
20.4 Pop Out Plot

Any plot can be moved to a second window by right clicking on the plot and selecting Pop Out Plot.



20.5 Timeline Trend Selection

Right click on the timeline to select the active trace to plot.



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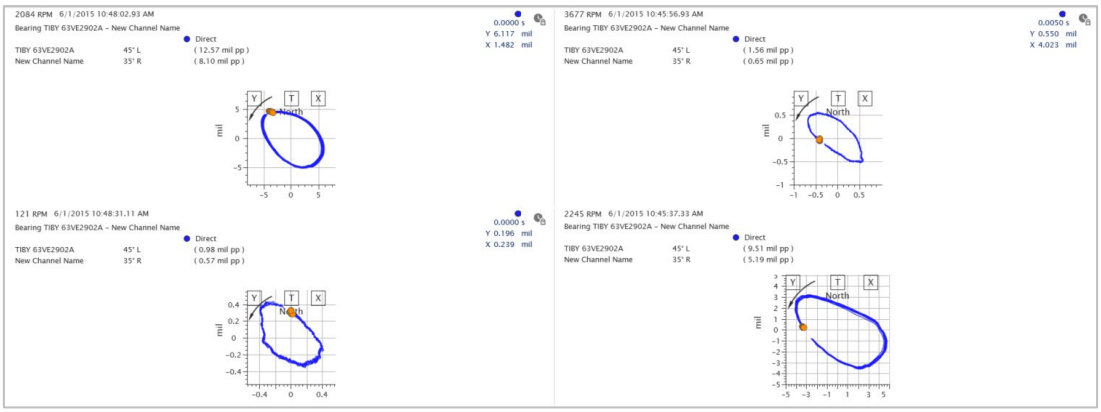
20.6 Channel Name Editing

In a CMS file channel names can be edited to make them clearer when diagnosing machines.

20.7 Time Lock

Right click and select lock time to freeze time for a given plot so that multiple plot can be reviewed over a range of time.



20.8 Defects and Enhancements

XC/CMS file Bode plot fixes Local Connections to Adapter

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21 CMS 2018 (v5.0.3045)

21.1 Data Availability

Data reliability and availability has been increased by providing recovering a mechanism for network failures. The network between the rack and the adapter can be broken and once fixed no data will be lost. This feature is only available for PI data collection.

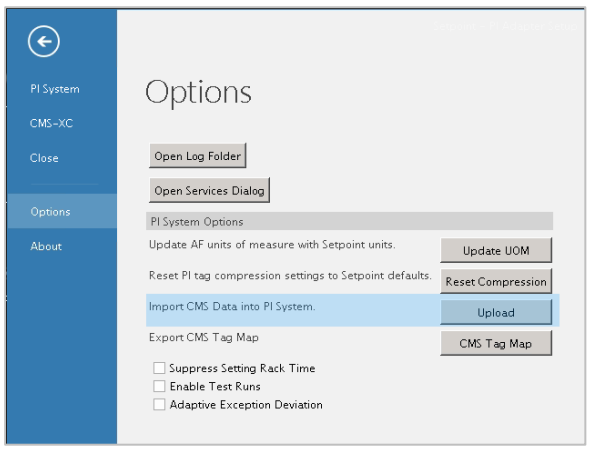
In addition, the connection between the adapter and the PI server can be lost and once recovered the data will be backfilled into the PI server. This data recovery will be done using the PI Buffering Subsystem. The subsystem needs to be configured during commissioning of the adapter. This feature is only available for PI data collection.

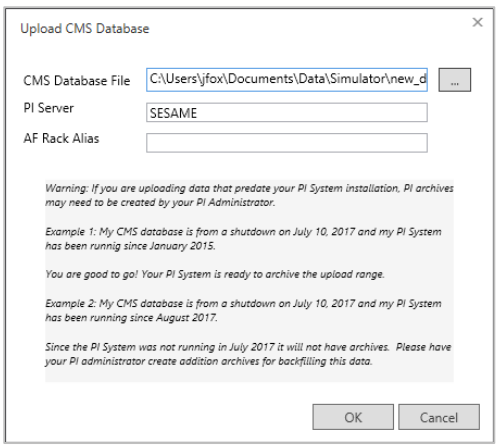
CMS-SD, CMS-XC, and CMS-HD data are now referred to as CMS Databases. The file extension cmsdb is used for them. CMS databases are used to manage large amounts of data and are suitable for archiving portable data, and HD data. The CMS client can now export to the CMS database format when connected to CMS-HD, and CMS-XC databases.

Offline data (CMS database format) may be uploaded into a PI System. When a network is not available to the rack and data still needs to be made available on the network the user may upload data using the adapter.

21.1.1 CMS Database Upload

Offline CMS databases may be upload to a PI System using the upload button in the adapter. This allows CMS-SD data, and offline CMS-HD to be archive with the PI System when a network is not available.





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21.1.2 Backfilling CMS-HD Data

The adapter can backfill data from a CMS-HD SAM to repair gaps in data due to network outages or server down time. This only works for PI Systems and does not work for CMS-XC. Note: a CMS-HD capable SAM is required.

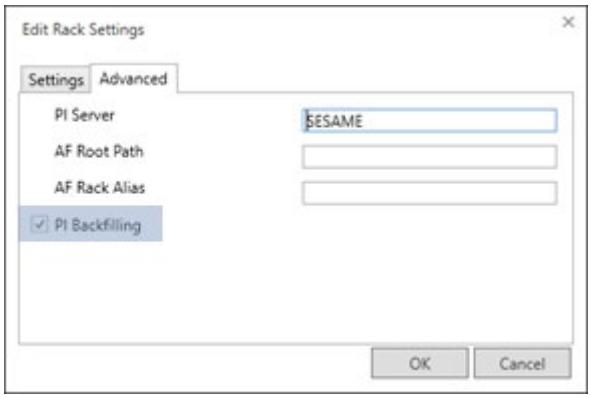

Figure 21-1) Enabling PI Backfilling

The adapter then check for gaps in data while collecting and refills them automatically.

21.1.3 Exporting a CMS Database

In the CMS client, CMS-HD and CMS-XC connections allow data to be exported to a CMS database format (cmsdb extension). This allows a more performant export for CMS-HD and a practical way to archive data. Unlike a CMS file more than 7 days may be exported.

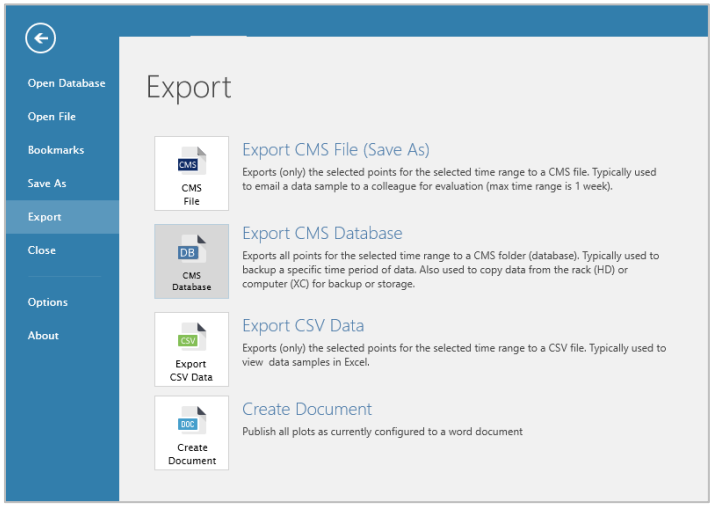

Figure 21-2) Enabling PI Backfilling

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21.1.4 Trouble Shooting Network Connections

While commissioning a PI System or when the server or network experiences issues the Check Connections button in the adapter may be used to trouble shoot what has gone wrong. This button will test the connections and authorizations to PI, AF, CMS-XC remote access and the VC-8000 rack communication link. Use the Check Connections button to initiate the test.

