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RELEASE NOTES

vibro-meter®

VibroSight® software version 7.0

VibroSight
Machinery Protection & Condition Monitoring Software

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PREFACE

About these release notes

This document provides important information about the VibroSight® software from Meggitt SA. It is applicable to all VibroSight-based condition monitoring systems using the versions of software described by this document, namely:

- VibroSight software version 7.0.0 (part number (PNR) 609-004-000-052).

This document contains information about changes to the software since the previously released version (VibroSight 6.1.x), such as new features and improvements, solved problems and bug fixes, and hardware and software compatibility.

For more general information on the actual software, or the entire machinery protection system (MPS) and/or condition monitoring system (CMS), refer to the following Meggitt SA documentation:

VibroSight® software data sheet
(document reference 660-020-005-223A)

Getting started with VibroSight® installation guide
(document reference 660-010-006-230A)

VibroSight® help

VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring module data sheet
(document reference 268-121)

VM600^{Mk2} RLC16^{Mk2} relay module data sheet
(document reference 268-125)

VM600^{Mk2} CPUM^{Mk2} + IOCN^{Mk2} rack controller and communications interface module data sheet
(document reference 268-135)

VM600^{Mk2}/VM600 XMx16 + XIO16T extended condition monitoring modules data sheet
(document reference 660-020-010-210A)

VibroSight application notes and technical notes.

Users who are familiar with VibroSight may also find it useful to refer to the release notes included in earlier versions of the software:

- VibroSight 6.1.0 (document reference 660-010-013-232A)
- VibroSight 6.0.0 (document reference 660-010-013-231A)
- VibroSight 5.1.0 (document reference 660-010-013-230A)
- VibroSight 5.0.0 (document reference 660-010-013-229A)
- VibroSight 4.1.0 (document reference 660-010-013-228A)

- VibroSight 4.0.0 (document reference 660-010-013-227A)
- VibroSight 3.8.0 (document reference 660-010-013-226A)
- VibroSight 3.7.0 (document reference 660-010-013-225A)
- VibroSight 3.6.0 (document reference 660-010-013-224A)
- VibroSight 3.5.0 (document reference 660-010-013-223A)
- VibroSight 3.4.0 (document reference 660-010-013-222A)
- VibroSight 3.3.0 (document reference 660-010-013-221A)
- VibroSight 3.2.0 (document reference 660-010-013-220A)
- VibroSight 3.1.0 (document reference 660-010-013-219A)
- VibroSight 3.0.0 (document reference 660-010-013-218A)
- VibroSight 2.12.7 (document reference 660-010-013-217A)
- VibroSight 2.12.6 (document reference 660-010-013-216A)
- VibroSight 2.12.5 (document reference 660-010-013-215A)
- VibroSight 2.12.4 (document reference 660-010-013-214A)
- VibroSight 2.12.3 (document reference 660-010-013-213A)
- VibroSight 2.12.2 (document reference 660-010-013-212A)
- VibroSight 2.12.1 (document reference 660-010-013-211A)
- VibroSight 2.12.0 (document reference 660-010-013-210A)
- VibroSight 2.11.6 (document reference 660-010-013-209A)
- VibroSight 2.11.5 (document reference 660-010-013-208A)
- VibroSight 2.11.4 (document reference 660-010-013-207A)
- VibroSight 2.11.3 (document reference 660-010-013-206A)
- VibroSight 2.11.2 (document reference 660-010-013-205A)
- VibroSight 2.11.1 (document reference 660-010-013-204A)
- VibroSight 2.11.0 (document reference 660-010-013-203A)
- VibroSight 2.10.1 (document reference 660-010-013-201A)
- VibroSight 2.10.0 (document reference VIBROSIGHT-RN/E)
- VibroSight 2.9.7 (document reference VIBROSIGHT-RN/E)
- VibroSight 2.9.6 (document reference VIBROSIGHT-RN/E)
- VibroSight 2.9.5 (document reference VIBROSIGHT-RN/E)
- VibroSight 2.9.4 (document reference VIBROSIGHT-RN/E)

- VibroSight 2.9.2 (document reference VIBROSIGHT-RN/E)
- VibroSight 2.9.1 (document reference VIBROSIGHT-RN/E).

Use of the release notes

You should read those sections that are most relevant to you and then keep the document for future reference.

Version identifiers

A complete VibroSight software version number has four components that provide the following information:

- **x**.x.x.x, major release identifier – typically incremented once per year.
- x.**x**.x.x, minor release identifier – incremented for each release with typically four scheduled releases per year.
- x.x.**x**.x, “hotfix” release identifier – 0 for a normally scheduled release and incremented for each hotfix release.
- x.x.x.**x**, software build number – for internal use.

For each scheduled release of VibroSight, at least one of the first two digits changes (**x**.**x**.x.x).
For unscheduled “hotfix” releases, which are occasionally required to solve urgent problems, the third digit changes (x.x.**x**.x).

The version identifiers for installed software appear in the Help About box (obtained using **Help > About …** in any VibroSight software module).

Terminology

To distinguish between the different Meggitt SA products that can be used with the VibroSight® software, the following terminology is used in this document:

- VM600Mk2/VM600 modules/card(s) – to refer to VibroSight compatible cards that are installed in a VM600Mk2/VM600 rack (that is, the first generation of VM600 systems).

  The currently available VM600Mk2/VM600 modules/cards that are designed for operation with the VibroSight software are the XMx16 card pairs (XMC16 / XIO16T, XMV16 / XIO16T and XMVS16 / XIO16T) and the CPUx card pairs (CPUR2/IOCR2 and CPUR/IOCR).

  Note: It is important to note that VibroSight Configurator is still used for the configuration of these VM600Mk2/VM600 modules/cards/systems.

  Where XMx16 is used in this document, it refers to XMC16 / XIO16T, XMV16 / XIO16T and XMVS16 / XIO16T cards, unless otherwise stated.

  Where CPUx is used in this document, it refers to CPUR2/IOCR2 and CPUR/IOCR cards, unless otherwise stated.

- VM600Mk2 module(s) – to refer to VibroSight compatible modules that are installed in a VM600Mk2 rack (that is, the second generation of VM600 systems).

  The currently available VM600Mk2 modules that are designed for operation with the VibroSight software are the MPC4Mk2 + IOC4Mk2 machinery protection and condition monitoring module, the RLC16Mk2 relay module and the CPUMMk2 + IOCNMk2 rack controller and communications interface module.

  Note: It is important to note that VibroSight Protect is used for the configuration of VM600Mk2 modules/systems.

- VibroSmart® module(s) or VibroSmart® device(s) – to refer to VibroSight compatible VibroSmart modules or devices that are used in a VibroSmart distributed monitoring system. The currently available VibroSmart modules and devices that are designed for operation with the VibroSight software are the VSI010, VSN010 and VSV30x.

  Where VibroSmart module is used in this document, it refers to the VSI010 and VSV30x modules, unless otherwise stated.

  Where VibroSmart device is used in this document, it can refer to the VSN010 device only, or to the VSI010 and VSV30x modules and the VSN010 device, unless otherwise stated.

  Where VSV30x is used in this document, it refers to VSV301 and VSV300 modules, unless otherwise stated.

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1 Licensing

Since VibroSight 4.0.0, the ability to install and run VibroSight software updates and upgrades depends on the purchased “Updates and support” package.

NOTE:	VibroSight 7.0.0 is a major level release and a new license key file is not required for updates and upgrades from VibroSight 6.x.x. However, a new license key file is required for updates and upgrades from VibroSight 3.8.x or earlier.

For further information on licensing or to obtain a new VibroSight license key file, contact Meggitt SA customer support. See 7 Customer support.

2 Features

General

2.1 Support for VM600^{Mk2} – the next generation of VM600 machinery protection and condition monitoring system

VibroSight 7.0.0 introduces full support for the second generation of VM600 rack-based machinery protection and condition monitoring systems – known as VM600^{Mk2} – for condition monitoring applications.

More specifically, with VibroSight 7.0.0 and new condition monitoring firmware for the MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring module, VibroSight / VM600^{Mk2} systems can now be used for condition monitoring applications, in addition to the existing support for machinery protection applications (which has been available since VibroSight 6.0.0).

VM600^{Mk2} hardware

The Meggitt vibro-meter® VM600^{Mk2} rack-based monitoring system is the evolution of the original VM600 (VM600^{Mk1}) solution for the protection and monitoring of rotating machinery used in the power generation and oil & gas industries. VM600^{Mk2} solutions are recommended when a centralised monitoring system with a medium to large number of measurement points (channels) is required. VM600^{Mk2} is typically used for the monitoring and/or protection of larger machinery such as gas, steam and hydro turbines, and generators, smaller machines such as compressors, fans, motors, pumps and propellers, as well as balance-of- plant (BOP) equipment.

VM600^{Mk2} systems use existing VM600^{Mk2}/VM600 rack infrastructure (racks and power supplies) with a new set of VM600^{Mk2} modules:

- VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring module
- VM600^{Mk2} RLC16^{Mk2} relay module
- VM600^{Mk2} CPUM^{Mk2} + IOCN^{Mk2} rack controller and communications interface module.

These VM600^{Mk2} modules use the latest technology to offer improved performance compared to the existing first-generation VM600 (VM600^{Mk1}) MPC4 / IOC4T machinery protection card pair, RLC16 card, and CPUx / IOCx rack controller and communications interface card pairs.

NOTE: The VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring module is a significant development in machinery monitoring because in addition to matching or bettering the outstanding specifications and performance of the MPC4 / IOC4T, the MPC4^{Mk2} + IOC4^{Mk2} now also supports condition monitoring – that is, machinery protection and condition monitoring are now available from a single module.

VM600^{Mk2} software

The VibroSight software includes significant updates to all of its software modules (VibroSight Server and VibroSight client application modules (System Manager, Vision, etc.)) in order to support the new VM600^{Mk2} system and modules.

Significantly, VibroSight 7.0.0 now includes VibroSight Capture, a new VibroSight client application dedicated to the configuration and operation of VM600^{Mk2} systems (specifically MPC4^{Mk2} + IOC4^{Mk2} modules) for condition monitoring applications.

As a result, VibroSight now has three separate software modules that are used for the configuration of different VM600^{Mk2}/VM600 system configuration:

- VibroSight Protect supports the configuration and operation of the machinery protection (MPS) functionality for a VM600^{Mk2} system (MPC4^{Mk2} + IOC4^{Mk2}, RLC16^{Mk2}, CPUM^{Mk2} + IOCN^{Mk2}).
- VibroSight Capture supports the configuration and operation of the condition monitoring (CMS) functionality for a VM600^{Mk2} system (MPC4^{Mk2} + IOC4^{Mk2}).
- VibroSight Confgurator supports the configuration of VM600 systems (XMx16 + XIO16T) for condition monitoring (CMS) applications and the configuration of VibroSmart® systems (VSB30x + VSB300, VSI010 + VSB010) for machinery protection (MPS) and/or condition monitoring (CMS) applications.

NOTE: Using separate VibroSight software modules – Protect and Capture – for the configuration and operation of VM600^{Mk2} functionality/systems helps ensure complete separation (“segregation”) of machinery protection (MPS) functionality and condition monitoring (CMS) functionality, when both are in a single VM600^{Mk2}/VM600 rack (for example, as required by API 670).

In this way, MPS and CMS configurations use separate tools with separate configuration files. So it is simply not possible for access/changes to a CMS (VibroSight Capture) to interfere in the operation of a MPS (VibroSight Protect) in the same VM600^{Mk2}/VM600 rack, whether by accident or intent.

(For reference, first-generation VM600 (VM600^{Mk1}) machinery protection systems (MPSs) are configurated and operated using the VM600 MPSx software.)

The other existing VibroSight software modules are used for the operation and management of VM600^{Mk2} modules in the usual manner. For example, VibroSight Vision is used to display measurements from MPC4^{Mk2} + IOC4^{Mk2} modules, while VibroSight System Manager is used to configure module Ethernet ports (IP addresses, etc.), update firmware, download log files, manage licensing and so on.

VibroSight Capture and VM600^{Mk2} systems

VibroSight Capture is the new VibroSight software module in VibroSight 7.0.0, featuring a modern and ultra-clear user-interface, designed for the configuration and operation of the condition monitoring (CMS) functionality for a VM600^{Mk2} system.

VibroSight Capture is used to add condition monitoring (CMS) functionality to the VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} module(s) in a VM600^{Mk2} system that has already been configured using VibroSight Protect. That is, the condition monitoring (CMS) configuration builds on the machinery protection (MPS) configuration (more specifically, the sensors / measurements chains and channels configured in VibroSight Protect).

NOTE:	It is important to note that when configuring a VM600^{Mk2} system for condition monitoring, the condition monitoring (CMS) configuration builds on the machinery protection (MPS) configuration. Therefore, VibroSight Protect must be used first in order to configure the complete VM600^{Mk2} system, including the MPC4^{Mk2} + IOC4^{Mk2} modules measurement channels and machinery protection (MPS) functionality, then VibroSight Capture must be used second in order to configure the MPC4^{Mk2} + IOC4^{Mk2} modules condition monitoring (CMS) functionality.

With VibroSight Protect, the signal list (Excel file) typically required by a VM600^{Mk1} system is no longer needed. A VM600^{Mk2} system configuration can now be created directly by an end-user and then used by Meggitt to build the system (as a VibroSight Protect configuration file contains all of the required information).

NOTE:	VibroSight Protect is completely separate and distinct to VibroSight Capture and VibroSight Configurator in order to ensure the complete separation (“segregation”) of machinery protection and condition monitoring in a VM600^{Mk2}/VM600 rack.

VibroSight® and VM600^{Mk2} MPC4^{Mk2} condition monitoring system licensing

In VibroSight® / VM600^{Mk2} systems (that is, the second generation of VM600 rack-based systems), the MPC4^{Mk2} + IOC4^{Mk2} module can provide machinery protection system (MPS) functionality and/or condition monitoring system (CMS) functionality, depending on the requirements of the application.

As already explained, the VibroSight® software uses completely separate software modules for the configuration and operation of VM600Mk2 systems depending on the functionality required:

- VibroSight Protect supports the configuration and operation of the machinery protection (MPS) functionality for a VM600Mk2 system.
- VibroSight Capture supports the configuration and operation of the condition monitoring (CMS) functionality for a VM600Mk2 system.

Using separate software modules (VibroSight Protect and Capture) for the configuration and operation of VM600Mk2 functionality/systems helps ensure complete separation ("segregation") of MPS and CMS in a single VM600Mk2/VM600 rack.

For example, a VibroSight® / VM600Mk2 system consisting of MPC4Mk2 + IOC4Mk2 modules can initially be installed and used as a MPS only. Then, CMS functionality can be quickly and easily added at any time by upgrading the licenses for the MPC4Mk2 + IOC4Mk2 module(s) and for VibroSight software, as required.

For the VM600Mk2 MPC4Mk2 + IOC4Mk2 machinery protection and condition monitoring module, machinery protection functionality is available by default for all versions of the module, while condition monitoring functionality is optional.

Accordingly, MPC4Mk2 condition monitoring can be used by either (1) ordering a version of the module with condition monitoring enabled or (2) ordering and uploading a condition monitoring license to a version of the module without condition monitoring enabled (using VibroSight System Manager).

See also 2.1.4 Managing condition monitoring licenses for VM600Mk2 MPC4Mk2 + IOC4Mk2 modules.

NOTE:	VM600Mk2 MPC4Mk2 condition monitoring also requires a VibroSight® software edition / license that supports condition monitoring.

2.1.1 VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} module – official launch of condition monitoring with new firmware and VibroSight software support

VibroSight 7.0.0 introduces full support for condition monitoring using the VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring module. This includes a new officially released version of condition monitoring firmware for the module (see 2.3 MPC4^{Mk2} + IOC4^{Mk2} module) and updates to the VibroSight software in order to support the configuration and operation of the condition monitoring system (CMS) functionality for the module – in addition to the existing support for machinery protection system (MPS) functionality for the module.

In general, for VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} systems:

- VibroSight Protect is used to configure VM600^{Mk2} systems (MPC4^{Mk2} + IOC4^{Mk2}, RLC16^{Mk2}, CPUM^{k2} + IOCN^{Mk2}) for machinery protection (MPS) applications.
- VibroSight Capture is used to configure VM600^{Mk2} systems (MPC4^{Mk2} + IOC4^{Mk2}) for condition monitoring (CMS) applications.
- VibroSight System Manager is used for the operation and management of modules, as usual.