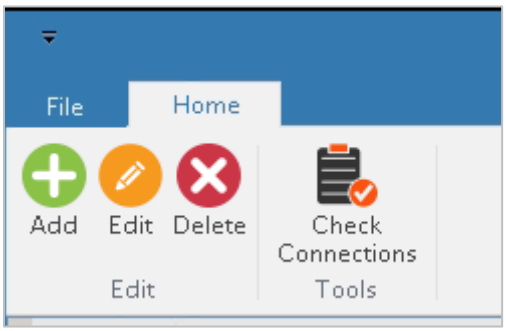

Figure 21-3) Check Connections Button

The results are shown in a dialog, and can be used to pinpoint a failure.

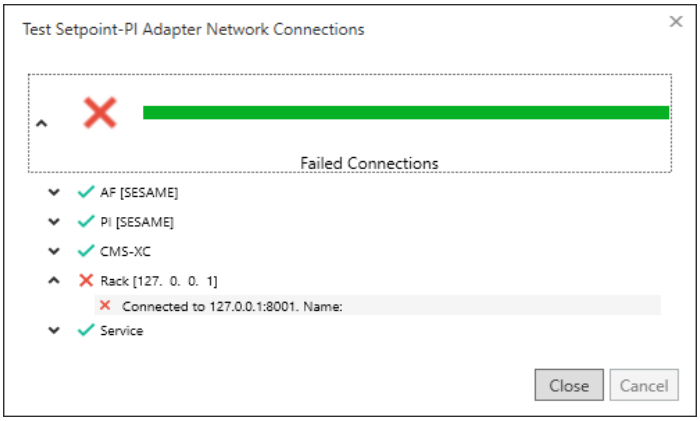

Figure 21-4) Check Connections Results

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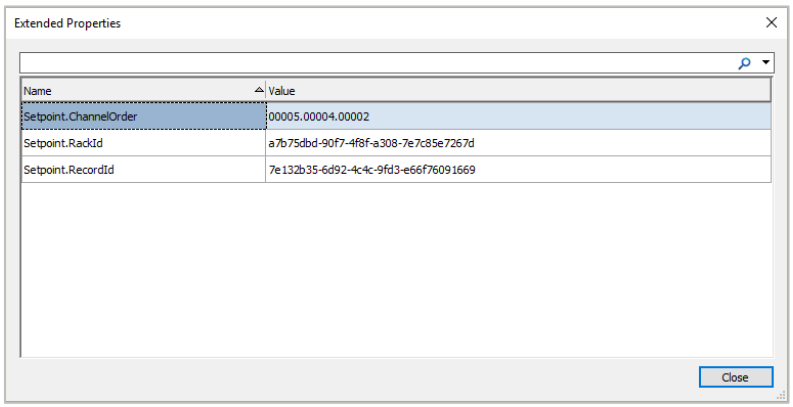
21.2 PI Administrator Enhancements

When using remote data centers, access to the VC-8000 rack can be difficult and may take months to have a change implemented for a particular rack. With this release PI administrators can now rename PI Tags, and move AF elements without needing to reconfigure a rack. This allows administrators the freedom to customize their PI system to meet their needs. The adapter will not override changes users make to their system.

The following changes allow administrators more flexibility:

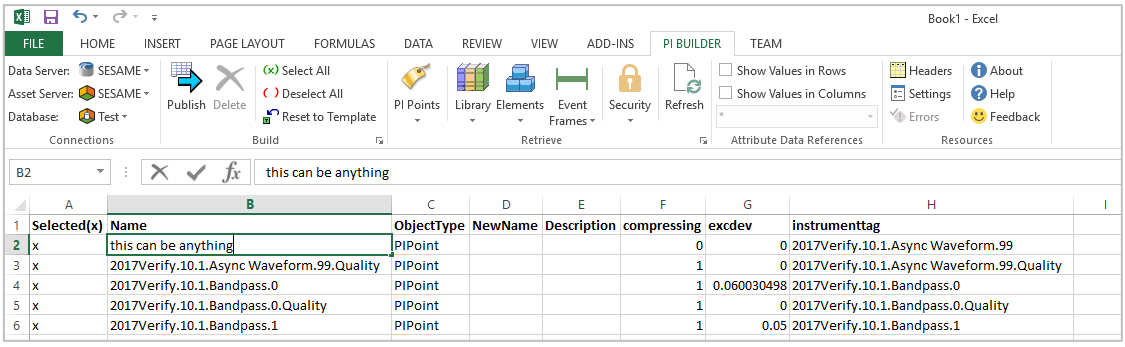
- Movable AF Elements

Extended properties are used to keep track of SETPOINT® rack identifiers. This allows users to move channel any they would like them in their AF database.



- Re-namable and pre-created PI Tags

PI tag names may now be renamed or manually created so that administrators can use their own naming conventions. The SETPOINT® PI Adapter uses the instrument tag instead to identify rack data (similar to how PI Interfaces work). PI Builder can be used to manage this process.



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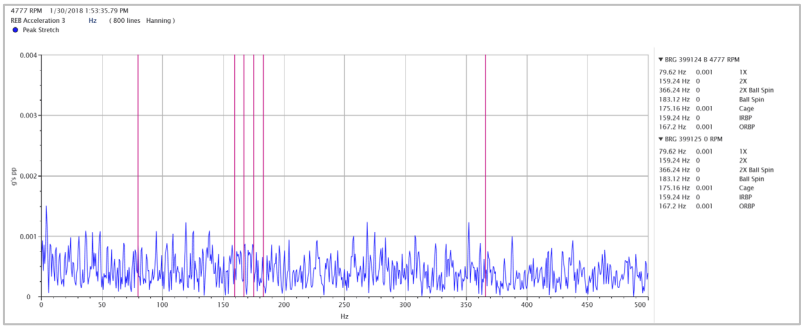
21.3 Plots

Plot enhancements have been made better format data, and to provide additional features for Rolling Element Bearing machinery.

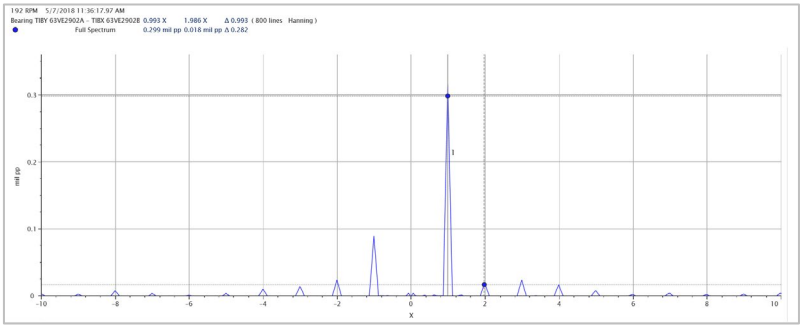
21.4 Plot Cursors

The following cursors have been added to plots:

- REB Fault Frequency Markers to allow fundamental REB fault frequencies from multiple bearings to be presented on spectrum data
- PI tools such as PI Builder or PI System explorer may be used to import a bearing fault frequency database, and configure bearings that utilize that database.