2.1.2 VibroSight Capture

VibroSight Capture user interface

When VibroSight Capture starts, the Welcome screen displays a view that allows the user to start a new VM600^{Mk2} condition monitoring configuration (Start a new configuration), open an existing VM600^{Mk2} condition monitoring configuration file (Open Capture file) or connect to a running VM600^{Mk2} system (Connect to server). This is shown in Figure 1.

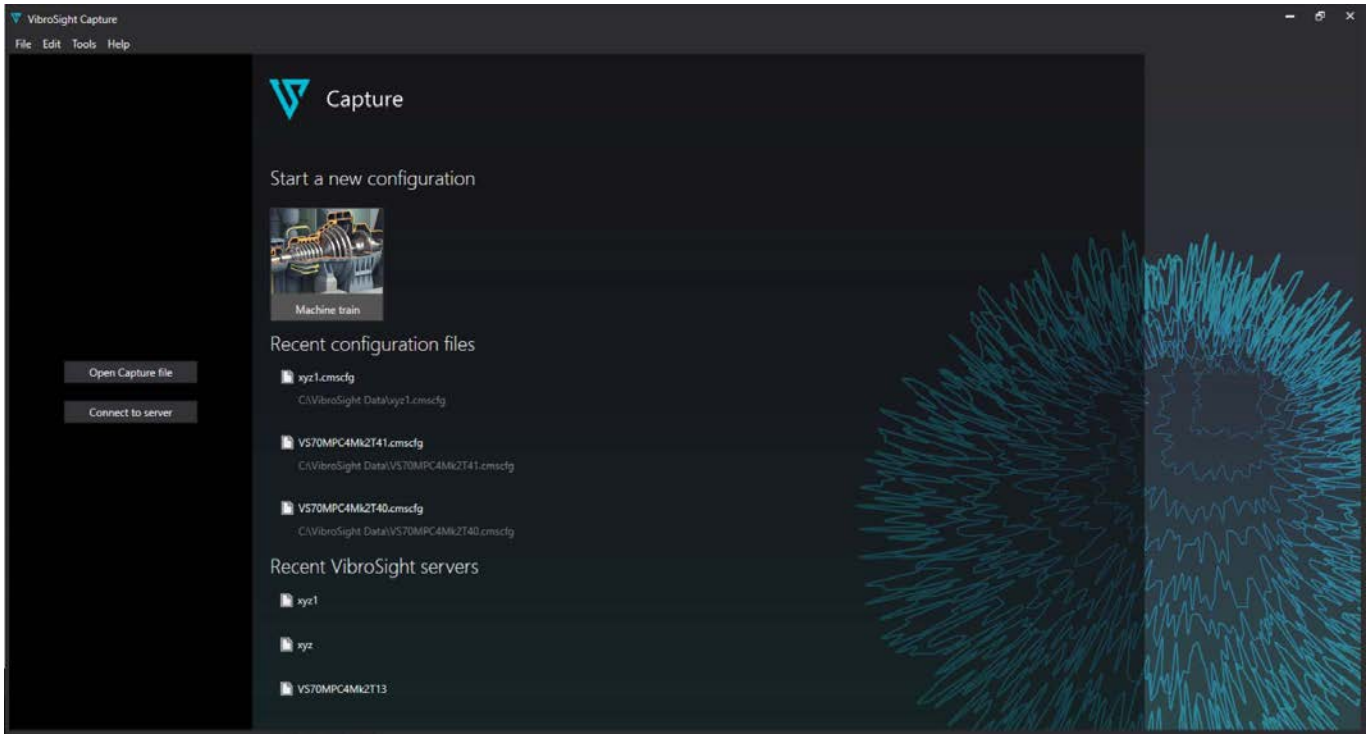

Figure 1: VibroSight Capture Welcome screen

Alternatively, the File menu command can be used to perform the same functions (New …, Open …, Connect …).

For example, to start working on a new VM600^{Mk2} condition monitoring configuration, click the Machine train image under Start a new configuration.

When working on a VM600^{Mk2} condition monitoring configuration (new or existing), the VibroSight Capture user interface consists of five main tabs/pages, Machinery, Systems, Connect, Configure and Data, which are used as follows:

- The Machinery tab/page is used for the configuration and display of general information (Machine train properties) important for the condition monitoring of the machinery being monitored, such as Layout, Reference speed, Direction of rotation, Reference direction, View direction.
  It is also used to visually define a machine train corresponding to the machinery being monitored using an embedded graphic library of machinery components (Machines, Bearings, Coupling, Shafts, etc.) and graphical user interface (GUI) framework.
  Note: The Machinery tab/page is roughly comparable to the Machinery view window in VibroSight Configurator.

- The Systems tab/page is used to import data from an existing system to be used as the basis for the condition monitoring system. An existing VibroSight Protect configuration is typically used as the basis for a VibroSight Capture configuration, although data can also be imported from OPC devices.

NOTE:	It is important to note that when using VibroSight Capture to configure a VM600^{Mk2} system for condition monitoring, the condition monitoring (CMS) configuration builds on the existing machinery protection (MPS) configuration, as defined using VibroSight Protect.

- The Connect tab/page is used to establish links between the machine train defined on the Machinery tab/page and the system data imported via the Systems tab/page (for example, the sensors / measurements chains and measurement channels configured in VibroSight Protect).

- The Configure tab/page is used to configure the individual condition monitoring measurements (Processing and Alarms), based on the imported machinery protection measurements, and to configure machine states (Machine states and/or Transient machine states), also known as machine operating conditions, for the machinery being monitored (Machine train).
  it is also used to configure overall parameters for the condition monitoring measurements, such as the condition monitoring update rate.
  Note: The Configure tab/page is roughly comparable to the Hardware view window in VibroSight Configurator.

- The Data tab/page is used for the configuration and display of information related to the management and sharing of VibroSight data.
  VibroSight includes fully-integrated support for VibroSight database management that simplifies the configuration and operation of the database backup, database purge and management of offline data storage. (This extremely easy to use data management configuration means that no external data/database management tools are required.)
  Note: The Data tab/page is roughly comparable to the Data storage view window in VibroSight Configurator.

2.1.3 Getting started with VibroSight Capture – Adding condition monitoring to a VM600^{Mk2} MPC4^{Mk2} system

Using VibroSight Capture to add condition monitoring to a VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} module requires a few simple steps:

- In VibroSight Protect, create (and save) a machinery protection (MPS) configuration for the VM600^{Mk2} system.

  Remember, a VM600^{Mk2} system can consist of one or more MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring modules, optional RLC16^{Mk2} relay modules and an optional CPUM^{Mk2} + IOCN^{Mk2} rack controller and communications interface module.

  A VibroSight Protect configuration is saved as a `*.mpscfg` file.

- In VibroSight Capture, to create and work with a condition monitoring (CMS) configuration for the VM600^{Mk2} system:
  - Use the Machinery tab/page to visually define the machine train and define machine train properties.
  - Use the Systems tab/page to import data from the associated machinery protection system (MPS) configuration.
  - Use the Connect tab/page to connect the components (bearings, shafts, etc.) defined for the machine train to the measurement points (sensors / measurements chains) imported from the machinery protection (MPS) configuration.
  - Use the Configure tab/page to configure the condition monitoring measurements (processing), the machine states (for the machine train) and the condition monitoring update rate for the machinery being monitored.
  - Use the Data tab/page to configure the data management for the condition monitoring (CMS), such as data logging rules and database management (backups, purges, file storage and data export).
  - Save the configuration as a VibroSight Server (Note: As usual, an integrated Consistency checker can be used to help ensure the correctness of a configuration.)
  - Access the VibroSight Server using VibroSight Vision in order to display and analysis data in the usual way.

VibroSight Capture user interface – Machinery tab/page

The Machinery tab/page is used to visually define the machine train and define machine train properties. This tab/page is shown in **Figure 2**.

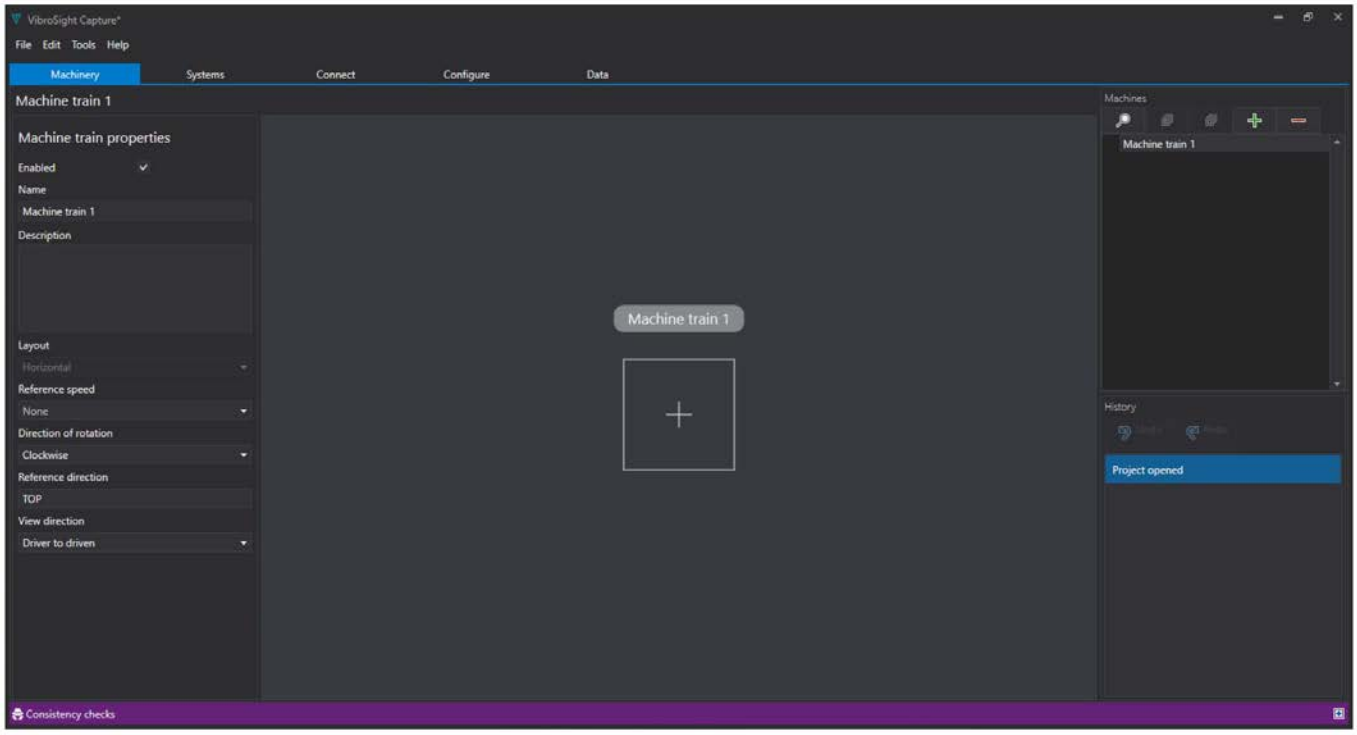

Figure 2: VibroSight Capture Machinery tab/page

Machine train properties (left) is used to configure and display general information important for the condition monitoring of the machinery being monitored, such as Layout, Reference speed, Direction of rotation, Reference direction, View direction.

The main window (centre) is used to visually define a machine train corresponding to the machinery being monitored using an embedded graphic library of machinery components and a graphical user interface (GUI) framework.

For example, click on the Machine train "+" box (**Figure 2**) to display the Machinery components window and start to build the machine train. In the Machinery components window, select an individual component from Machines, Bearings, Couplings or Shafts and click Finish to add it to the machine train.

When a component is added to the machine train, it's "+" indicators can then be used in order to add/connect additional components. In this way, a machine train can be built/defined graphically. As an example, **Figure 3** shows a simple machine train that was built using a Machine – Compact, a Bearing – Radial rolling bearing, and a Shaft – Shaft notch.

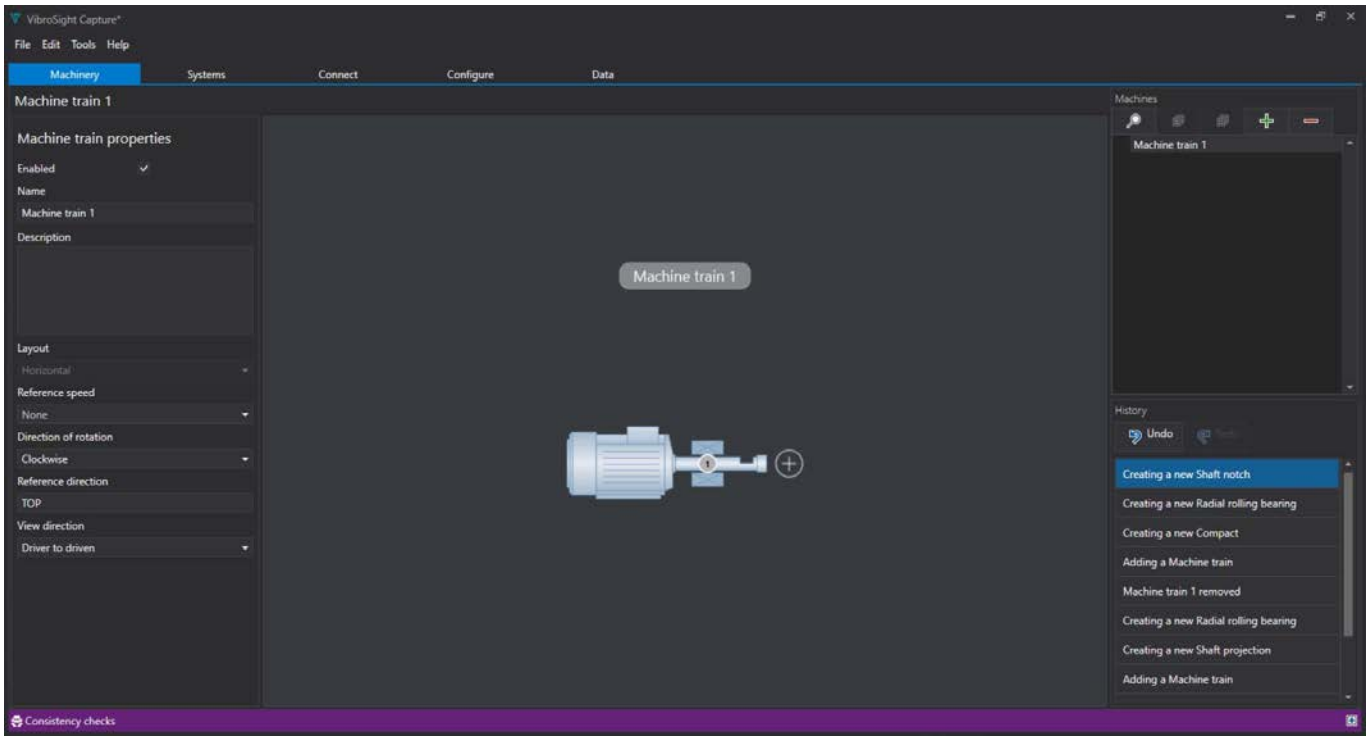

Figure 3: VibroSight Capture Machinery tab/page – showing a simple machine train

On the Machinery tab/page, as per most other VibroSight Capture tabs/pages:

- The Machines window (right top) is used to add/remove items in the configuration.
- The History window (right bottom) is used to undo/redo operations in the configuration.
- Some other VibroSight Capture tabs/pages use a System window (right top) to select items in the configuration.

Similar functionality is supported on other VibroSight Capture tabs/pages, where applicable.

Also, there is a Consistency checks window (bottom) is common to all VibroSight Capture tabs/pages.

Consistency checks are used to run and/or display consistency check information so that any problems in the VM600^{Mk2} system configuration can be corrected.

Clicking on the Consistency check title bar displays/hides the consistency check window, as required. When the consistency check window is displayed, clicking the “play” icon (triangle in top left of window) will run the consistency checks and any issues will be reported as Errors, Warnings or Messages as appropriate.

Double-clicking on a displayed issue will automatically take the user to the source of the problem in the configuration.

The Consistency check title bar is displayed in purple if no problems are detected but is displayed in red if problems are detected.

VibroSight Capture user interface – Systems tab/page

The Systems tab/page is used to import data from the associated machinery protection system (MPS) configuration. This tab/page is shown in **Figure 2**.