- Difference Cursor for trends, bode, spectrums, and time base waveforms



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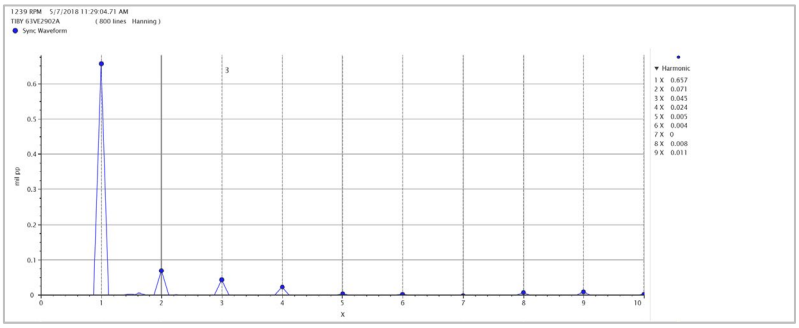
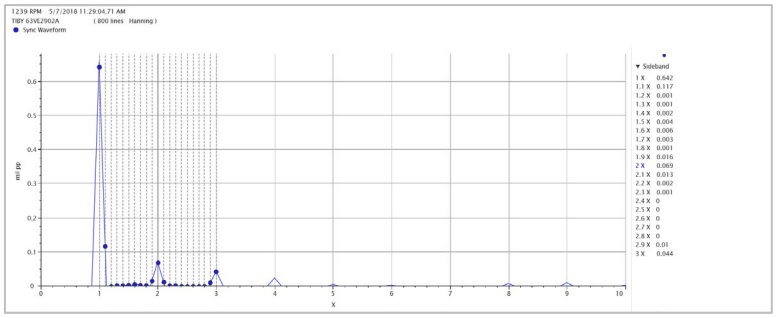
- Harmonic Cursor



- Sideband Cursor



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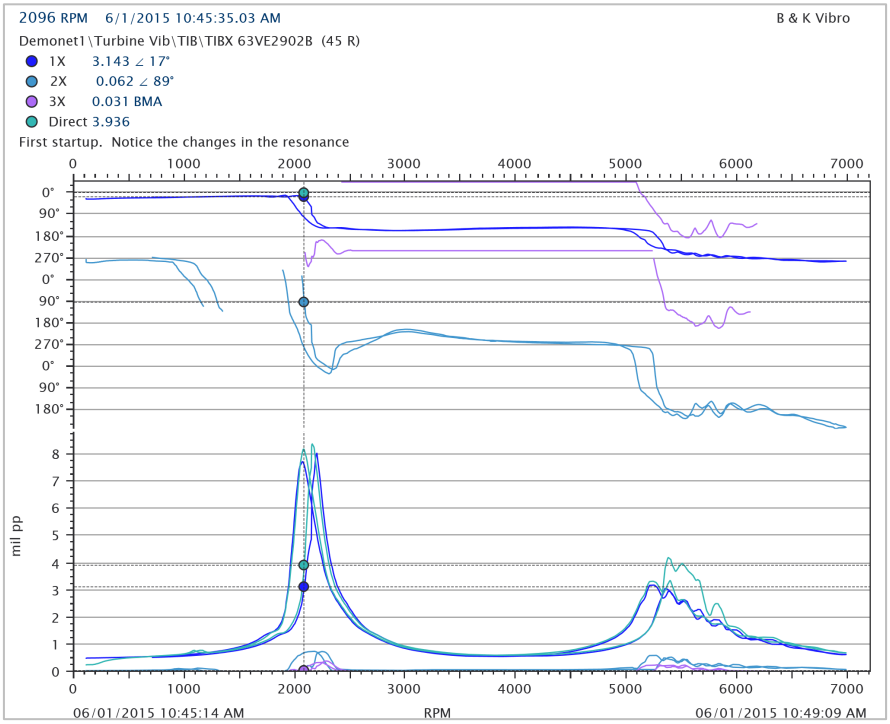
21.5 Plot Headers

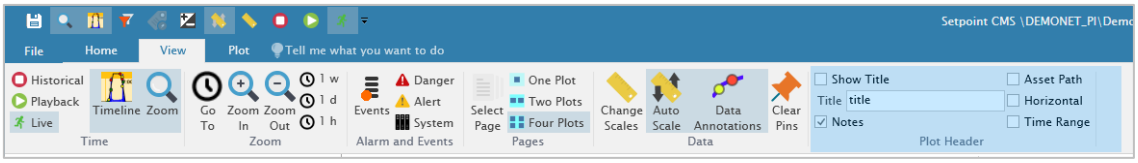
Plot headers have been redesigned to consistently show information in the same location for each plot. In addition, plots can optionally show the following features:

- Title
- Notes
- Full asset path
- Horizontal vs vertical layouts
- Time range

In addition, reference data values and names are displayed when plots are compensated. Here is an example of the new plot headers:



Optional features can be configured on the View ribbon tab in the Plot Header section:



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21.6 Polar Plot

The polar plot has the following enhancements:

- Orientation of Phase Trigger is labeled on plot
- Always draw scale to the edge of the plot
- Full scale is labeled
- Larger direction of rotation arrow
- Vector cursor presented as an arrow
- Time range of data is always visible
- Optimize space used to show data

Here are before and after screenshots:

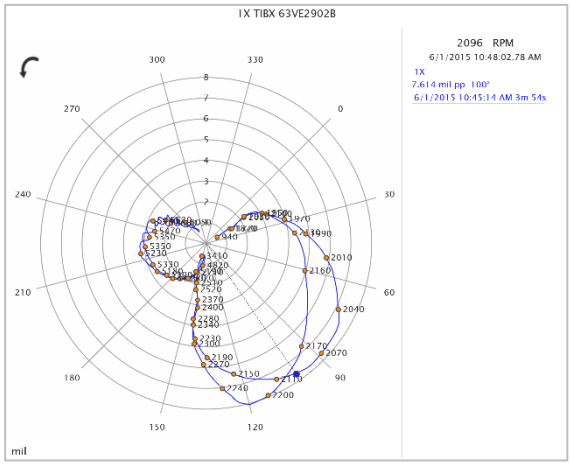

Figure 21-5) Previous Polar Plot Format

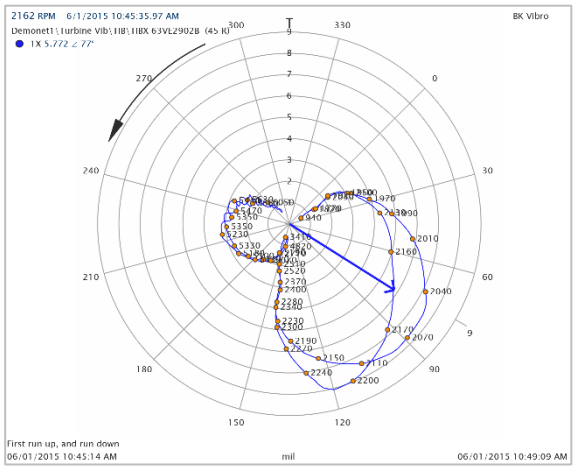

Figure 21-6) New Polar Plot Format

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Polar and shaft center line plots have an option to plot time labels on the trace.

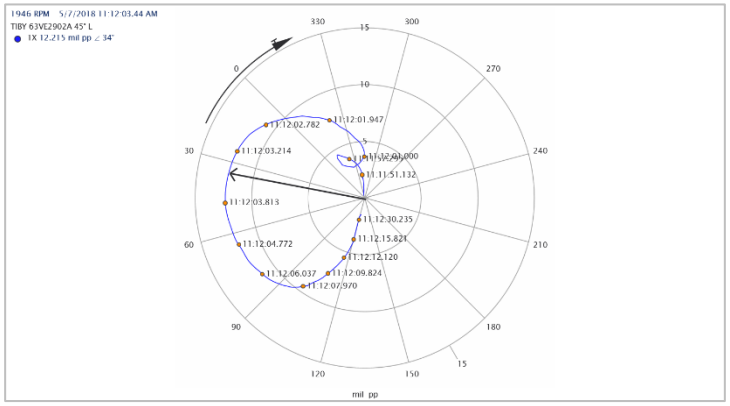

Figure 21-7) Polar plot with time labels

21.7 AVEVA™ PI Vision™

A symbol is available to launch CMS directly from AVEVA™ PI Vision™. Previously the recommended operator display software was PI ProcessBook, but PI Vision™ is more suitable for large systems. PI Vision™ is now structured as an ordering option with CMS.

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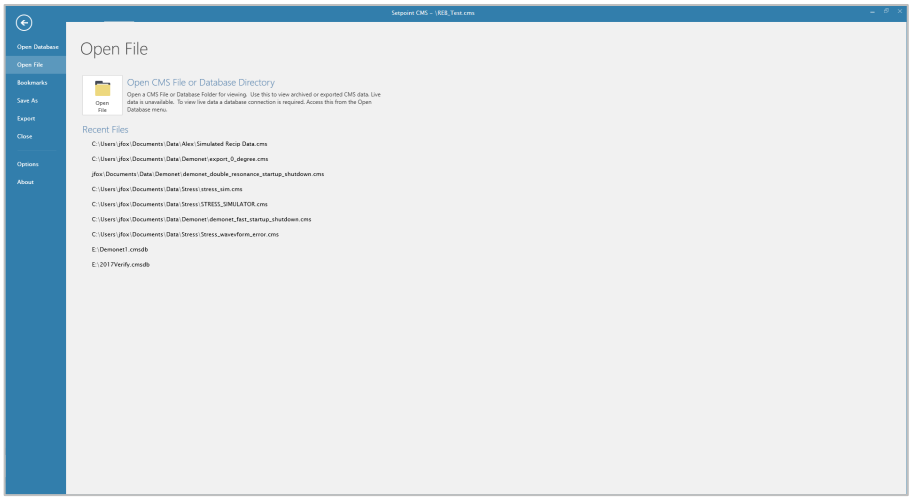
21.8 Defects and Enhancements

The following defects and enhancements have also been made:

- Waterfall and Cascade plots were not plotting correctly when exporting to word documents
- Search can now find bookmarks and channels by name
- Fixes to always automatically update configuration for CMS-XC
- Fix issue with waterfall and cascade data not always loading
- All plot types may now be accessed from the quick access menu
- Fixed issue with waveform tick trends were not scaling correctly for SI units
- Reference to “Metrix” have been removed from AF
- Fixes for loading CMS files when app is already running
- Units may be changed from the change scales pane
- Fix issue with plots not clearing when turned off
- Reduce necessary access to write to AF database
- Option to show Direct measurements on bode plot
- REB Rule set and bearing database modification (contact BK Vibro support for more information)
- Test stand template reports have been restored. Template based reports allows a reuse of pre-built reports across multiple test runs. This had previously been removed from the product after revision 2.50
- Waterfall and Cascade plots can optionally show amplitude scales (3D Plot Walls)
- Icon and loading status is now shown for connected database type

Figure 21-8) - Connected Database Icon

- Recently used CMS files can be quickly accessed from the open file menu.



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22 CMS 2017 (v4.0.1212)

SETPOINT® CMS 2017 provides a wide range of solutions to store and utilize condition monitoring data, regardless of what network or IT infrastructure are available on site.

22.1.1 AVEVA™ PI System™

The primary means of accessing CMS data is via the AVEVA™ PI System™. The PI System™ provides a performant, highly available solution where important features such the following are available:

- Scale to unlimited assets
- Integration with process data
- Train diagrams and other operator displays
- Redundant data base collectives
- Advanced analytics
- Notifications
- Asset modeling
- Web access
- Mobile access
- Cloud access
- Multi-tier networks
- IT managed
- Advanced security

22.1.2 CMS Database

When the PI system is not available due to limited or no network access or when additional redundancy is required SETPOINT® provides alternative means of capturing and accessing CMS data. These options include the following:

- **CMS - SD** stores CMS data on an SD card. This allows CMS data to be recorded with no server or network. Retrieve the SD card to view data within CMS client.
- **CMS - HD** stores CMS data integral to the rack. This allows CMS data to be recorded with no server or network. This is best suited for sites where network access is limited, or IT support is minimal. It is also good for providing redundant data so nothing is lost if the network goes out for an extended period of time.
- **CMS - XC** allows CMS data to be stored and accessed on a computer. Multiple VC-8000 racks may have data aggregated together to view in a CMS client.

When CMS databases are offline they may later be imported into the PI System. All CMS database solutions may be used together with the AVEVA™ PI System™.

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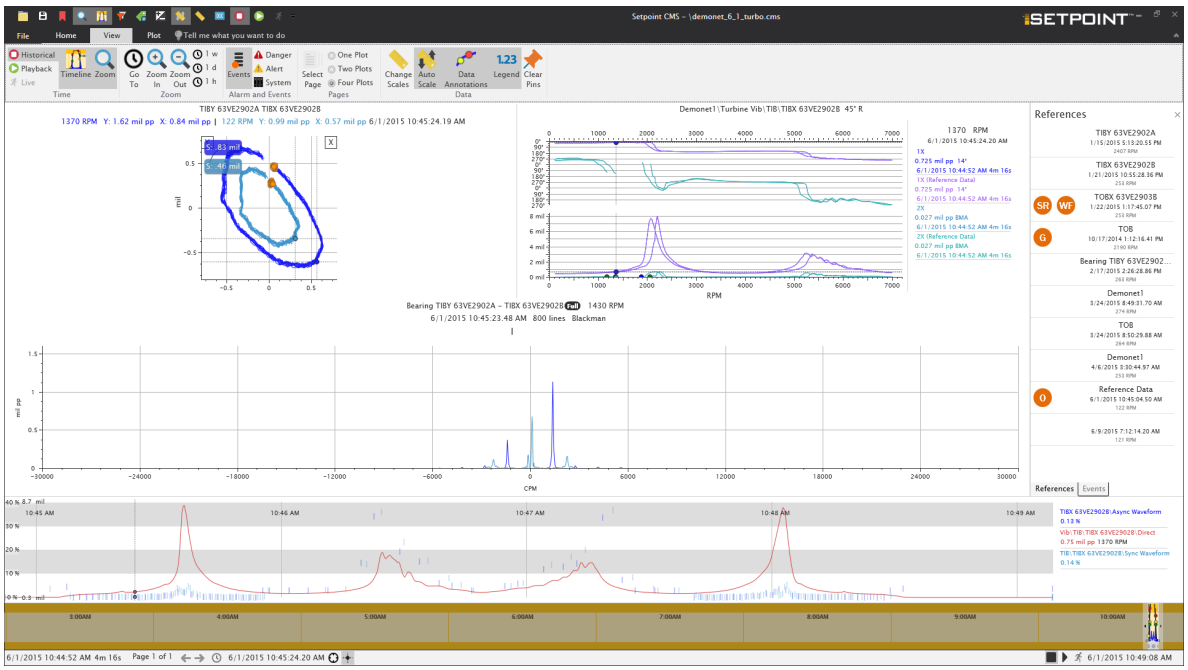
22.1.3 CMS Files

CMS files may be exported and shared to allow easy access to CMS data even when remote network access is not available.