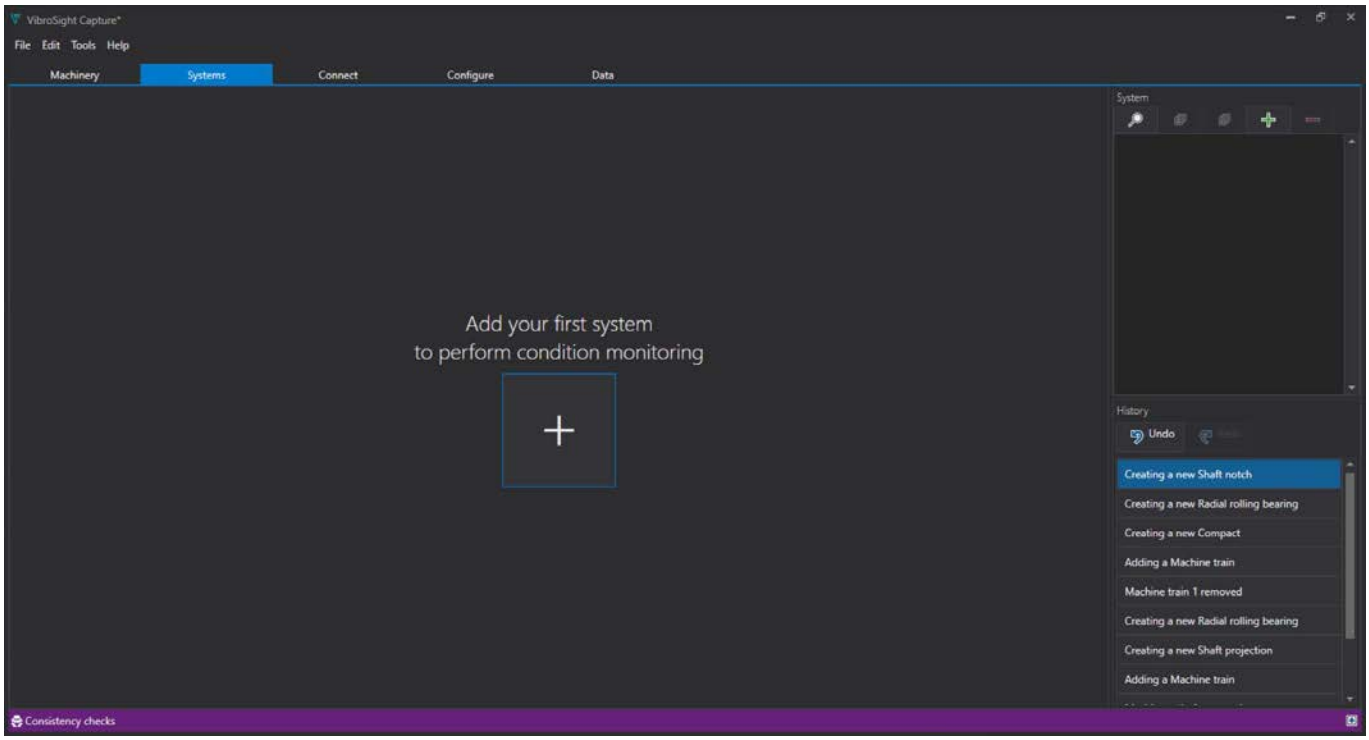

Figure 4: VibroSight Capture Systems tab/page

The main window (centre) is used to add system information, for example, by importing it an existing VibroSight Protect configuration.

For example, click on the Add your first system "+" box (**Figure 4**) to display the new system window, then select Import protect file and use the dialog box that appears to navigate the folders on your computer and select the VibroSight Capture configuration file (`*.mpscfg`), then click Open, then click Finish to continue.

VibroSight Capture will automatically import all of the required system information from the VibroSight Capture configuration file and refresh the main window to display the system as an icon (top left). As an example, see **Figure 5**.

Clicking on an imported system icon will display the summary information for the system, equivalent to the Layout tab/page from VibroSight Protect. As an example, see **Figure 6**. When the summary information for a system is being displayed, clicking on Return to systems (main window, centre, top right) will return to the systems view (see **Figure 5**).

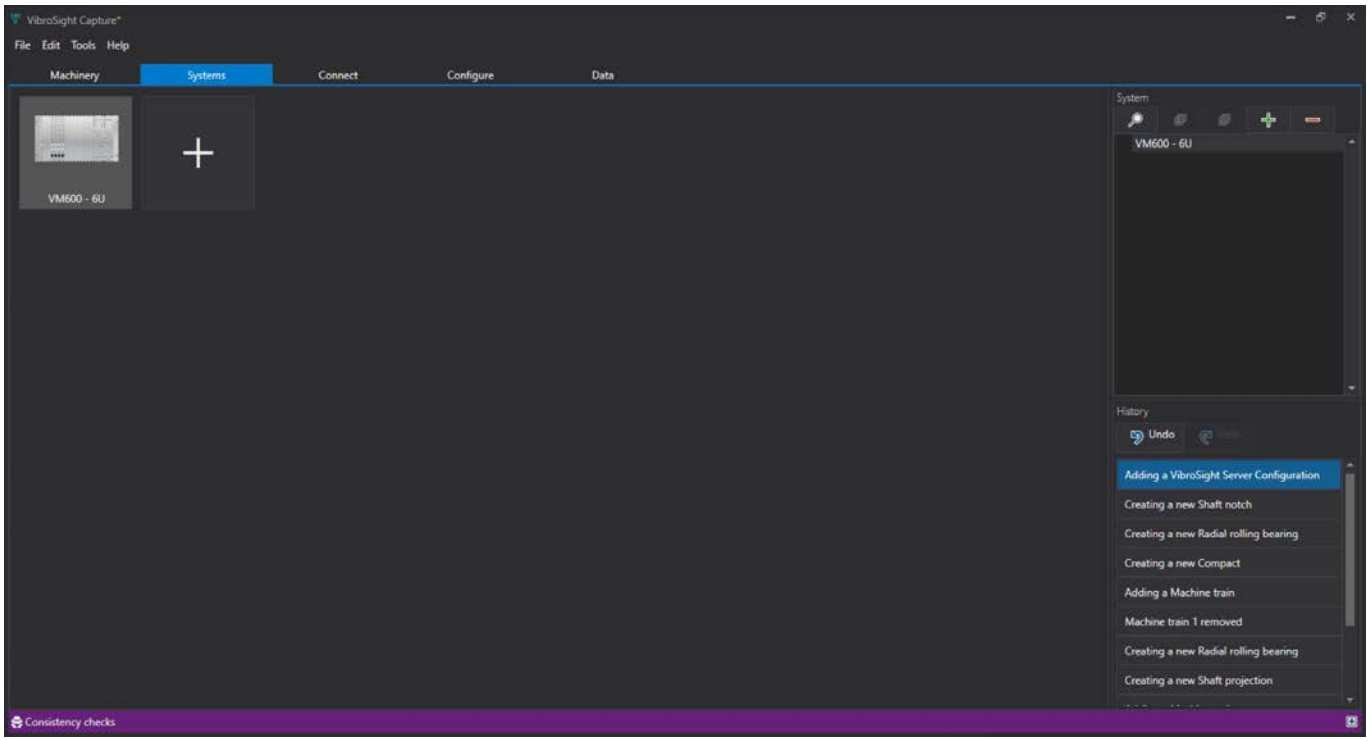

Figure 5: VibroSight Capture Machinery tab/page – with a VibroSight Protect system imported

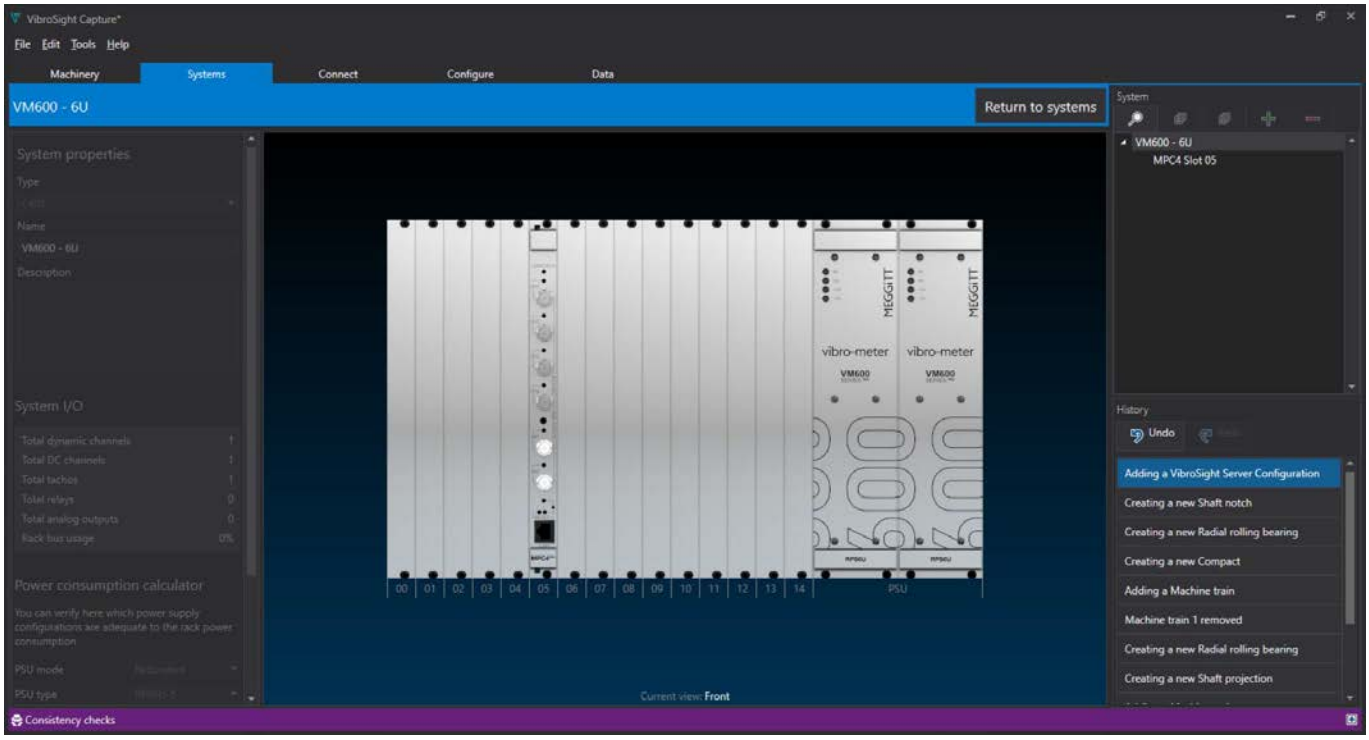

Figure 6: VibroSight Capture Machinery tab/ page – displaying the imported VibroSight Protect system information

VibroSight Capture user interface – Connect tab/page

The Connect tab/page is used to connect the components (bearings, shafts, etc.) defined for the machine train to the measurement points (sensors / measurements chains) imported from the machinery protection (MPS) configuration. This tab/page is shown in **Figure 7**.

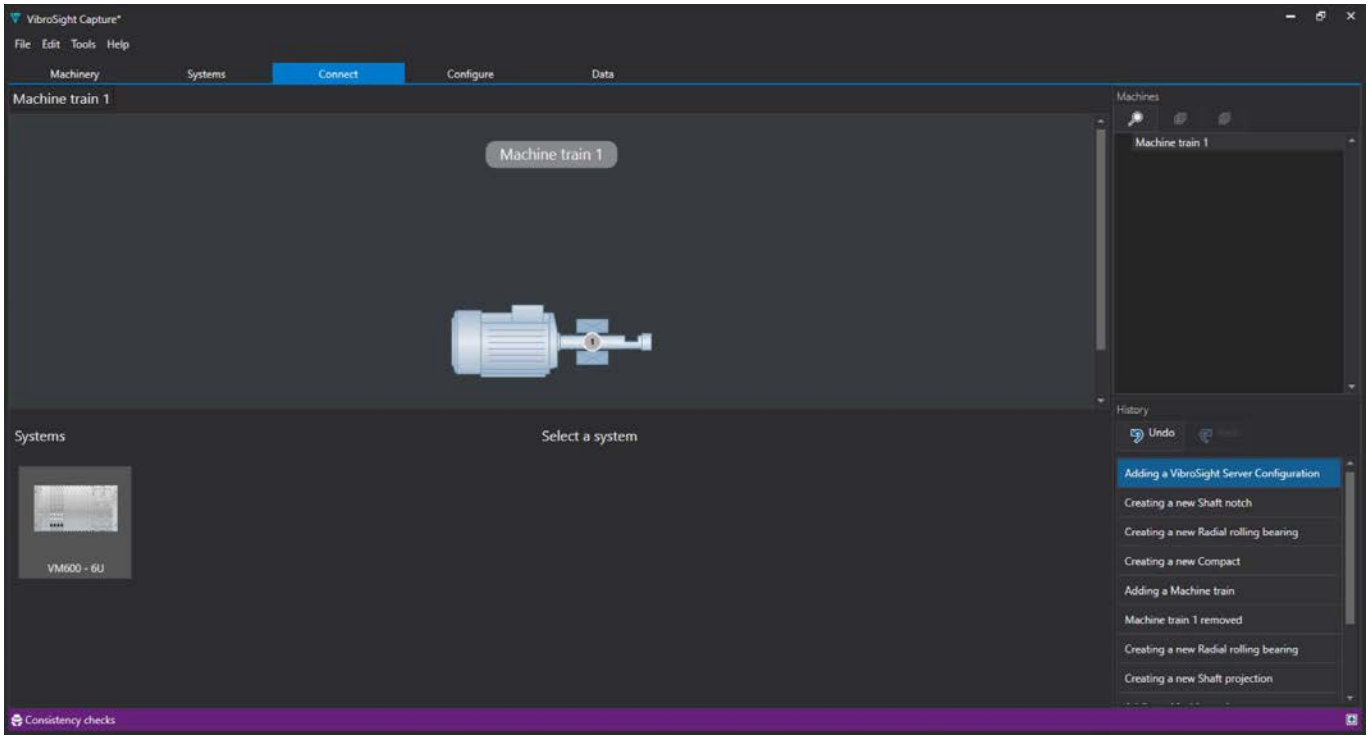

Figure 7: VibroSight Capture Connect tab/page – with a machine train and an imported system

When a machinery train has been defined via the Machinery tab/page and a system has been imported via the Systems tab/page, they will automatically appear on the Connect tab/page.

The main window (top) displays the machine train, while the main window (bottom) displays the system information as an icon, as shown in **Figure 7**.

Clicking on a system icon (bottom) will display the summary information for the system, in terms of modules and measurement channels. As an example, see **Figure 8**. When the summary information for a system is being displayed, clicking on Return to systems (main window, centre, top right) will return to the systems view (see **Figure 7**).

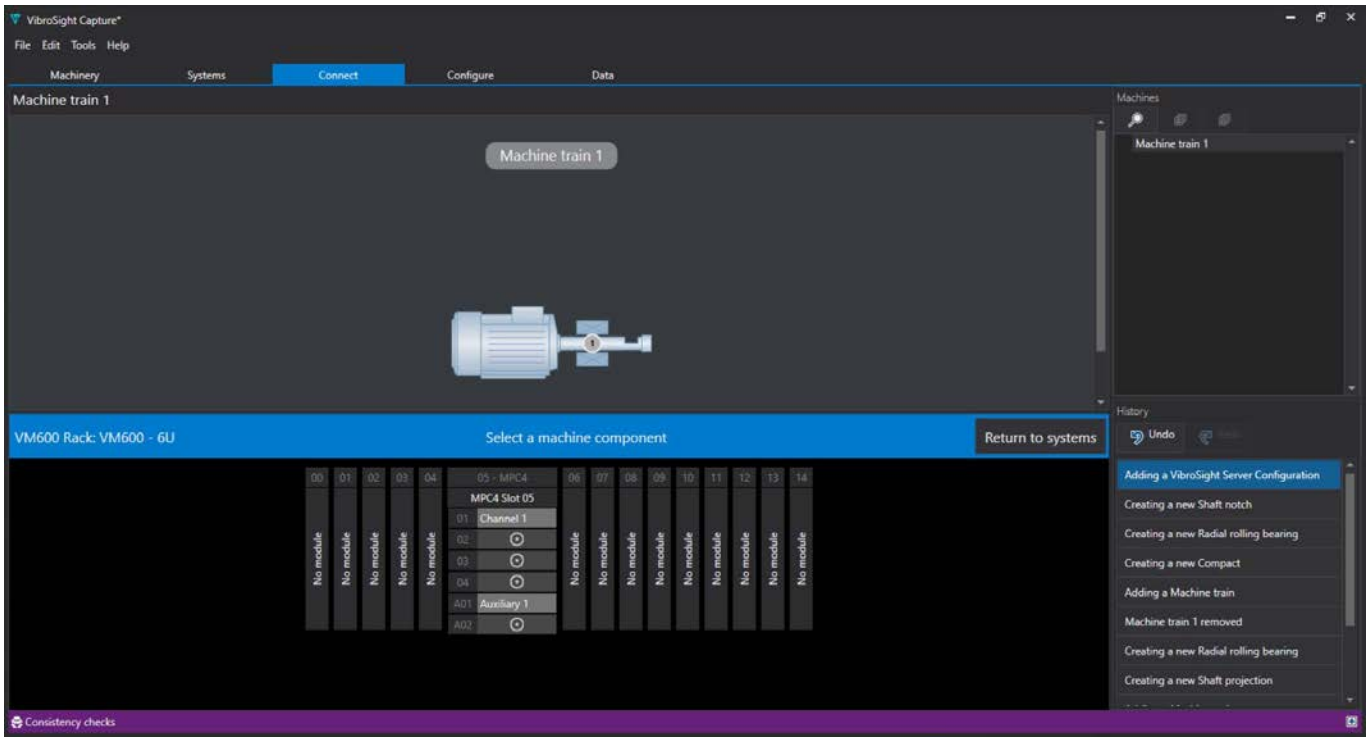

Figure 8: VibroSight Capture Connect tab/page – displaying the imported system information

In order to establish connections/links between the components of the machine train and the measurement points (sensors / measurements chains) of the imported system, the system must be selected, that is, summary information displayed in terms of modules and measurement channels, as shown in **Figure 8**.