A backup plan is recommended for all solutions.

22.1.4 Overlays

Add overlays to compare two disparate events.



22.1.5 Cursors

Cursors may now do the following:

- Track during playback or live mode
- Synchronize cursors by clicking on the on the cursor
- Persist position when plot is not on screen
- Toggle on and off across all plots

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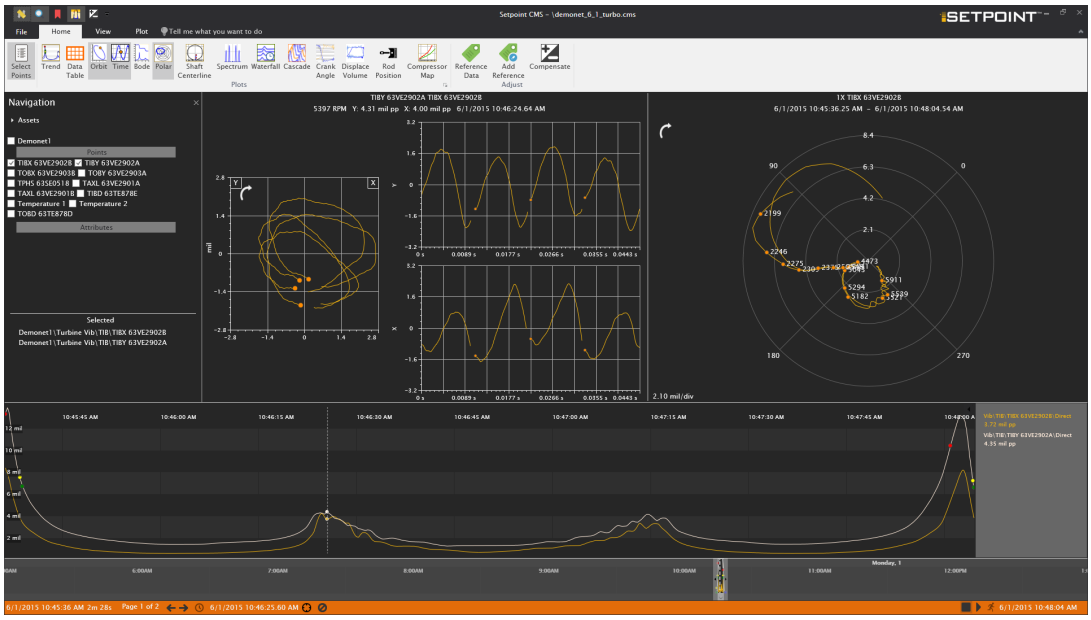
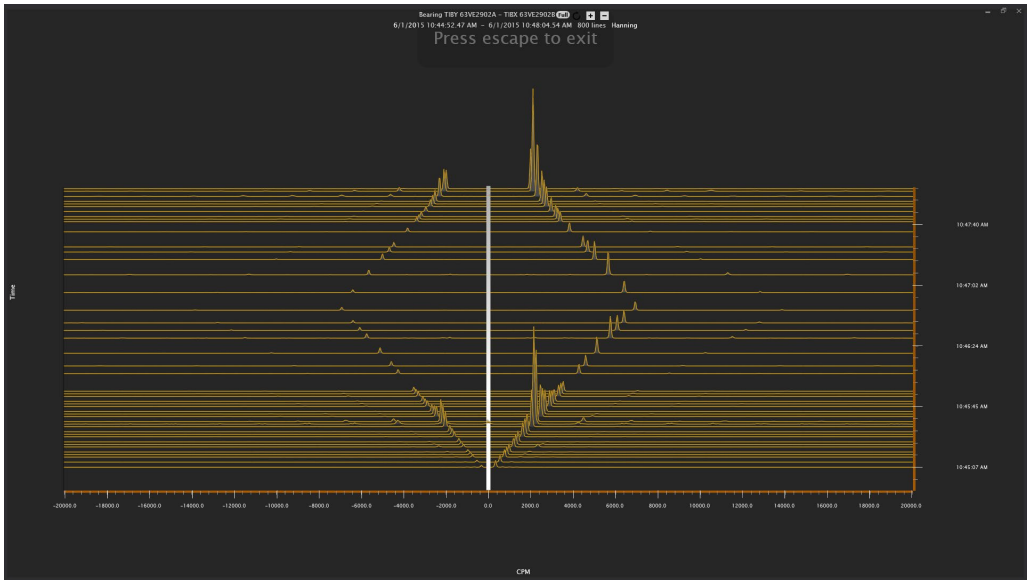
22.1.6 High Contrast Theme

Change the theme to provide a high contrast experience.



22.1.7 Full Screen Plots

Go full screen to see all the rich detail on a plot.



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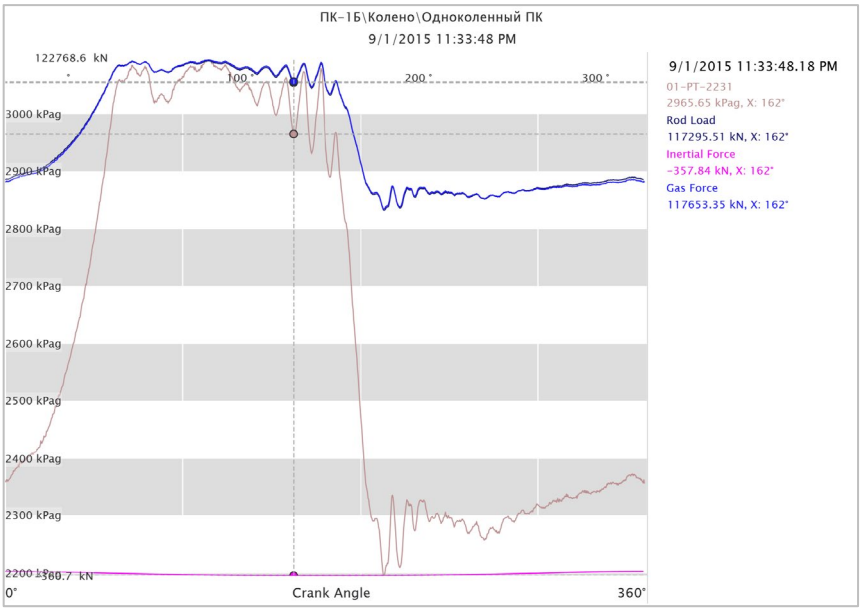
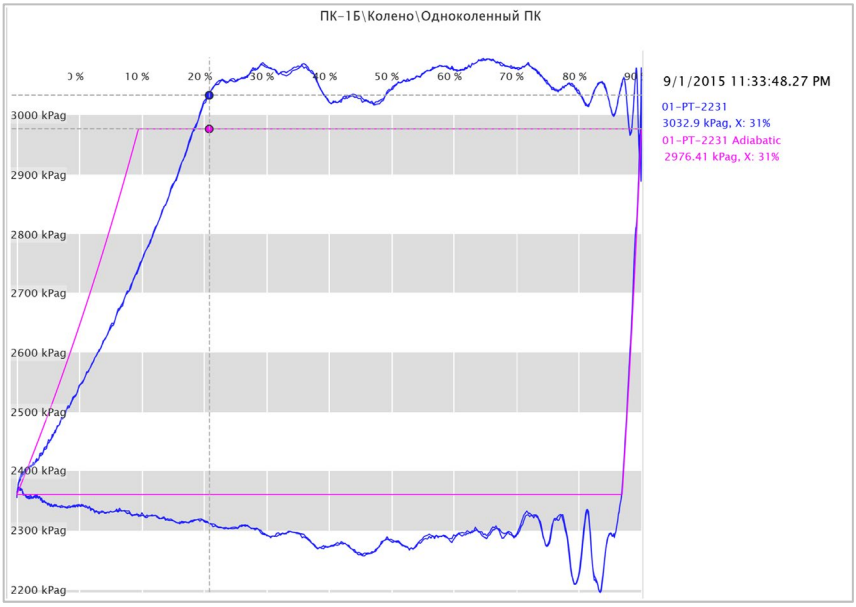
22.1.8 Recip Plot Enhancements

Recip plots can now be used individually per crank angle, displaced volume, or rod position. All Recip measurements for a single throw are overlaid on a single plot.





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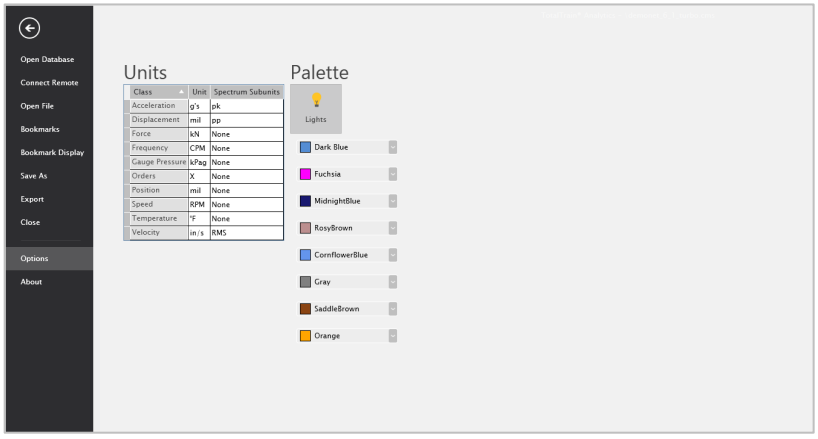
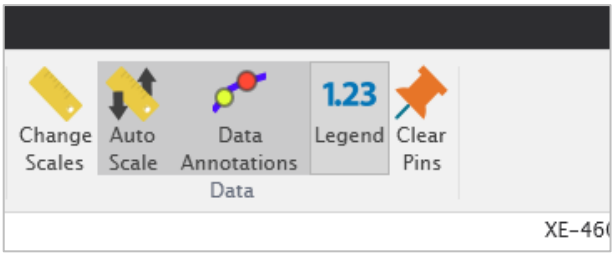
22.1.9 Trace Color Palette

Select which trace colors to see.



22.1.10 Toggle Legends

Toggle cursor legends off and on.



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22.1.11 Other Enhancements and Bug Fixes

The following enhancements and defect fixes have been added for this release of SETPOINT® CMS:

1. Direct measurements on Bode plot.
2. View all vector measurement for a channel on one bode plot.
3. Double Click on CMS File to launch CMS client.
4. Button to clear all selected points.
5. Manually enterable minimum scales
6. Tooltips to identify trace, and cursor
7. Fix waveform ticks to show and hide correctly.
8. Fix data annotations to hide when trace is disabled.
9. Fix cursor keyboard input fixes for orbit time base plot.
10. Fix Waterfalls and cascades to retrieve data with more than 1 hour gaps.
11. Fix CMS client show all waveform data when using CMS SD databases for waterfalls and cascades.
12. Fix integrated units in CMS files
13. Fix phase labels to a value range of 0 to 360
14. Fix issue with units disappearing on trend plot

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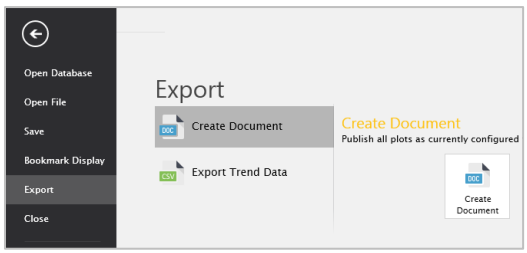
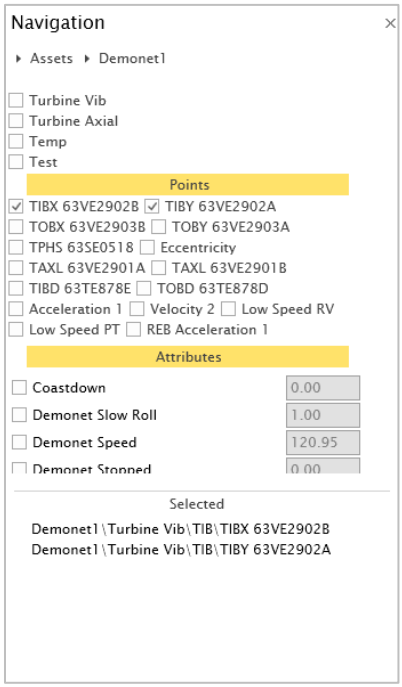
23 Version v3.00

1. View CMS SD data that was collected directly in a VC-8000 rack.
2. Export to Word, and Excel with the click of a button.



3. Points maybe be selected immediately without navigating up and down hierarchies.



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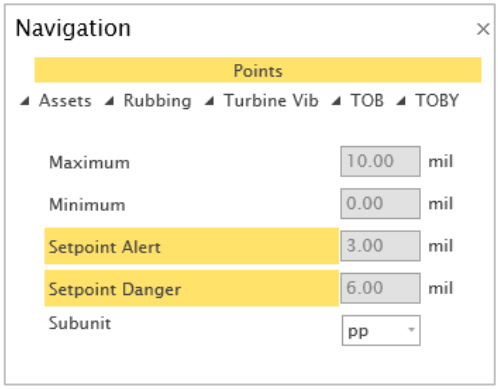
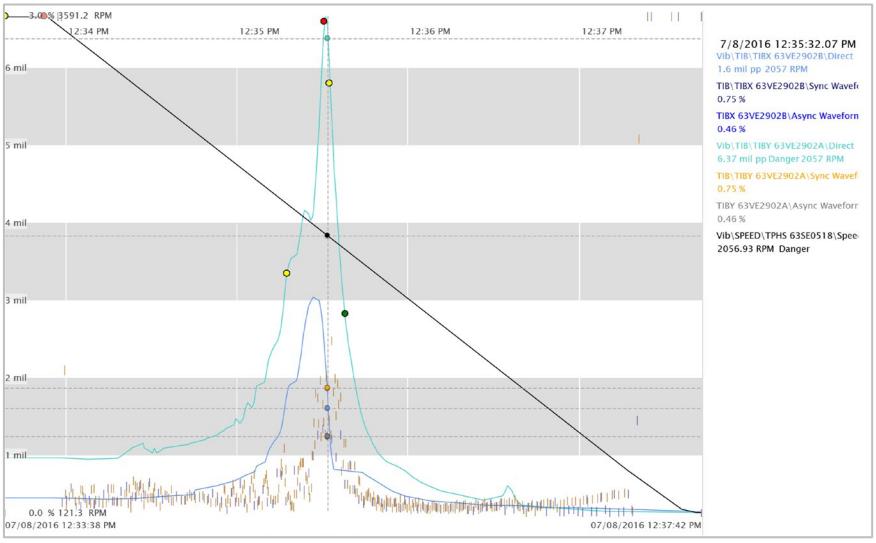
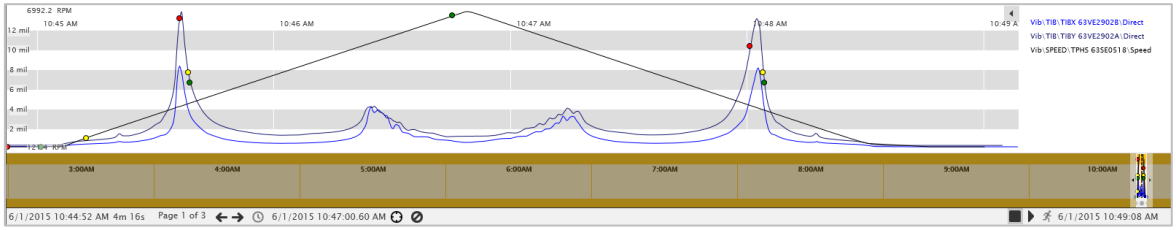
4. All vibration and process data available in AF/PI or CMS files may be displayed in one plot. Select any attribute on the navigation pane to add it to the trend.