Then for each connection to be made:

- In the machine train (top), click on a component to select it.
- In the system (bottom), click on a module's input channel to select it.

  (Or vice versa, the order is not important.)
- On the bar between the machine train (top) and the system (bottom), click Connect to connect/link the two selected (highlighted) elements.

- **NOTE:** On the bar between the machine train (top) and the system (bottom), the Connect control becomes available when two compatible elements are selected.

  However, when two incompatible elements are selected, then the Connect control does not become available and a message is displayed, such as "The processing of a selected input channel is not compatible with the selected machine component". For example, it is not possible to connect/link a bearing component and an auxiliary channel configured to measure speed (as speed must be measures on a shaft component such as a shaft projection, shaft notch or toothed wheel).

When a component of the machine train and an input channel are connected/linked:

- A small icon is added close to the component on the image of the machine train (top) to indicate that there is now associated processing (measurements).
- Selecting the component on the image of the machine train (top) will display the name of the processing, as defined in the imported system.
- Selecting the component also displays a rubbish bin (trash can) icon that can be used to disconnect the link between the component of the machine train and the input channel.

This is shown in **Figure 9**.

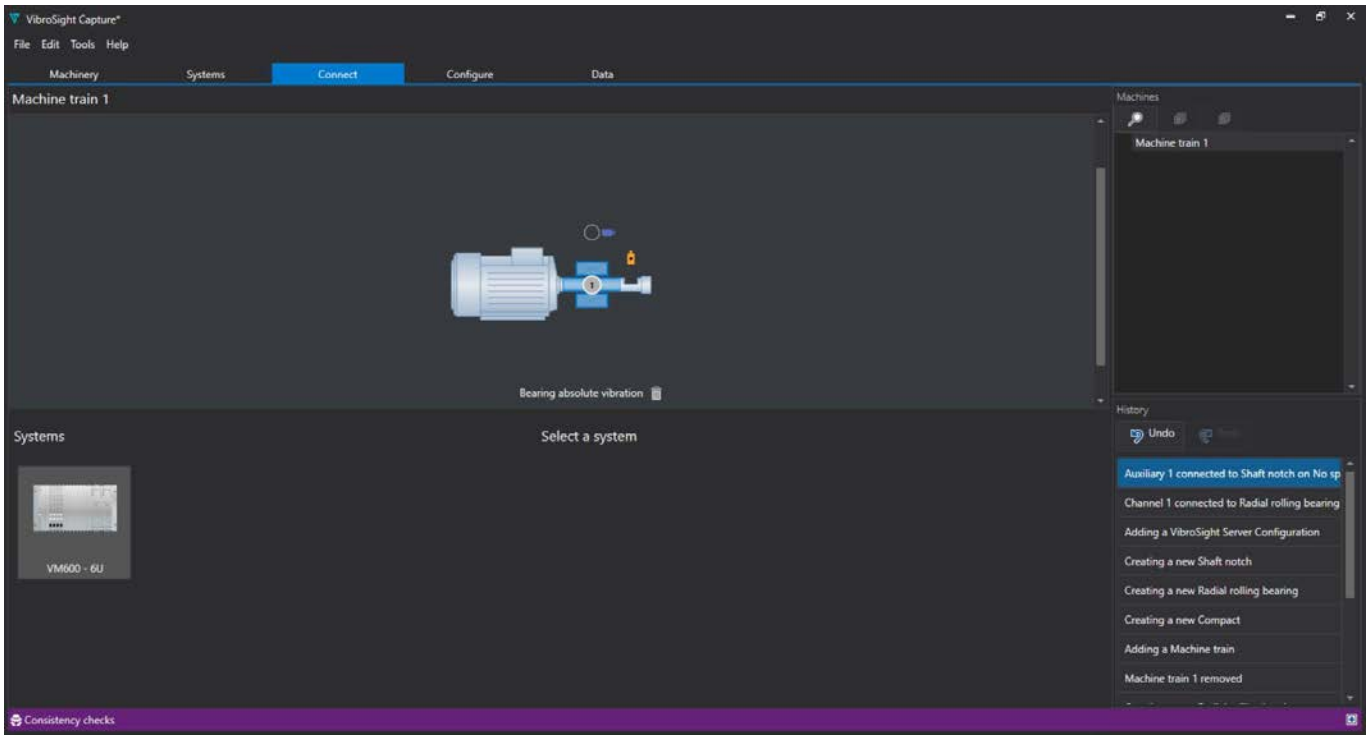

Figure 9: VibroSight Capture Connect tab/page – selecting a machine train component to display additional information

VibroSight Capture user interface – Configure tab/page

The Configure tab/page is used to configure the condition monitoring measurements (processing), the machine states (for the machine train) and the condition monitoring update rate for the machinery being monitored. This tab/page is shown in **Figure 10**.

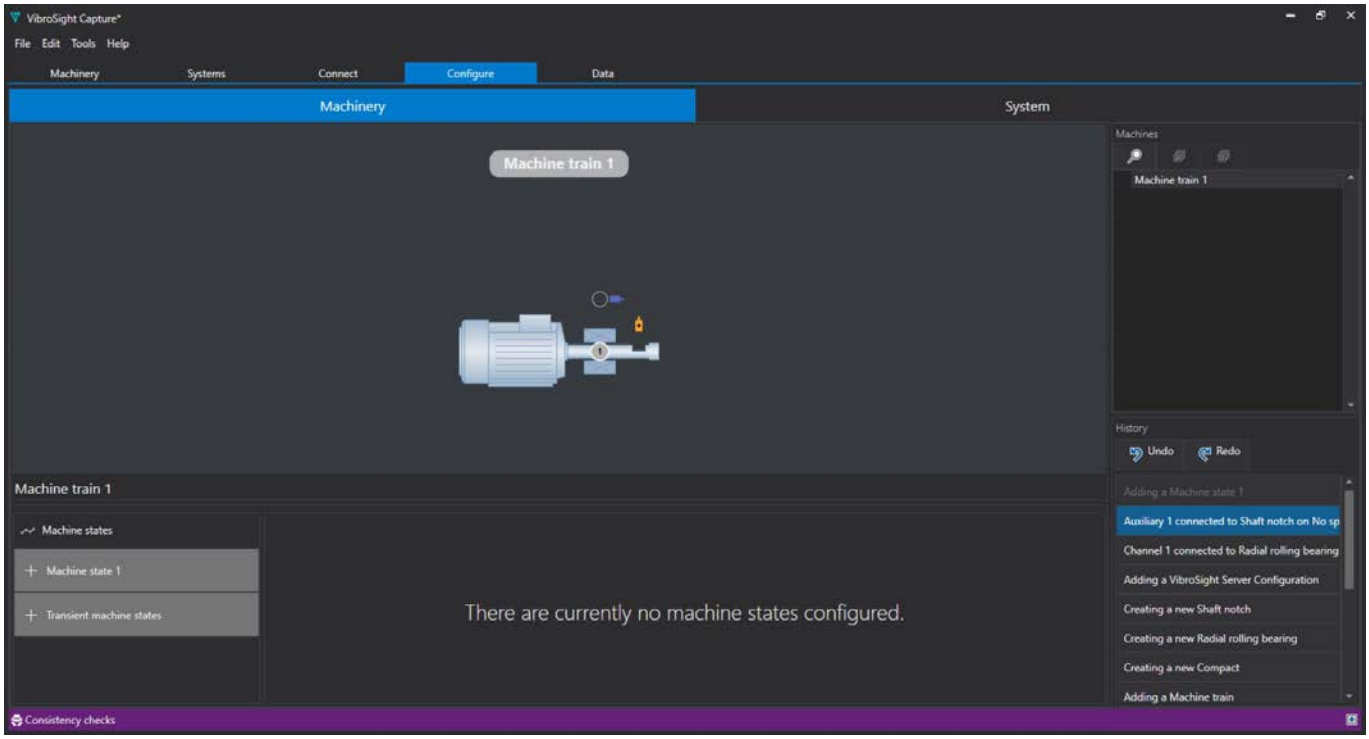

Figure 10: VibroSight Configure Connect tab/page – Machinery tab with the machine train title selected

On the Configure tab/page, select the Machinery tab (top left), then select the Machine train title (top, centre) in order to display the Machine states controls (bottom, left), as shown in **Figure 10**.

The Machine states controls allow Machine states and Transient machine states to be defined for the condition monitoring system.

In the Machine states control (left), click + Machine state or + Transient machine state to add the type of machine state required, then use the main window (centre, bottom) to configure the parameters for the machine state, as necessary.

On the Configure tab/page, select the Machinery tab (top left), then select a machine train component on the image of the machine train in order to display all of the information for the processing and measurements (bottom) associated with the component, as shown in **Figure 11**.

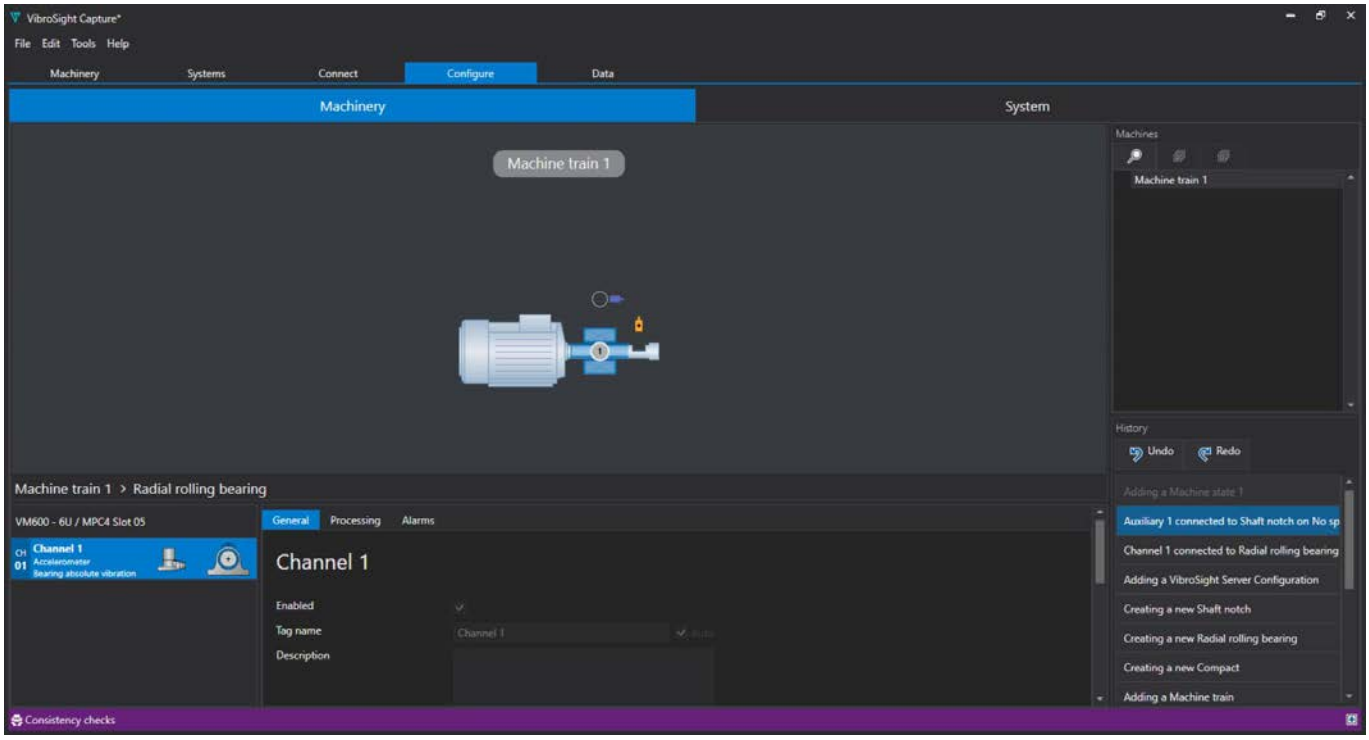

Figure 11: VibroSight Configure Connect tab/page – Machinery tab with a machine train component selected

For the selected component/processing, the name and type of measurement is displayed (bottom, left), while more detailed information for the associated processing and measurements is displayed (bottom, centre) across three tabs: General, Processing and Alarms.

The information displayed is a combination of:

- The information imported from the associated machinery protection system (MPS) configuration, that is, the measurements (sensors / measurements chains, processing and alarms) imported from the VibroSight Protect configuration.
- The default condition monitoring measurements (processing and alarms) that are automatically generated by VibroSight Capture, depending on the VibroSight Protect configuration.

NOTE: It is important to note that any machinery protection system (MPS) information is displayed for information only and cannot be edited in VibroSight Capture.
In general, such information is displayed as being unavailable (that is, greyed out).

However, all condition monitoring system (CMS) information can be freely edited in VibroSight Capture, as required by the user.

For example, on the General tab (see **Figure 12**) none of the information displayed can be edited in VibroSight Capture, while on the Processing (see **Figure 13**) and Alarms tabs the information displayed under Machinery protection (top) cannot be edited but the information displayed under Condition monitoring (bottom) can be edited.

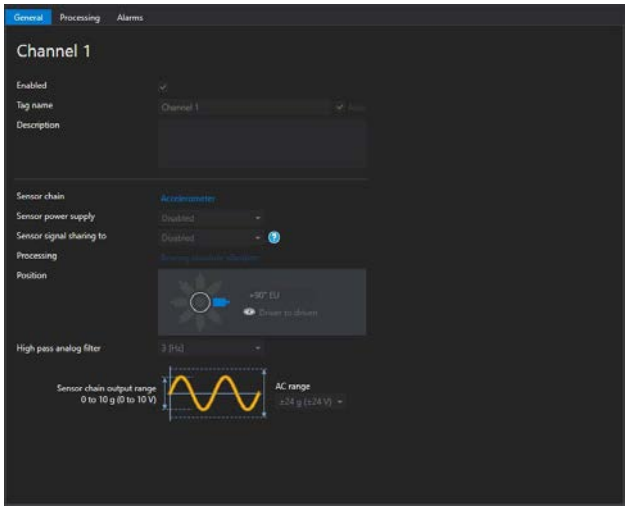

Figure 12: VibroSight Configure Connect tab/page – General tab for a selected component/measurement

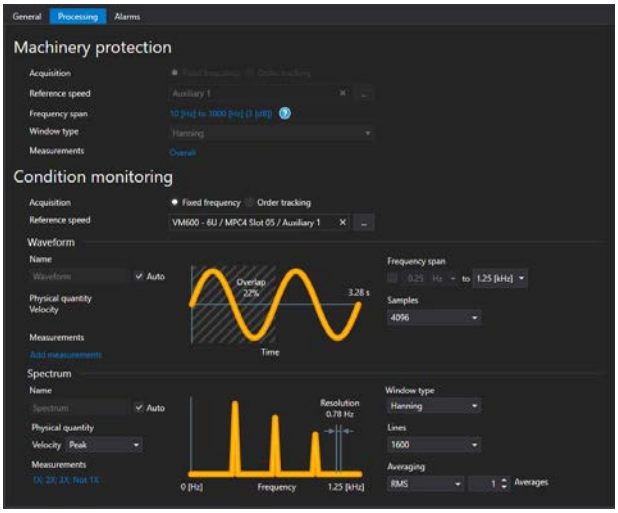

Figure 13: VibroSight Configure Connect tab/page – Processing tab for a selected component/measurement

Here, at the bottom of the tabs, the user can modify the default condition monitoring measurements (processing and alarms), as required.

On the Configure tab/page, select the System tab (top right), then select the system from the System window (top right) in order to display the general information for the system (MPC4^{Mk2} module), as shown in **Figure 14**.

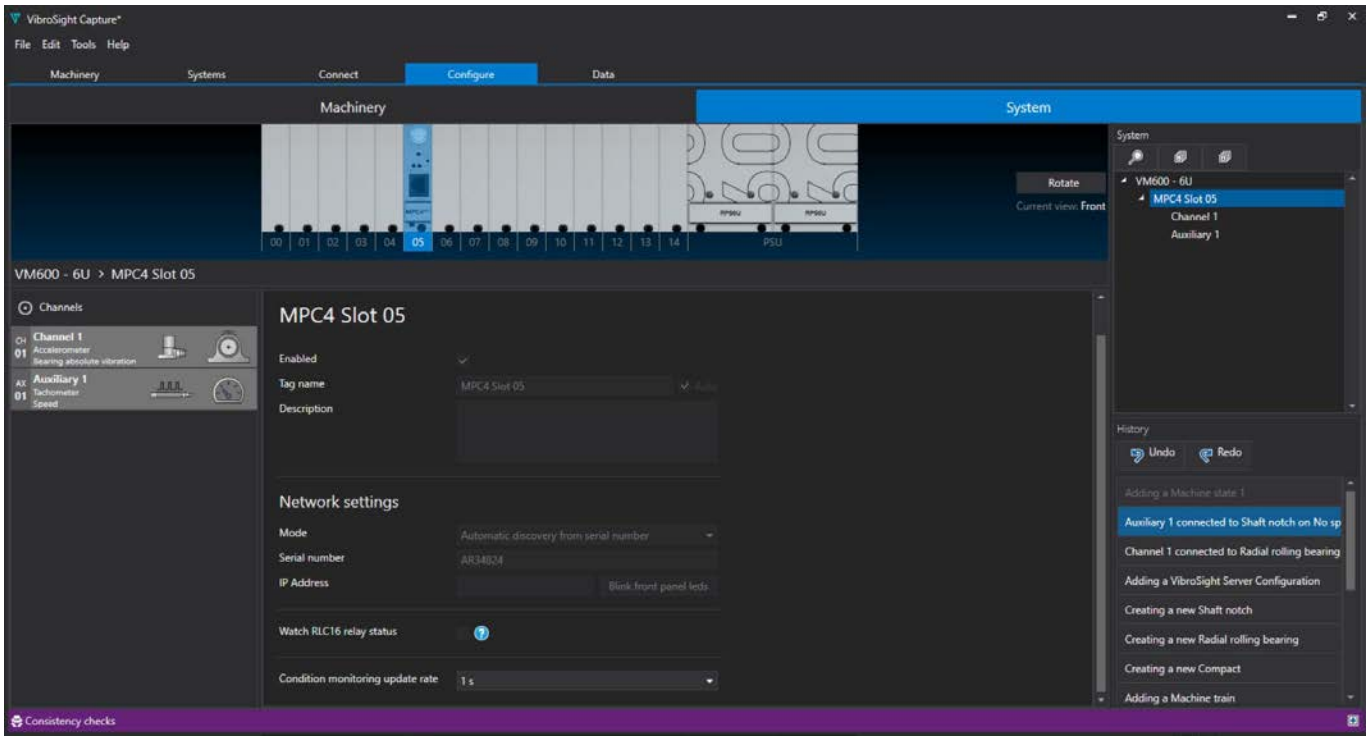

Figure 14: VibroSight Configure Connect tab/page – Machinery tab with a machine train component selected

Here, at the bottom of the window, the user can modify the default Condition monitoring update rate for the system (MPC4^{Mk2} module) of 1 s, as required.

VibroSight Capture user interface – Data tab/page

The Data tab/page is used to configure the data management for the condition monitoring (CMS), such as data logging rules and database management operations (backups, purges, file storage and data export). This tab/page is shown in **Figure 15**.

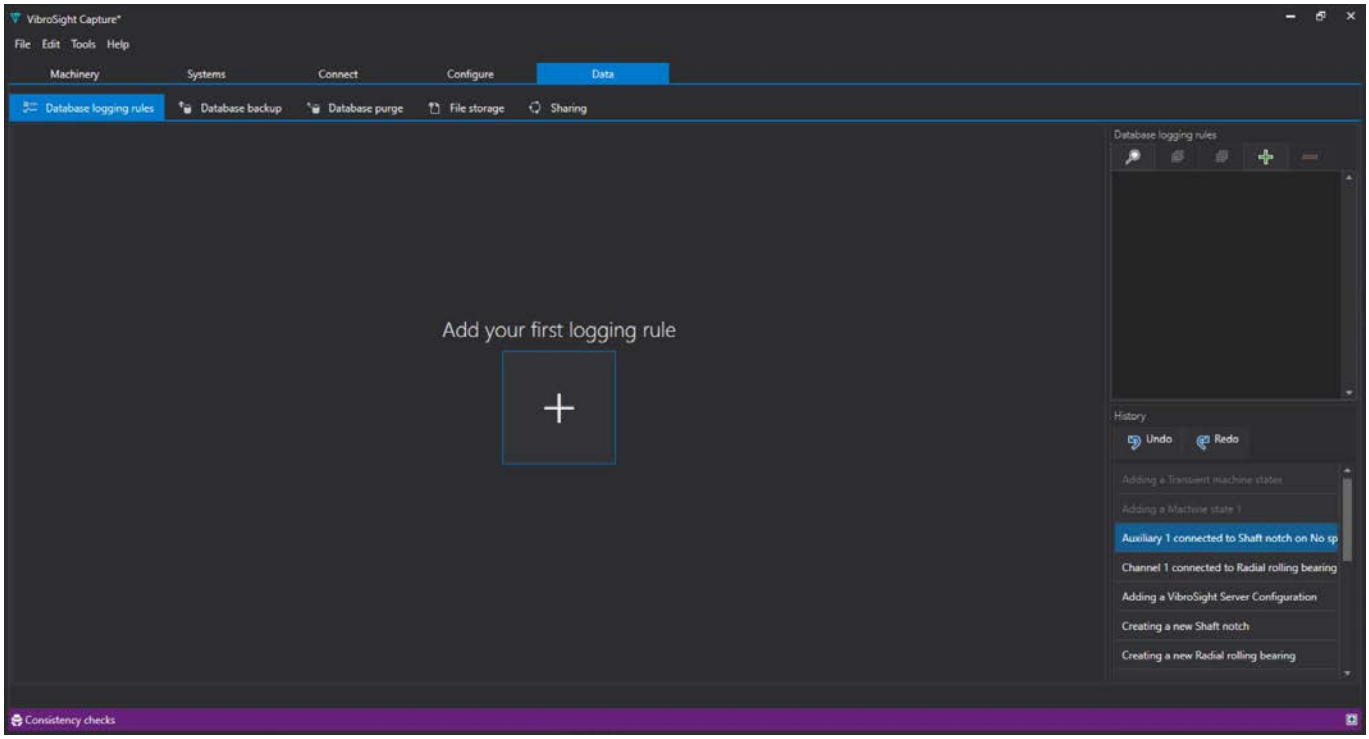

Figure 15: VibroSight Configure Data tab/page

On the Data tab/page, select one of the tabs (top) to see the window and configure the information relevant to the required data management operation:

- Database logging rules
- Database backup
- Database purge
- File storage
- Sharing.

NOTE:	VibroSight includes fully-integrated support for VibroSight database management that simplifies the configuration and operation of the database backup, database purge and management of offline data storage.

For example, on the Database logging rules tab, click on the Add your first logging rule “+” box (**Figure 15**) to add and display a logging rule that can be configured in the main window (centre), as required.

The Database backup, Database purge and File storage tabs are used similarly to configure database management operations for the database used by the VibroSight Server.

Activating a VibroSight Capture condition monitoring configuration on a VM600^{Mk2} system

As the condition monitoring configuration for a VM600^{Mk2} system is being developed, the Consistency checks window (bottom) should be used to help correct any configuration errors and warnings as they occur, thereby helping ensure that a valid configuration is arrived at.

Once a configuration has been created and/or changed, and there are no consistency check errors, a VibroSight Server must be created for the storage of the condition monitoring data and the configuration must be uploaded to the VM600^{Mk2} system in order to actually run on the system hardware (VM600^{Mk2}/VM600 rack containing VM600^{Mk2} MPC4^{Mk2} module(s)).

In VibroSight Capture, the **File > Save as server** menu command is used to create a VibroSight Server for the active condition monitoring configuration.

Please note that the **File > Save as server** command is a one step process that automatically creates, starts and connects to the server – in order to initialise it, that is, upload and run the configuration. (For reference, this is different to VibroSight Configurator which uses a two step process, which requires that the VibroSight Server is created using one command and that the configurator is activated on the server using another command.)

Figure 16 shows a VibroSight Server running a VM600^{Mk2} MPC4^{Mk2} condition monitoring. Success!

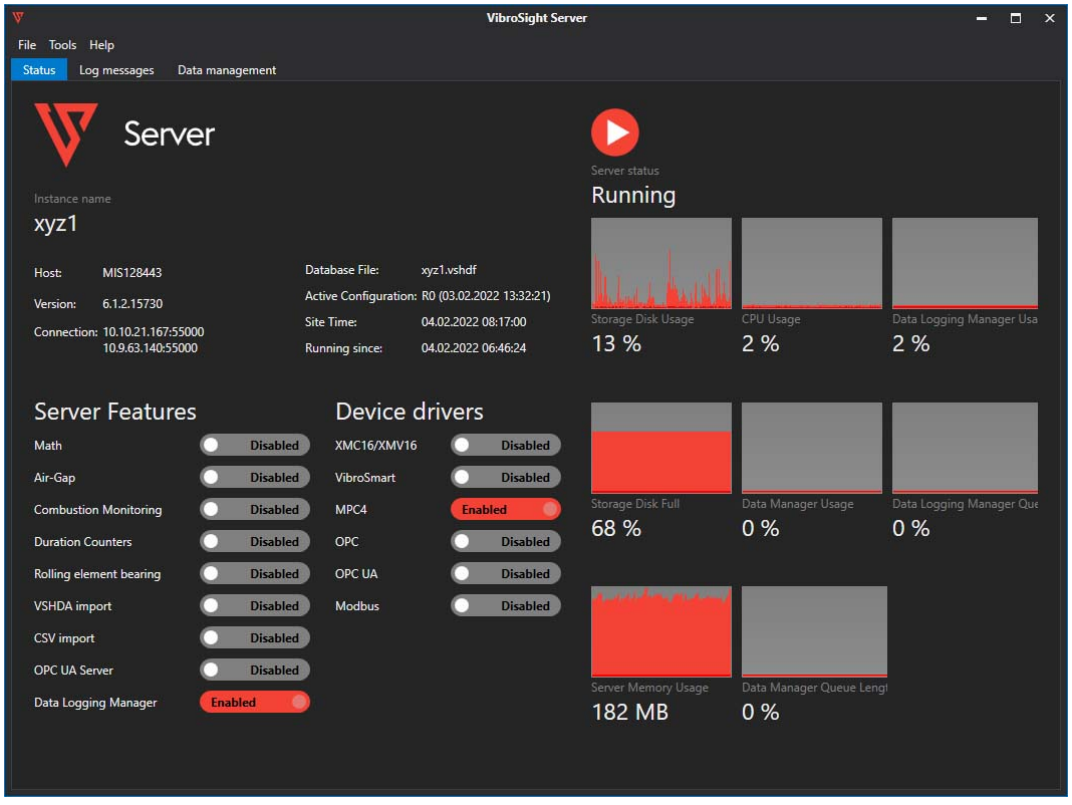

Figure 16: VibroSight Server – being used for VM600^{Mk2} MPC4^{Mk2} condition monitoring

When a configuration running on a VibroSight Server is modified and it is required to use/apply these changes to update the configuration running on the server, then the **File > Apply changes to active configuration** menu command is used.

When a configuration running on a VibroSight Server is modified and it is not required to use/apply these changes to update the configuration running on the server, then the **File > Revert to active configuration** menu command is used (to effectively discard any modifications/changes).

NOTE:	When activating a condition monitoring configuration on a VM600^{Mk2} system, the changes are applied to the VibroSight Server independently of whether the MPC4^{Mk2} modules are available or not. For modules not available on the network, an error message will be displayed by the server GUI (Log messages tab) every 10-20-30-60-120 seconds. (For reference, when activating a machinery protection configuration on a VM600^{Mk2} system, all of the MPC4^{Mk2} modules contained in the configuration must be available.)

Using condition monitoring data from a VM600^{Mk2} system

Once the VibroSight Server is up and running, the measurement data from the condition monitoring configuration running on the VM600^{Mk2} MPC4^{Mk2} modules system is available for use by the other VibroSight software modules in the usual way.

Notably, this includes VibroSight Vision for the display and analysis of condition monitoring data.

VibroSight System Manager and VM600^{Mk2} systems

For VM600^{Mk2} systems, VibroSight System Manager is used to display information about VM600^{Mk2} modules (MPC4^{Mk2} + IOC4^{Mk2}, RLC16^{Mk2}, CPUM^{k2} + IOCN^{Mk2}).

In the System Explorer window (left), MPC4^{Mk2} + IOC4^{Mk2} modules are listed under **MPC4 modules** and CPUM^{Mk2} + IOCN^{Mk2} modules are listed under **CPUM modules** and.

In general, for VM600^{Mk2} modules in VibroSight System Manager, functionality is available from the Actions window (right) and general information is displayed in the main window (centre).

For example, as shown in shown in Figure 17 (centre), under General Information, this includes the following information relevant to machinery protection and condition monitoring:

- Machinery protection status
- Condition monitoring status
- Condition monitoring licensing status.

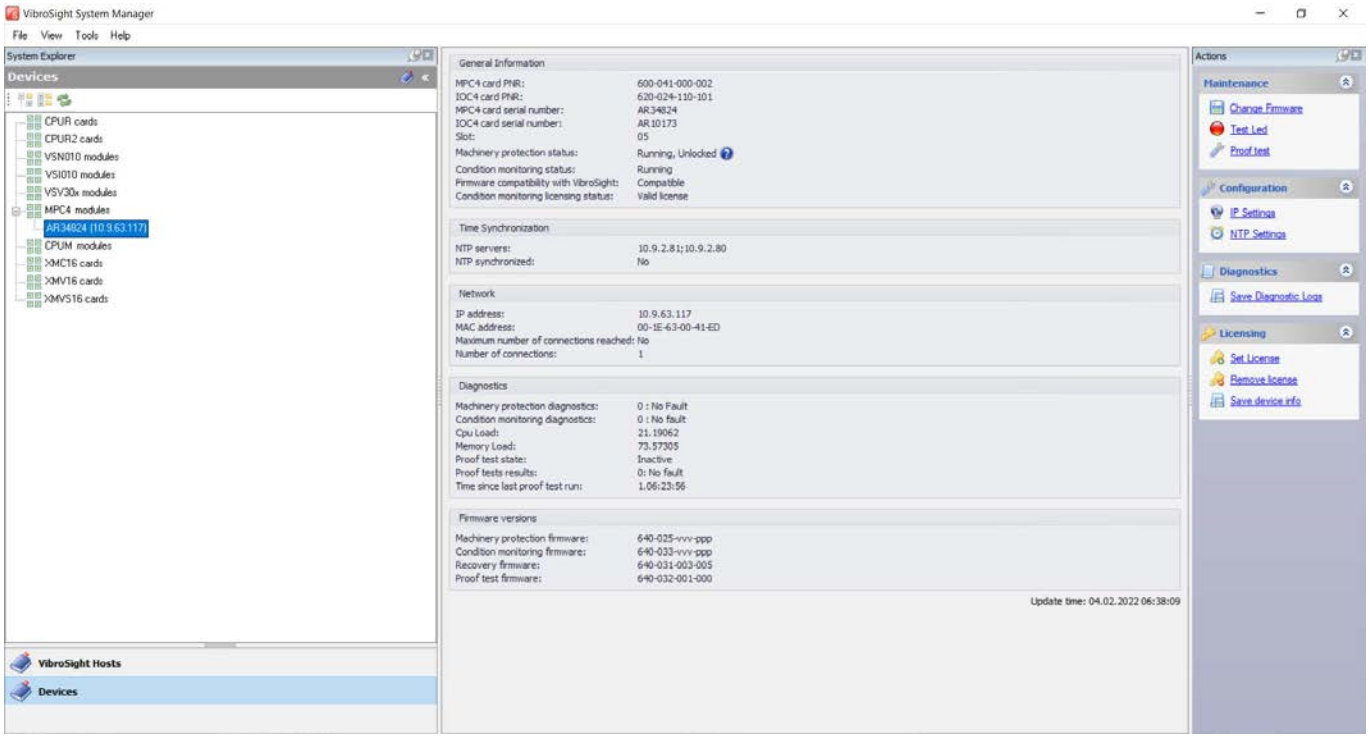

Figure 17: VibroSight System Manager – information and actions for a MPC4^{Mk2} module

Figure 17 (right) also shows the various actions/tasks that VibroSight System Manager can perform for MPC4^{Mk2} modules, notably:

- Maintenance: Changing firmware, Test LED (module identification in a rack) and Proof test.
- Configuration: Configuration of IP and NTP settings.
- Diagnostics: Download of diagnostics log.
- Licensing: Set licence, Remove licence and Save device info.