5. Timeline improved to display all configured measurements.



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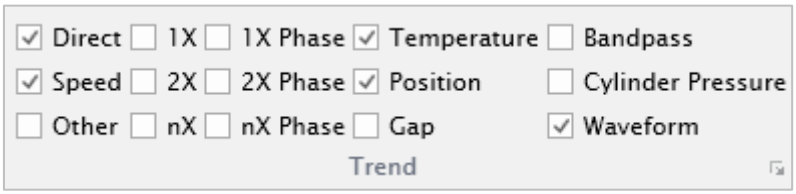
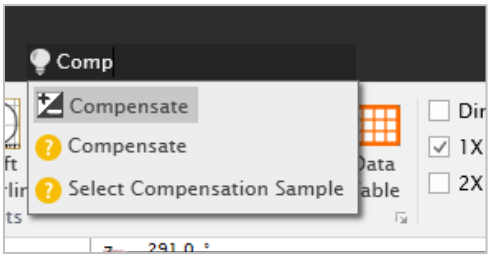
6. Measurement filters may be used to quickly select what types of data to show on the trend

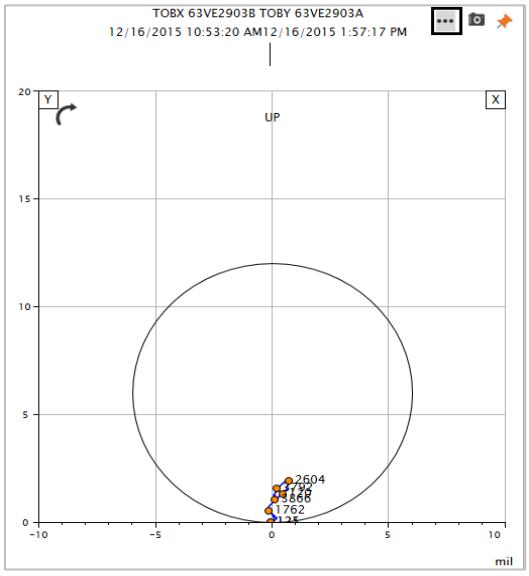


7. Cannot figure how to do something? Search for it in the 'tell me what you want to do' box. Then click a feature directly to activate it or bring up a help topic with more details.



8. All plot settings are now available from the plot tab.

9. On the shaft centerline plot use the '…' button to change shaft centerline settings for bearing clearance, machine orientation, and shaft reference location.



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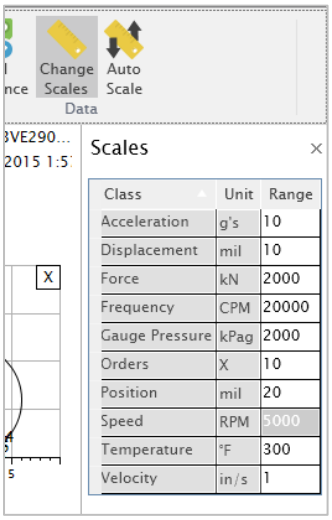
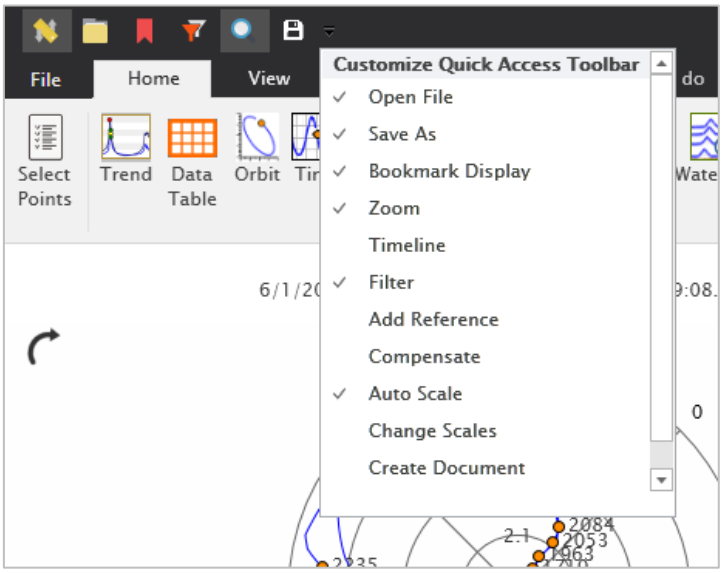
10. Scales may be changed on a side pane without leaving the main screen.



11. Quick access to items can be configured to optimize user workflow.



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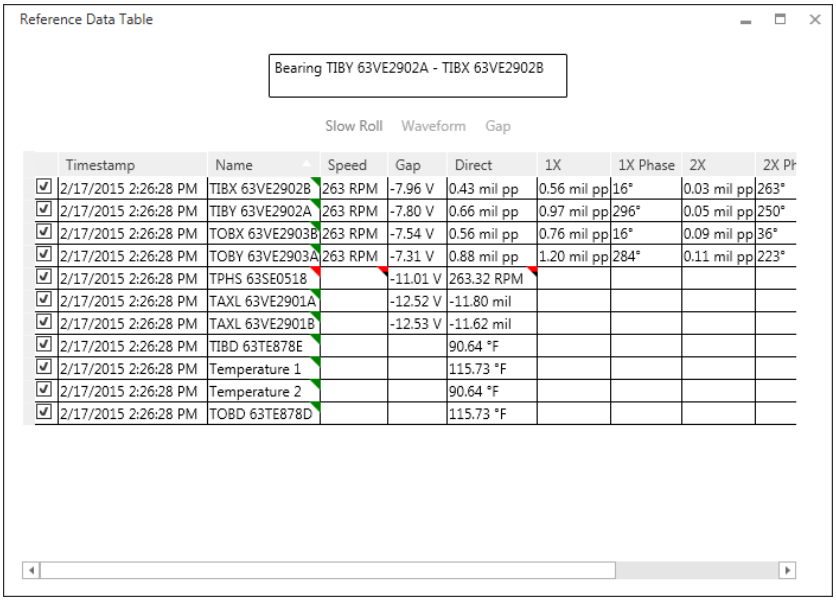
12. Each channel can be adjusted to find the perfect reference values.