See also 2.1.3 Getting started with VibroSight Capture – Adding condition monitoring to a VM600^{Mk2} MPC4^{Mk2} system.

2.1.4 Managing condition monitoring licenses for VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} modules

VibroSight System Manager is used to display information about and manage condition monitoring licenses for VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring modules.

To display information about the condition monitoring license for a VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} module in VibroSight System Manager:

1. Start VibroSight System Manager.
2. In the System Explorer window (left), select **Devices** (bottom) so that the VibroSight compatible devices available to the computer are displayed.
3. From the list of available **MPC4** modules, select the MPC4^{Mk2} module (identifiable by its serial number xxxxxxx).
4. The main window (centre) updates to display information for the MPC4^{Mk2} + IOC4^{Mk2} module.
   Under General information (top), **Condition monitoring licensing status** indicates the status of the condition monitoring license for the MPC4^{Mk2} + IOC4^{Mk2} module: **Valid license** *or* **No license**.

When the MPC4^{Mk2} + IOC4^{Mk2} module has a valid condition monitoring license, under General information, **Condition monitoring status** indicates the status of the condition monitoring for the MPC4^{Mk2} + IOC4^{Mk2} module: **Running** *or* **Not configured**.

When the MPC4^{Mk2} + IOC4^{Mk2} module does not have a valid condition monitoring license, under General information, **Condition monitoring status** will indicate that condition monitoring is not possible for the MPC4^{Mk2} + IOC4^{Mk2} module: **There is no condition monitoring license. To purchase a license please contact your Meggitt sales representative.**

To activate (set) a condition monitoring license for a VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} module in VibroSight System Manager:

1. Start VibroSight System Manager.
2. In the System Explorer window (left), select **Devices** (bottom) so that the VibroSight compatible devices available to the computer are displayed.
3. From the list of available **MPC4** modules, select the MPC4^{Mk2} module (identifiable by its serial number xxxxxxx).
   The main window (centre) updates to display information for the MPC4^{Mk2} + IOC4^{Mk2} module.
4. In the Actions window (right), under Licensing, click **Set license** and use the dialog box that appears to navigate the folders on your computer and select the License file (`*.lic`), then click **Open**, then click **Next**. After which, VibroSight will install (upload) the condition monitoring license to the MPC4^{Mk2} module. Click **Finish** to continue.

When the main window (centre) is refreshed, it will display updated information for the MPC4^{Mk2} + IOC4^{Mk2} module. For example, under General information (top), **Condition monitoring licensing status** will indicate the status of

the condition monitoring license for the MPC4^{Mk2} + IOC4^{Mk2} module as: **Valid license** when a valid license has been activated (set / uploaded to the module.

NOTE:	In VibroSight System Manager, the main window (centre) updates automatically (every 10 s approx.) or manually, for example, whenever a module is (re)selected in the System Explorer window.

Similarly, VibroSight System Manager can also be used to clear (remove) a condition monitoring license for a VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} module by using the **Remove license** control in the Actions window (right).

2.2 Inter-process communication – gRPC

The VibroSight software has been improved with the migration of its inter-process (client-server) communication library to use gRPC, a high-performance, open source universal RPC (remote procedure call) framework.

For example, gRPC is now used to support communication between a VibroSight Server and clients such as VibroSight Vision and VibroSight Mimic, and communication between VibroSight and other servers such as a VibroSight Modbus Server or a VibroSight OPC Server.

The migration to gRPC has been implemented in order to:

- Improve performance, reliability and security.
- Increase interoperability and extensibility.

With the migration to gRPC, it is important to note the following about the IP ports used by VibroSight 7.0:

- VibroSight Server

  The default TCP port number used by a VibroSight Server (`Xms.Server.Client.exe`) is 55 000. Although any port in the range 55 000 to 55 020 can be used.

  TCP port binding can be used to ensure that a VibroSight Server always uses a particular TCP port. This is done by manually editing the configuration file for the server, typically available here:
  `\VibroSight data\<HDF database folder>\Storage\ServerConfiguration\EditableServerConfiguration.xml`
  In the configuration file:
  `<Property Name="TcpIpPort" Value="55000"` … should be changed to the required port number.
  `<Property Name="IsTcpIpPortFixed" Value="false"` … should be changed to `"true"`.

- VibroSight Host Service

  The default TCP port number used by the VibroSight Host Service (`XmsHostService.exe`) is 50 000.

  TCP port binding can be used to ensure that the VibroSight Host Service always uses a particular TCP port. This is done by manually editing the configuration file for the host service, typically available here:
  `C:\Program Files\Meggitt\VibroSight\Bin\ XmsHostService.exe.config`

In the configuration file:
`<add key="Port" value="50000"` … should be changed to the required port number.

- VibroSight Modbus Server

  The default TCP port number used by a VibroSight Modbus Server is 60000.

  TCP port binding can be used to ensure that a VibroSight Modbus Server always uses a particular TCP port. This is done by manually editing the configuration file for the server (`*.vssrvcfg`) in order to change the `"Port"` to the required port number.

VM600^{Mk2} modules

2.3 MPC4^{Mk2} + IOC4^{Mk2} module

Updated VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring module firmware with the following main improvements:

Machinery protection firmware: `640-025-005-000`

NOTE:	VM600^{Mk2} MPC4^{Mk2} machinery protection firmware (640-025-005-000) is only compatible with MPC4^{Mk2} modules with PNR 600-041-000-002. Uploading this machinery protection firmware (640-025-005-000) to MPC4^{Mk2} modules with PNR 600-041-000-001 will result in a module stuck in the Power-up operating mode.

- RMS measurement improvements
  The algorithms used to compute “True RMS” and “True Average” measurements have been improved. Some oscillations observed at certain frequencies have removed and some instabilities seen during frequency changes have also been improved.
- LP filter creation errors
  Some low-pass (LP) filter parameters were not being accepted by the module.
- Outputs shall change only after a stabilisation period
  During power-up, the modules outputs (4-20 mA, relays, VibroSight interface) are now held in their default state until the stabilisation period is over.
  Note: The stabilisation period can be increased by the user via the Delay NOK to OK. The longest sensor / measurement chain delay becomes the stabilisation period.
- Removal of HP filter 400 Hz cutoff limitation
  The high-pass (HP) filter is no longer limited to 400 Hz max.
- Extended windows for protection
  The signal-processing window functions (Window types) supported for machinery protection now include Blackman, Blackman-Harris and Tukey α=0.5.
- Added infrastructure for condition monitoring support
  The MPC4^{Mk2} module can now run the machine protection firmware (FW) and the condition monitoring firmware (FW) in parallel.
  Importantly, the condition monitoring firmware (FW) runs at a lower priority and there is complete separation (“segregation”) between the two.

As the latest version of VM600^{Mk2} MPC4^{Mk2} machinery protection firmware (640-025-005-000) is only compatible with MPC4^{Mk2} modules with PNR 600-041-000-002, the previous version of the module firmware (640-025-004-000) has also been updated in order to create firmware (640-025-004-003) that is compatible with MPC4^{Mk2} modules with PNR 600-041-000-001 and PNR 600-041-000-002. However, this version of machinery protection firmware (640-025-004-003) does not support condition monitoring on the MPC4^{Mk2} module.

Machinery protection firmware: `640-025-004-003`

NOTE:	VM600^{Mk2} MPC4^{Mk2} machinery protection firmware (640-025-004-003) is compatible with MPC4^{Mk2} modules with PNR 600-041-000-001 (that is, previous versions of the module hardware) and PNR 600-041-000-002 (that is, the latest version). However, using this version of machinery protection firmware (640-025-004-003) will result in a module that supports machinery protection only. More specifically, machinery protection firmware (640-025-004-003) is not compatible with the condition monitoring firmware (640-033-vvv-ppp).

- Machinery protection firmware (640-025-004-003) features all of the same main improvements as machinery protection firmware (640-025-005-000) – except for the “Added infrastructure for condition monitoring support”.

Condition monitoring firmware: `640-033-001-000`

NOTE:	VM600^{Mk2} MPC4^{Mk2} condition monitoring firmware (640-033-001-000) is only compatible with machinery protection firmware (640-025-005-000), that is, MPC4^{Mk2} modules with PNR 600-041-000-002 or later.

- Initial release
  VM600^{Mk2} MPC4^{Mk2} condition monitoring firmware (640-033-001-000) is the first release of condition monitoring firmware for MPC4^{Mk2} modules and adds condition monitoring system (CMS) functionality to VibroSight / VM600^{Mk2} MPC4^{Mk2} systems.
- License required
  For the VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring module, machinery protection (MPS) functionality is available by default for all versions of the module, while condition monitoring (CMS) functionality is optional.
  Accordingly, in order for a VM600^{Mk2} MPC4^{Mk2} module to run any condition monitoring firmware (640-033-vvv-ppp) and support condition monitoring (CMS) functionality, a condition monitoring license is required for the MPC4^{Mk2} + IOC4^{Mk2} module.
  See also 2.1.4 Managing condition monitoring licenses for VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} modules.

Recovery firmware: `640-031-003-006`

- Various small improvements and bug fixes
- Compatibility with VibroSight 7.0.

Proof test firmware: `640-032-001-001.VxeFw`

NOTE:	VM600^{Mk2} MPC4^{Mk2} proof test firmware (640-032-001-001) is only compatible with recovery firmware (640-031-003-006).

- IOC4G2 Error not reported correctly
  Some measurement errors on the IOC4^{Mk2} were not being reported correctly.
- RTOS timer test sometime failing
  The real-time operating system (RTOS) test was sometimes failing due to an incorrect wrong measurement of the OS timer.

See also 2.1 Support for VM600^{Mk2} – the next generation of VM600 machinery protection and condition monitoring system and 5.2 VM600^{Mk2}/VM600 modules/cards.

2.4 CPUM^{Mk2} + IOCN^{Mk2} module

Updated VM600^{Mk2} CPUM^{Mk2} + IOCN^{Mk2} rack controller and communications interface firmware with the following main improvements and bug fixes:

Base-system / Applications firmware: `640-031-001-001`

- I^{2}C bus hanging in multi-master mode
- Spurious reboots of the CPUM^{Mk2}.

See also 5.2 VM600^{Mk2}/VM600 modules/cards.

VM600 modules

2.5 CPUR2 + IOCR2 module

Updated VM600 CPUR2 + IOCR2 rack controller and communications interface firmware with the following main improvements and bug fixes:

Base-system firmware: `640-014-001-005` and Applications firmware: `640-015-001-005`

- Support for latest version of module hardware (compatible with the previous version)
- Modbus server connection handling enhancements
- Added support and management for VME bus deactivation
- Added support to force detection of VM600^{Mk2}/VM600 XMC16 modules.

See also 5.2 VM600^{Mk2}/VM600 modules/cards.

3 Solved problems and bug fixes

3.1 General improvements and bug fixes

General stability improvements and bug fixes across the VibroSight 7.0.0 software.

3.2 Events selected for logging are not persisted

In VibroSight Configurator, in the Data storage view, the Event entities selected for an Events data logging rule did not persist. That is, after the configuration was activated, the Event entities were no longer listed in the configuration as selected.

3.3 Crash in Scope when configuration contains a dual processing block

In VibroSight Scope, when working with a VibroSmart VSV30x module configured with a Dual shaft relative processing block, VibroSight Scope experienced an “unexected error” and crashed (stopped working) when attempting to select the module as a data source.

3.4 Changing server passwords from the System Manager fails

In VibroSight System Manager, in the System Explorer view (VibroSight Hosts), when connected to a VibroSight Server and attempting to change the server’s passwords, VibroSight System Manager experienced an “unexected error” and crashed (stopped working).

3.5 In Protect, when activating a configuration with a channel referencing another one, protect crashes when activating the configuration

In VibroSight Protect, when working with a VM600^{Mk2} MPC4^{Mk2} module configured with a dynamic measurement channel that uses an existing signal input as its signal input (that is, a dynamic measurement channel that is linked to an existing channel in order to use the same sensor / measurement chain), VibroSight Protect experienced an “error” and crashed (stopped working) when attempting to activate the machinery protection configuration on the module.

3.6 In the server the VibroSmart component cannot be started

For a VibroSight Configurator configuration containing VibroSmart modules, after the configuration is saved as a server / database, the VibroSmart components of the VibroSight Server could not be started as expected and an “exception” was raised.

3.7 In Protect, validation of adaptive monitoring band values not always triggered when editing values

In VibroSight Protect, configuring a measurement channel Alarm to use Adaptive monitoring with Trip multiplier bands was not easy as the displayed hint text was not always clear and/or correct, sometimes the validation of the entered vales was not triggered, and sometimes incorrect text (error messages) continued to be displayed even when the entered values were correct.

3.8 Protect remains blocked and must be killed after activating the configuration

In VibroSight Protect, under certain circumstances, after activating the machinery protection configuration on VM600^{Mk2} MPC4^{Mk2} module(s) (that is, System activation), VibroSight Protect would become unavailable/blocked and would have to be “killed”, for example, using a Task manager End task command.

3.9 VibroSight Server - Data logging stops

For a VibroSight Server running as a Windows service and being operated via VibroSight System Manager, the data logging stopped infrequently without any user intervention. This issue was further characterised by live data continuing to be available via VibroSight Mimic and VibroSight Vision as usual, even though data logging by the database had stopped.

3.10 Protect displays Raw bus connections in OC bus view

In VibroSight Protect, when working with a VM600^{Mk2} system configuration consisting of MPC4^{Mk2} and RLC16^{Mk2} modules, when RLC16^{Mk2} logical functions were created using the Raw bus for inter-module signalling, these signals/lines were correctly displayed on the Raw bus but were also incorrectly displayed on the OC bus, in the Bus view (on the Layout tab/page).

3.11 When adding a new Mathematical function processing block no existing input channels are available in the "Existing signal input" tab

In VibroSight Protect, when working with a VM600^{Mk2} MPC4^{Mk2} module and attempting to configure Dual mathematical function (DMF) processing (that is, Processing type: Dual, Sensor family: Any sensors and Mathematical function), after having select the Processing (Sensor family: Pressure sensors, Processing: Broad-band pressure) for the individual channels and being prompted to select the Signal input, the Existing signal input tab was blank/empty.

3.12 Issues displaying card data in the Protect dashboard when the computer is directly connected to that card

In VibroSight Protect, when working with a VM600^{Mk2} system consisting of two MPC4^{Mk2} modules which are connected to the computer running VibroSight via a network/switch and after having activated the system, if the network connections to the MPC4^{Mk2} modules were replaced by a single direct connection between the computer and each of the modules in turn, then communications with one of the modules was possible and data could be displayed in the VibroSight Protect Dashboard tab/page as expected but communications with the other module was not possible (that is, communications became “blocked”).

3.13 Protect - wrong temp values in dashboard for input channels using current mode

In VibroSight Protect, when a measurement channel (dynamic or auxiliary) was configured with Sensor family: Temperature sensors and Processing: Quasi-static temperature, and with a current input for operation with a current-based temperature sensor (sensitivity: xx µA/°C, output range: 4 to 20 mA), incorrect temperature values were displayed from the running system by the VibroSight Protect Dashboard tab/page and by VibroSight Vision, probably due to incorrect conversions between K (as used internally by VibroSight for temperature) and °C.

3.14 In the Configurator an exception occurs when adding a new slot to a Profibus

For a VibroSight Configurator configuration containing VibroSmart VSV30x and VSI010 modules, when adding a PROFIBUS port to the VSI010 module’s communication interfaces, after a New slot is defined and it was attempted to select and add all data entities to the slot, VibroSight Configurator experienced an “unexected error” and crashed (stopped working).

4 Known issues

4.1 Display of timestamps in VibroSight Vision

In VibroSight Vision, when the timestamps (date and time) are configured to be displayed as Site time or Local computer time and the site time or local computer time is subsequently changed on the relevant computer (for example, using Windows > Control Panel > Date and Time), this change is not reflected in the VibroSight Vision user interface until the user clicks on the **Timestamp** displayed in the VibroSight Vision status bar.

4.2 VibroSight Server and Host Service restart required after changes to network adapter

If the configuration of a network adapter is changed (for example, enabled or disabled, connected or disconnected) on a computer running VibroSight, then the VibroSight Servers and Host Services running on the computer must be restarted in order for the network adapter to be recognized by the VibroSight discovery mechanism.

4.3 Length limitation of VibroSight Server instance names

Since VibroSight 2.9.6, VibroSight Server instance names are limited to 18 characters, whereas up to 27 characters were allowed in previous versions. This constraint is enforced during the creation of new server instances with VibroSight 2.9.6 or later.

NOTE:	VibroSight allows only alphanumeric characters (A to Z, a to z, 0 to 9), the hyphen-minus character (-) and the underscore character (_) to be used for VibroSight Server names.

However, existing server instances may be non-compliant (too long) and no longer run after an upgrade of the VibroSight software. In such cases, the file names used for a VibroSight Server database file (*.vssrvdb or *.db) and a VibroSight Server configuration file (*.vssrvcfg or *.config) should be updated (and manually edited in the VibroSight configuration file) to be 18 characters or less. Changes may also be required in any VibroSight software that references the server instance name, such as VibroSight Vision projects.

Where used, the automated data management commands and operations that append a timestamp (_yyyyMMddHHmmss) to the Server instance name reduces the number of file name characters that remain available for VibroSight Server instance names to three. Alternatively, the server instance name can be shorted after the data repository command or operation is complete.

Also, depending on the VibroSight Server data repository (database) file names used and any truncation performed by VibroSight, it is possible that servers are created with names that contain non-allowed characters (such as spaces), with the result that these servers will not be accessible by VibroSight software clients. Similarly, duplicate VibroSight Server names are also possible.

NOTE:	Choose appropriate VibroSight Server names in order to avoid name conflicts arising due to truncation and/or additional data repositories being created during automatic data management. This is particularly important for systems with automated data management and system backup procedures that can generate VibroSight Server data repositories with different file names.

4.4 Display of timestamps in VibroSight clients other than VibroSight Vision

Although VibroSight Vision now supports the display of timestamps (date and time) as either Site time, UTC time or Local computer time, all other VibroSight client software modules continue to display timestamps in local computer time only (that is, the date and time according to the local clock of the computer running the VibroSight software module).

4.5 Display of devices in VibroSight System Manager

In the System Explorer window of VibroSight System Manager, the Devices tree-view does not always update correctly to show all of the devices (VM600 modules/cards and VibroSmart devices) available on the network.

In particular, this has been seen when changing the firmware of a device, and can persist even after a refresh (using the **Refresh** toolbar button or **View > Refresh**).

If this behaviour is seen, the recommended workaround is to:

- Wait a few minutes and refresh again.
- Restart VibroSight System Manager.

4.6 VibroSight Mimic backwards compatibility

VibroSight 2.10.0 contained significant improvements and changes, including a separate VibroSight Mimic client software module for mimics (that were previously available in VibroSight Vision). As a result, VibroSight Vision mimics created with VibroSight 2.9.7 or earlier are not compatible with VibroSight 2.10.0 or later.

VibroSight 2.11.0 contained significant improvements and changes to the VibroSight Mimic client software module. As a result, VibroSight Vision mimics created with VibroSight 2.10.1 or earlier are not compatible with VibroSight 2.11.0 or later.

VibroSight 2.11.5 contained significant improvements to the VibroSight Mimic project framework to include version information, in order to improve the compatibility between projects created with different versions of VibroSight Mimic and eliminate the requirement for the recreation of Mimics. Starting with VibroSight 2.11.5, Mimic projects automatically detect any changes in the VibroSight Mimic software that affect project compatibility, inform the user and update the project as required.

NOTE:	VibroSight 2.11.5 is also able to open and work with Mimic projects created with VibroSight 2.11.0 or later, if the corresponding database had been updated as required.

NOTE:	When updating existing machinery monitoring projects created with VibroSight 2.12.x to VibroSight 3.x.x or later, a new data repository created by copying a VibroSight database (*.vssrvdb) to a VibroSight historical data folder (*.vshdf) must use the same server file name as the existing server in order for existing VibroSight Mimics to maintain links with the data repository and continue to work (without manual corrections). In addition, the VibroSight Server using the new data repository must be running before the existing VibroSight Mimics are run for the first time, after the update.

4.7 VibroSight OPC Clients not recovering

When a VibroSight OPC Client is being used to import information from an external OPC server into a VibroSight system and the external OPC server becomes unavailable, the VibroSight OPC Client may not always recover automatically when the OPC server becomes available again.

This is typically characterised by the VibroSight OPC Client continuing to show connection error messages even when OPC server is available and can result in permanent loss of the imported data if not noticed.

NOTE:	The external OPC data can be permanently lost if it is not imported into VibroSight as expected. Any VibroSight system feature or configuration element relying on the imported OPC data will not behave as expected, for example, alarms, machinery operating conditions and data logging rules.

If this behaviour is seen, the recommended workaround is to:

- Stop and restart the VibroSight OPC Client from either the VibroSight Server (**Data > Acquisition > OPC Device Driver**) or VibroSight System Manager.
- Stop and restart the VibroSight Server, if required.

4.8 Duplicate events

For VibroSight systems using VM600 XMx16 cards, VibroSight Event Viewer retrieves all of the event information available from the data buffers on the cards.

For VibroSight systems using VibroSmart modules, VibroSight Event Viewer retrieves the event information available from the current time only (no buffered events).

Accordingly, for a VibroSight system using VM600 XMx16 cards, there is the possibility of duplicate events being listed in the Event Viewer, particularly for VibroSight systems being operated without an NTP server (where events are not recognised as duplicates due to time drift).

4.9 VibroSight Server status indicators

The status indicators (performance counter monitors) on the Status tab of the new VibroSight Server are not correctly displayed and updated when an NVIDIA WMI driver is installed on the same computer as the VibroSight Server.

NOTE:	The NVIDIA Enterprise Management Toolkit (NVWMI) is a graphics and display management and control technology that interfaces to Microsoft's Windows Management Instrumentation (WMI) infrastructure, specific to NVIDIA graphics processing units (GPUs).

This is because NVIDIA WMI prevents the Microsoft .NET Framework from obtaining the required counter values from the underlying operating system / computer.

4.10 XMx16 card pre-logging

For an XMx16 card pair, if Dynamic Input Channel 16 is used as an input to a Dynamic Processing Block that is used as an input to a Dual Shaft Relative Processing Block which is configured to provide an Orbit and/or Full Spectrum output, then any pre-logging configured for the principal mode Waveform and/or Spectrum of Dynamic Input Channel 16 will not actually log any of the data from the same pre-logging scope.

4.11 Problems creating new VibroSight OPC Classic Servers

Users who have upgraded from an earlier version of VibroSight to a later version (for example, from VibroSight 2.x.x or 3.0.0 to VibroSight 3.1.0) can experience problems when creating new VibroSight OPC Classic Servers.

Such problems are typically characterised by the **OPC Server Create** command in VibroSight System Manager displaying an error message such as
"The type initializer for 'ch.VibroMeter.Xms.OpcServer.Utils.OpcServerUtils' threw an exception".

This typically occurs because an earlier version of the OpcServer.config file required by VibroSight OPC Classic Servers is being used by the later installation of VibroSight, which can happen in one of two ways:

- When a version of VibroSight 3.x.x or later is installed on a computer that was running a version of VibroSight 2.x.x or earlier, the VibroSight installer automatically checks existing VibroSight folders (such as **C:\ProgramData\Meggitt\VibroSight 2**) in order to copy relevant system and/or user preference files across to the new VibroSight folders (such as **C:\ProgramData\Meggitt\VibroSight**), including an earlier OpcServer.config file.

- When VibroSight 3.1.0 is installed on a computer that was running VibroSight 3.0.0, the creation of a VibroSight OPC Classic installer using VibroSight 3.0.0 automatically created an earlier OpcServer.config file.

As shown below, the first few lines of a typical OpcServer.config file contains version specific information that is incompatible with later versions of VibroSight:

```
<?xml version="1.0" encoding="utf-8"?>
<configuration>
  <configSections>
    <section name="opcServersConfiguration" type="ch.VibroMeter.Xms.OpcServer.Utils.OpcServersSystemConfiguration,
XmsOpcServerUtils, Version=2.0.0.0, Culture=neutral, PublicKeyToken=2db2a2387bac0a0a" />
  </configSections>
…
</configuration>
```

So for users who have upgraded from an earlier version of VibroSight to a later version, if problems are experienced when creating new VibroSight OPC Classic Servers, the workaround is to:

1. Use an XML-compatible text editor program to edit the OpcServer.config file and remove the version specific information. That is, change the line containing the section name
from:

```
<section name="opcServersConfiguration" type="ch.VibroMeter.Xms.OpcServer.Utils.OpcServersSystemConfiguration,
XmsOpcServerUtils, Version=2.0.0.0, Culture=neutral, PublicKeyToken=2db2a2387bac0a0a" />
```

to:

```
<section name="opcServersConfiguration" type="ch.VibroMeter.Xms.OpcServer.Utils.OpcServersSystemConfiguration,
XmsOpcServerUtils, Culture=neutral, PublicKeyToken=2db2a2387bac0a0a" />
```

2. Restart the computer.
   Note: The computer must be restarted to ensure that the edited version of the OpcServer.config file is used (and not some other version from cache memory).

3. Use the **OPC Server Create** command in VibroSight System as required.

NOTE:	The manual migration of existing VibroSight OPC Classic Servers to VibroSight 3.x.x or later is described in detail in the “VibroSight OPC Classic Server migration” section of the latest *Getting started with VibroSight installation guide*.

4.12 Potential TCP port 50000 conflict

The VibroSight Host Service (XmsHostService.exe) requires TCP port 50000 for communication with the VibroSight software. So if the computer running the VibroSight software is running other software which also requires TCP port 50000, this results in a TCP port conflict which can prevent VibroSight (or the other software) from running.

During the VibroSight software installation process, the VibroSight 3.4.x or later installer will typically detect other software on the computer that is using TCP port 50000 and report this. For example: “The port 50000 cannot be used. Please close all application using this port before manually starting the host service.”

Accordingly, any potential TCP port 50000 conflicts should be resolved before the VibroSight software can be successfully installed and run.

4.13 Problems using shared network drives/locations for VibroSight data management

On computers running Windows 10 or Windows Server 2016, problems can be experienced using shared network drives/locations with VibroSight’s integrated data management operations such as Offline data storage and Database backup (configured in VibroSight Configurator) due to Windows security policies and restrictions.

Such problems are typically characterised by the individual copy commands scheduled and run on a VibroSight Server (corresponding to Offline data storage and Database backup operations) failing to run correctly. More specifically, on the Data Management tab of a VibroSight Server, scheduled incremental copy jobs (Type: Copy) are typically displayed with Status: Error, while the Log Messages tab of the server display typically displays messages such as “Errors during the copy operation” and “Uncaught error IOException occurred in task ‘Task “DataRepositoryCopyDataMan…”.

NOTE:	For Windows 10 and Windows Server 2016, Microsoft improved network security with a change to the rules governing shared network drives/locations. More specifically, a shared network drive/location is now only accessible and visible to the user who created the shared network drive/location, even if the user is an Administrator.

Accordingly, in order to avoid such problems, a shared network drive/location on Windows 10 and Windows Server 2016 computers that is required to be used by VibroSight’s integrated data management operations should be created as a “system account” in order to ensure that the required Windows Services can access the shared resource (drive/location).

This can easily be done using Microsoft’s PsExec utility. For example, by running the following command (as an Administrator):

PsExec.exe -i -s cmd.exe /C "net use Z: \\server\share"

Where the net use command is used to map the \\computer name\sharename (\\server\share) to the devicename (Z:).

NOTE:	For Windows 10 and Windows Server 2016, Microsoft improved network security with a change to the rules governing shared network drives/locations. More specifically, a shared network drive/location is now only accessible and visible to the user who created the shared network drive/location, even if the user is an Administrator.

4.14 Problems installing VibroSight 3.7.x on computers without internet access

On computers which are not connected to the internet, the VibroSight 3.7.x installer can experience problems when automatically installing the prerequisite Microsoft Visual C++ Redistributable Package for Visual Studio 2015, and report a generic message such as “Setup Failed. One or more issues caused the setup to fail”.

As a workaround, trying to manual install the Microsoft Visual C++ Redistributable Package for Visual Studio 2015, the Microsoft Visual C++ installer can also experience problems, and report a similar generic “Setup Failed” message.

This is a known Microsoft problem which is due to some components in Visual Studio being signed by a certification authority that is not installed on the computer, and the computer cannot automatically download the required certificate(s) because it is not connected to the internet.

Accordingly, the Microsoft solution is to:

1. On a computer which is connected to the internet, download the following certificate:
   http://www.microsoft.com/pki/certs/MicRooCerAut2011_2011_03_22.crt
   Then copy the certificate to the VibroSight computer (for example to C:\Temp).
2. On the VibroSight computer, use the certmgr.exe utility to add the certificate by using the command line.
   Note: For more information, refer to the Certmgr.exe (Certificate Manager Tool) topic at MSDN.
3. Open an admin command prompt and run the following command:
   certmgr.exe /add C:\Temp\MicRooCerAut2011_2011_03_22.cer /s /r localMachine root
4. Next, try installing the patch KB3135996 or KB3136000.

If required, additional information is available from a Microsoft MSDN blog, here:
https://blogs.msdn.microsoft.com/vsnetsetup/2016/03/28/a-certificate-chain-could-not-be-built-to-a-trusted-root-authority-2

5 Compatibility

As part of the VibroSight software installation process, the VibroSight installer will automatically check to see if the required Microsoft .NET Framework, Microsoft Visual C++ Redistributable Package, OPC Core Components Redistributable software and OPC UA Local Discovery Server are pre-installed on the computer:

- The required Microsoft Visual C++ Redistributable Package (see section 5.1.3) must be manually installed before VibroSight can be installed. If it is not detected, then the VibroSight installer will exit the installation and VibroSight is not installed.
- The required Microsoft .NET Framework (see section 5.1.2) is automatically installed by the VibroSight installer if it is not detected.
- The required OPC Core Components Redistributable (see section 5.1.4) software is automatically installed on the computer by the VibroSight installer if it is not detected.
- The required OPC UA Local Discovery Server (see section 5.1.5) software is automatically installed on the computer by the VibroSight installer if it is not detected.

NOTE: Refer to the latest version of the *Getting started with VibroSight installation guide* or the *VibroSight software data sheet* for further information on VibroSight's prerequisites and compatibility.

5.1 VibroSight software

VibroSight 7.0.0 is a major level release and replaces VibroSight 6.1.x.

Compatibility with existing VibroSight data repositories (databases) is achieved using a specific data migration process from any existing databases based on Sybase SQL Anywhere (*.vssrvdb) to data repositories based on the VibroSight historical data repositories (VibroSight historical data folder (*.vshdf) for operation with a VibroSight Server (live data) and VibroSight historical data archive (*.vshda) for operation with historical data).

Compatibility with existing VibroSight machinery monitoring projects using VibroSight OPC Servers that were created using VibroSight 2.12.7 or earlier is achieved using a specific VibroSight OPC Server migration process for these VibroSight OPC Servers.

Therefore, it is important to note that:

- New machinery monitoring projects created with VibroSight 7.x.x (VibroSight 3.x.x or later) will automatically use VibroSight historical data repositories.
- Existing machinery monitoring projects created with versions of VibroSight earlier than VibroSight 3.0.0 must be manually migrated from Sybase SQL Anywhere databases to VibroSight historical data repositories before they can be used with VibroSight 7.x.x (VibroSight 3.x.x or later).
- Existing machinery monitoring projects using VibroSight OPC Servers that were created with versions of VibroSight earlier than VibroSight 2.12.7 must manually migrate their VibroSight OPC Servers before they can be used with VibroSight 7.x.x (VibroSight 3.x.x or later).
  It is very important to note that migrating a VibroSight OPC Server from VibroSight 2.12.7 or earlier to

VibroSight 7.x.x (VibroSight 3.x.x or later) or later requires that certain steps must be performed using the existing version of VibroSight (that is, VibroSight 2.12.7 or earlier) BEFORE it is removed (uninstalled).