Timestamp	Name	Speed	Gap	Direct	1X	1X Phase	2X	2X Ph
2/17/2015 2:26:28 PM	TIBX 63VE2902B	263 RPM	-7.96 V	0.43 mil pp	0.56 mil pp	16°	0.03 mil pp	263°
2/17/2015 2:26:28 PM	TIBY 63VE2902A	263 RPM	-7.80 V	0.66 mil pp	0.97 mil pp	296°	0.05 mil pp	250°
2/17/2015 2:26:28 PM	TOBX 63VE2903B	263 RPM	-7.54 V	0.56 mil pp	0.76 mil pp	16°	0.09 mil pp	36°
2/17/2015 2:26:28 PM	TOBY 63VE2903A	263 RPM	-7.31 V	0.88 mil pp	1.20 mil pp	284°	0.11 mil pp	223°
2/17/2015 2:26:28 PM	TPHS 63SE0518		-11.01 V	263.32 RPM				
2/17/2015 2:26:28 PM	TAXL 63VE2901A		-12.52 V	-11.80 mil				
2/17/2015 2:26:28 PM	TAXL 63VE2901B		-12.53 V	-11.62 mil				
2/17/2015 2:26:28 PM	TIBD 63TE878E			90.64 °F				
2/17/2015 2:26:28 PM	Temperature 1			115.73 °F				
2/17/2015 2:26:28 PM	Temperature 2			90.64 °F				
2/17/2015 2:26:28 PM	TOBD 63TE878D			115.73 °F				

13. Cascade and waterfall plots may use order tracking cursors
14. Data playback now updates in 100 ms increments which allows
15. Data collection has been improved to provide an Exception Deviation Anti-Aliasing Filter, optional averaging, and high resolution transient collection for all measurements.

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24 Version v2.52

The following changes have been made for SETPOINT® CMS Client, and SETPOINT® PI Adapter for revision 2.52:

1. **Pinned Plots**
   Flagging now pins not only the plot type, but the exact measurement point(s) selected. This will allow plots to display side-by-side Bode plots (and any other plot) from different machine cases.
2. **Report Creation**
   Developed primarily for customers (such as Timken and Toshiba) using CMS on test stands, but usable by any customers that need to generate reports. The reports use Microsoft WORD and automatically populate a document with plots, points, etc. as set up by the user in templates (see below). The only thing the user has to set before running a report is the data range selected (begin, end, and cursor position).
3. **Report Template Creation**
   Creates Microsoft WORD templates with specific plots in specific locations in the document. Can use any boilerplate verbiage, graphics, etc. of the user's choice. Automatically grabs screen captures of CMS plots and places them in the designated location.
4. **NX Transient Data**
   Now collected with higher resolution to provide more usable plots
5. **Measurement/Channel Status Bubbles**
   Alarm "bubbles" superimposed on plots now reflect the specific measurement(s) selected. For example, if a trend of gap voltage is display, the alarm bubbles will only reflect gap voltage alarms – not any alarm for that channel. It thus filters alarms. The time slider at the bottom of the screen continues to reflect all alarms for the channel, thus providing a channel overview of alarms on top of the overall trend.
6. **Plot Ordering**
   Allows users to display plots and points in a particular order of their choosing. This is done by using the description field for points in AF. The CMS manual provides details on the conventions to use in AF descriptions to force points and plots to appear in a particular order.
7. **New Waterfall, Cascade Perspective**
   3D plots previously used a vanishing point perspective and could make it difficult to interpret data. These plots now reflect a strictly orthogonal perspective so that spectral lines no longer "lean" inward or outward. The ability to rotate 3D plots is still present.
8. **Saving/Opening data using .CMS files**
   Beginning with release 2.50 (see item #9 in list below), CMS software now allows the user to save their selected time range and point(s) to an archive (.cms) file. This file can be shared and opened by anyone with CMS Display installed, and does not require AF client. When installing CMS Display, it will now automatically check the user's computer for the presence of PI AF Client. If present, CMS Display will install such that the user will be able to connect to a PI Server (which required AF Client) or open a .cms file (archive – does not require PI AF). If not present, CMS Display will still install, but the user will only be able to open .CMS files – the option to connect to a PI Server will be grayed out. This release fixed some issues that prevented users from opening older .CMS files.

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9. **Global Default Database**
   This enhancement was in response to a request by Eastman Chemical such that a particular PI Server could be designated as a default and would automatically connect with CMS Display is launched, rather than prompting the user to browse to and open the correct server each time.
10. **Test Runs on home screen**
    This feature is primarily for users with CMS on their test stands. It allows them to designate and bookmark test runs, for easy retrieval later.

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25 Version v2.50

The following changes have been made for SETPOINT® CMS Client, and SETPOINT® PI Adapter revision 2.50:

1. Plot Enhancements
   - **a)** Unobtrusive cursor labels
   - **b)** Fine grain keyboard cursor control (1 / 700 of screen, or 1 RPM), similar to OSI products
   - **c)** Native Gap reference data for Shaft Centerline plots
   - **d)** Probe orientations, and direction of rotation drawn on plot
   - **e)** Full Spectrum plot (Spectrum, Waterfall, Cascade)
   - **f)** Full Spectrum cursors
   - **g)** Integrated Spectrum capability
   - **h)** Time base and orbit plots showing amplitudes in header
   - **i)** Filter plots showing amplitude and phase in header
   - **j)** Units for Data Table Values
   - **k)** Page dot selections, and previews
   - **l)** Always show associated speed in timeline
   - **m)** Preferences for maximum number of traces, and orbit revolutions
   - **n)** Manually type in desired data range
   - **o)** Data Table may be sorted
   - **p)** Rod Load, and Rod Position plots
2. Transient Data Improvements
   - **a)** Transient detection to show rich startup/shut down data no matter what the time range is (infinite zoom)
   - **b)** Transient phase data capture to optimize phase data collection rate during steady state, but still get very rich data during a transient event
   - **c)** Bug: Fixed polar plots round corners using polar coordinates and more accurately present polar data.
3. Sub-second updates during playback of historical data
4. Sub-second updates during live (Running Man) mode and performance improvements make the application more responsive
5. Preference to turn on trends for all measurements (excluding phase)
6. Persist flagged plots with bookmarks
7. Waterfall and Cascade styling changes to draw lines instead of 3D surfaces
8. Data Collection Enhancements
   - **a)** Compression settings optimized based on system noise floor
   - **b)** Start, and stop collection within Adapter
   - **c)** Capture test runs in a multi-user environment
9. Data export for remote machinery diagnostics (export and then view up to one week of data remotely without pi installed)
10. PI System auditing to support optimization of pi tag compression settings
11. CMS and Adapter localization enhancements (with Russian language support)
12. Data annotations for waveform tick marks

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13. Bug: Polar data is now correctly oriented against direction of rotation
14. Bug: Stop interpolating invalid values on data table
15. Bug: Display Bode, and Polar samples, and scales between 0 and 360
16. Bug: Hide RPM in plot header when it does not apply
17. Bug: Fix number of spectral lines (last bucket was not shown)
18. Bug: Fix compression settings for integrated units
19. Bug: Fix phase values to be compressed when below min amplitude
20. RAID 5 tested with CMS
21. OSI AF 2014 R2 support

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Contact Us

Brüel & Kjær Vibro GmbH
Wittichstrasse 6
64295 Darmstadt
Germany

Phone: +49 6151 428 0
Fax: +49 6151 428 1000

Brüel & Kjær Vibro A/S
Lyngby Hovedgade 94, 5 sal
2800 Lyngby
Denmark

Phone: +45 69 89 03 00
Fax: +45 69 89 03 01

BK Vibro America Inc.
1100 Mark Circle
Gardnerville NV 89410
USA

Phone: +1-775-552-3110

General e-mail
info@bkvibro.com

Homepage
www.bkvibro.com

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Subject to technical changes