NOTE:	The manual migration of an existing machinery monitoring project to VibroSight 7.x.x (VibroSight 3.x.x or later) or later is described in detail in the "Data migration" and "VibroSight OPC Server migration" sections of the latest *Getting started with VibroSight installation guide*.

5.1.1 Microsoft Windows operating systems

VibroSight 7.x.x (VibroSight 3.x.x or later) or later is compatible with 32-bit versions and 64-bit versions of Microsoft ® Windows ® operating systems.

NOTE:	Starting with VibroSight 3.0.0, VibroSight software is now available as 64-bit software for 64-bit Windows and 32-bit software for 32-bit Windows. The 64-bit version of VibroSight can be installed on 64-bit Windows computers only. The 32-bit version of VibroSight can be installed on 32-bit Windows computers only. Only a single version of VibroSight can be installed and exist on a computer at any one time

See the Appendix of these release notes for further information on VibroSight software and Windows operating system compatibility.

5.1.2 Microsoft .NET Framework

For most Windows operating systems, VibroSight 7.x.x (VibroSight 3.7.0 or later) requires that the Microsoft .NET Framework 4.7.2 or later is installed.

NOTE:	VibroSight 7.x.x requires Microsoft .NET Framework 4.7.2.

If the required Microsoft .NET Framework is not pre-installed, then the VibroSight installer will detect this and automatically install it as part of the VibroSight software installation process.

See the Appendix of these release notes for further information on VibroSight software and Microsoft .NET Framework requirements.

5.1.3 Microsoft Visual C++ Redistributable Package

VibroSight 7.x.x (VibroSight 3.x.x or later) requires that the Microsoft Visual C++ Redistributable Package for Visual Studio 2015 is installed, in order to install and register the Visual C++ libraries used by VibroSight.

NOTE: The 64-bit version of the Microsoft Visual C++ Redistributable Package ("Microsoft Visual C++ 2015 Redistributable (x64)") must be installed on 64-bit Windows computers.
The 32-bit version of the Microsoft Visual C++ Redistributable Package ("Microsoft Visual C++ 2015 Redistributable (x86)") must be installed on 32-bit Windows computers.

If the required Microsoft Visual C++ Redistributable Package is not pre-installed, then the VibroSight installer will detect this and exit the installation.

5.1.4 OPC Core Components Redistributable

VibroSight 7.x.x (VibroSight 3.x.x or later) requires that the OPC Core Components Redistributable is installed, in order to configure and run VibroSight OPC Clients and VibroSight OPC Servers correctly: the redistributable must be installed on OPC client computers in order to allow connections to remote OPC servers and it must be installed on OPC server computers in order to allow OPC clients to browse for running OPC servers.

NOTE: The 64-bit version of the OPC Core Components Redistributable ("OPC Core Components Redistributable (x64) 106.0") must be installed on 64-bit Windows computers.

The 32-bit version of the OPC Core Components Redistributable ("OPC Core Components Redistributable (x86) 106.0") must be installed on 32-bit Windows computers.

If the required OPC Core Components Redistributable is not pre-installed, then the VibroSight installer will detect this and automatically install it as part of the VibroSight software installation.

5.1.5 OPC UA Local Discovery Server

VibroSight 7.x.x or later requires that the OPC UA Local Discovery Server is installed, in order to expose OPC UA servers for discovery and enable communications with OPC UA clients.

If the required OPC UA Local Discovery Server is not pre-installed, then the VibroSight installer will detect this and automatically install it as part of the VibroSight software installation.

5.1.6 Sybase SQL Anywhere 11 software

VibroSight 7.x.x (VibroSight 3.x.x or later) does not include any Sybase SQL database software.

Starting with VibroSight 3.0.0, the VibroSight historical data repositories (VibroSight historical data folder (*.vshdf) for operation with a VibroSight Server (live data) and VibroSight historical data archive (*.vshda) for operation with historical data) are exclusively used for the required data repositories.

A VibroSight database based on Sybase SQL Anywhere (*.vssrvdb) can no longer be used as a data repository. Accordingly, the Sybase SQL Anywhere 11 database software is no longer included and distributed as part of the VibroSight software.

NOTE:	VibroSight 3.x.x or later exclusively uses data repositories based on the VibroSight historical data system. VibroSight 2.12.7 used data repositories based on Sybase SQL Anywhere databases and introduced initial support for working with data repositories based on the VibroSight historical data repositories for data analysis. VibroSight 2.12.6 or earlier exclusively used data repositories based on Sybase SQL Anywhere databases.

NOTE:	The manual migration of an existing machinery monitoring project to VibroSight 7.x.x (VibroSight 3.x.x or later) is described in detail in the "Data migration" section of the latest *Getting started with VibroSight installation guide*.

5.1.7 Dell Backup and Recovery software

Some Dell™ computers running versions of Dell Backup and Recovery software can experience problems running the VibroSight software, characterised by the VibroSight software not running or running incorrectly. This is because the Dell Backup and Recovery software can use a version of SQLite and associated libraries (DLLs) that prevent the VibroSight Host Service from running correctly.

For example, VibroSight clients can stop running (crash), VibroSight clients can be unable to connect to data sources and/or VibroSight System manager may not display all of the commands expected to be available in the Actions window.

If this behaviour is seen, the recommended workaround is to uninstall the Dell Backup and Recovery software.

NOTE:	It is recommended to install and use VibroSight 3.x.x or earlier on a computer that does not have Dell Backup and Recovery software installed.

5.1.8 MatrikonOPC software

Both MatrikonOPC™ software and the VibroSight software can be installed and run on the same computer.

However, if the MatrikonOPC software is installed after the VibroSight software, this can result in problems related to credentials (access rights). These problems are typically characterised by an unhandled exception in VibroSight Configurator when trying to configure an OPC device in the Hardware view or an unhandled exception in a VibroSight Server when trying to handle/process OPC data.

MatrikonOPC software and the VibroSight software must be installed on the same computer in the following order:

1. Install the MatrikonOPC software.
2. Install the Microsoft Visual C++ Redistributable Package for Visual Studio 2010 (version 40219).
   Note: This redistributable package is required by the MatrikonOPC software.
3. Install the Microsoft Visual C++ Redistributable Package for Visual Studio 2015 (version 23026 or later).
   Note: This redistributable package is required by the VibroSight software.
4. Install VibroSight 3.x.x or later.

5.2 VM600^{Mk2}/VM600 modules/cards

5.2.1 Card firmware

There are some firmware upgrades for VM600^{Mk2}/VM600 modules/cards corresponding to VibroSight 7.0.0.

The latest firmware for the VM600^{Mk2} MPC4^{Mk2} module is now:

- Machinery protection: `640-025-005-000.Mpc4g2Fw`
- Condition monitoring: `640-033-001-000.VxeFw`
- Recovery: `640-031-003-006.Mpc4g2Fw`
- Proof test: `640-032-001-001.VxeFw`

See 2.3 MPC4^{Mk2} + IOC4^{Mk2} module.

The latest firmware for the new VM600^{Mk2} CPUM^{Mk2} module is now:

- Base system: `base-system-640-034-001-001.tgz`

See 2.4 CPUM^{Mk2} + IOCN^{Mk2} module.

The latest firmware for the VM600 CPUR2 card is now:

- Base System : `base-system-640-014-001-005.tgz`
- Applications: `applications-640-015-001-005.tgz`

See 2.5 CPUR2 + IOCR2 module.

The latest firmware for the VM600 CPUR card remains:

- Base System: `base-system-640-011-001-005.tgz`
- Applications: `applications-640-012-001-005.tgz`

NOTE: In order to help distinguish between VM600^{Mk2} CPUx modules and VM600 CPUx cards, VibroSight 6.0.0 and later uses the following terminology:
• **CPUM^{Mk2}** to refer to the VM600^{Mk2} CPUx module with mathematical processing of fieldbus data and support for Modbus TCP and PROFIBUS DP (PNR 600-050).
• **CPUR2** to refer to the latest version of the VM600 CPUx card with support for PROFIBUS (PNR 600-026-000-VVV).
• **CPUR** to refer to the earlier version of the VM600 CPUx card with support for Modbus RTU/TCP and card pair redundancy (PNR 600-007-000-VVV).

The latest firmware for the VM600^{Mk2}/VM600 XMC16, XMV16 and XMVS16 cards remains:

- Base System: `base-system-640-003-001-016.tgz`
- Applications: `applications-640-010-001-016.tgz`

Therefore, for current versions of VibroSight and VM600^{Mk2}/VM600 systems, firmware upgrades are required.

5.3 VibroSmart devices

5.3.1 Module firmware

There are no firmware upgrades for VibroSmart modules and devices corresponding to VibroSight 7.0.0.

The latest firmware for the VSI010 module remains:

- `642-002-000-013.xmsifw`

The latest firmware for the VSN010 device remains:

- `642-004-000-011.redboxfw`

The latest firmware for the VSV30x module remains:

- `642-001-000-019.xtranfw`

Therefore, for current versions of VibroSmart modules and devices, no firmware upgrades are required.

6 Upgrade procedure

This section describes the procedure for upgrading a VibroSight system from a previous version. Perform the steps in the given sequence in order to complete a system upgrade.

NOTE:	It is strongly recommended to verify the version of firmware running in the related hardware (XMx16 cards and VibroSmart modules and devices) before starting a VibroSight system upgrade, in order to establish if any firmware updates are also required. See 6.2.3 Updating the firmware using VibroSight System Manager.

NOTE:	It is strongly recommended to ensure that a copy of the configuration for a VibroSmart is available before updating the firmware of any of the VibroSmart modules used in the distributed monitoring system. See 6.2.3 Updating the firmware using VibroSight System Manager.

6.1 VibroSight software user settings

The VibroSight Software generates and uses some files on the storage device of the computer running VibroSight to keep track of user-configurable settings, so that these settings are remembered and applied for the VibroSight installation.

These settings files have an .xmssettings file name extension and on a computer running Windows 7, can be found here:

C:\Users*username*\AppData\Roaming\Meggitt\VibroSight, where *username* is the Windows account name.

For example, the VibroSightVision.xmssettings file records the user-configurable default settings for VibroSight Vision, such as default settings for plots.

NOTE:	VibroSight software updates and upgrades do not replace these settings files, so: • For a computer on which VibroSight was previously installed, an update, upgrade or a re-installation of VibroSight will continue to use the previous defaults recorded in the .xmssettings files. • For a computer on which VibroSight was not previously installed, the installation of VibroSight will generate and use new .xmssettings files, which use the latest VibroSight software defaults. If a settings file is deleted for any reason, VibroSight will generate and use a new settings file, which uses the latest VibroSight software defaults.

6.2 Updating VibroSight-compatible hardware

Appropriate files and tools are included in the installation package to allow VM600^{Mk2}/VM600 modules/cards (XMx16) and VibroSmart devices (VSI010, VSN010 and VSV30x) to be updated to the latest firmware, in order to take advantage of improvements to the VibroSight software.

Updating the firmware for VM600^{Mk2}/VM600 modules/cards cards or VibroSmart devices is a special task that can, if used unintentionally or incorrectly, lead to malfunctioning of the device and affect proper function of data acquisition.

During the firmware update of a device, the card or module being updated cannot provide its normal machinery monitoring functions because its outputs (alarms and relays) can go to undetermined states, irrespective of how they have been configured.

For VibroSmart modules, the machinery being monitored is not protected for the duration of a firmware update and the restart (reboot) that is triggered automatically after the firmware update (which can take up to 5 minutes).

NOTE: It is highly recommended that firmware updates are only performed in accordance with the operating procedures for the machinery being monitored and that appropriate precautions are taken at the control system level (such as DCS or PLC).

For example, alarms and relay outputs should be ignored (bypassed or inhibited) in order to avoid false trips of the machinery being monitored.

6.2.1 VM600^{Mk2}/VM600 module/card firmware

The latest VM600^{Mk2}/VM600 module/card firmware files are copied to a directory on your computer as part of the VibroSight software installation process.

NOTE: For example, the default firmware directory for VM600^{Mk2}/VM600 modules/cards is: C:\Program Files\Meggitt\VibroSight\Firmware\VM600

The firmware files for a VM600^{Mk2}/VM600 module/card can be found in the appropriate subfolder and identified by their .tgz file name extension. For example, the XMV16 subfolder contains the applications and base system firmware for use by XMV16 cards. Any additional firmware updates received from Meggitt SA should also be stored in these directories.

Table 1 shows the compatibility between VibroSight software and VM600^{Mk2} MPC4^{Mk2} module hardware (that is, MPC4^{Mk2} firmware).

Table 2 shows the compatibility between VibroSight software and VM600^{Mk2} CPUM^{Mk2} module hardware (that is, CPUM^{Mk2} firmware).

Table 3 shows the compatibility between VibroSight software and VM600 CPUR2 card hardware (that is, CPUR2 firmware).

Table 4 shows the compatibility between VibroSight software and VM600 CPUR card hardware (that is, CPUR firmware).

Table 5 shows the compatibility between VibroSight software and VM600 XMx16 card hardware (that is, XMC16, XMV16 and XMVS16 firmware).

NOTE:	It is strongly recommended to use the most recent version of the VM600 CPUR firmware and VM600 XMx16 firmware that is compatible with the version of VibroSight software being used.

Table 1: VibroSight software and VM600^{Mk2} MPC4^{Mk2} firmware compatibility

	VM600^{Mk2} MPC4^{Mk2} firmware				
VibroSight software version Part number (PNR)	Machinery protection firmware (`640-025-vvv-ppp.Mpc4g2Fw`)				
	`640-025-002-000`	`640-025-003-002`	`640-025-004-000`	`640-025-004-003`	`640-025-005-000`
	Condition monitoring firmware (`640-033-vvv-ppp.VxeFw`)				
	---	---	---	---	`640-033-001-000`
	Recovery firmware (`640-031-vvv-ppp.Mpc4g2Fw`)				
	---	`640-031-003-002`	`640-031-003-004`	`640-031-003-006`	
	Proof test firmware (`640-032-vvv-ppp.VxeFw`)				
	---	`640-032-001-000`		`640-032-001-001`	
5.1.0 609-004-000-049	✓ See note 1				
6.0.0 609-004-000-050		✓ See note 2			
6.1.0 609-004-000-051			✓ See note 3		
7.0.0 609-004-000-052				✓ See note 4	

Notes for Table 1 (see the next page)

Notes for Table 1

1. This version of VM600^{Mk2} MPC4^{Mk2} (previously referred to as VM600 MPC4G2) firmware is a release intended to support the ongoing development and evaluation of VibroSight Protect and VM600^{Mk2} systems only. A firmware upgrade is required in order to run VibroSight 5.1.0 or later.

2. This version of VM600^{Mk2} MPC4^{Mk2} (previously referred to as VM600 MPC4G2) firmware is the official launch release of firmware supporting VibroSight Protect and VM600^{Mk2} systems. A firmware upgrade is required in order to run VibroSight 6.0.0 or later – that is, to use VM600^{Mk2} systems in “live” machinery protection system (MPS) applications. Contact Meggitt SA for further information.

3. This version of VM600^{Mk2} MPC4^{Mk2} firmware improves frequency domain measurements (the phase component can be used as the input signal for an analog output), differential expansion (dual taper) processing (the ramp angles for the taper on the shaft are configured separately), auxiliary input channels configured as tacho inputs (appropriate data quality indicators and warning messages, with automatic recovery), and the maximum tacho speed / frequency has been increased. It also includes a number of bug fixes. (Refer to the VibroSight 6.1 release notes for further information.) A firmware upgrade is required in order to run VibroSight 6.1.0 or later.

4a. These versions of VM600^{Mk2} MPC4^{Mk2} firmware:
• Improve support for machinery protection (640-025-005-000 machinery protection firmware)
• Add support for condition monitoring (640-033-001-000 condition monitoring firmware)
• Improve system recovery (640-031-003-006 recovery firmware)
• Improve proof testing (640-032-001-001 proof test firmware).
See 2.3 MPC4Mk2 + IOC4Mk2 module for further information. A firmware upgrade is required in order to run VibroSight 7.0.0 or later.
Note: For reference, earlier versions of VibroSight / VM600^{Mk2} MPC4^{Mk2} supported machinery protection only, that is, no condition monitoring firmware (640-033-vvv-ppp) was available.

4b. These versions of VM600^{Mk2} MPC4^{Mk2} firmware:
• Improve support for machinery protection (640-025-004-003 and 640-025-005-000 machinery protection firmware)
• Add support for condition monitoring (640-033-001-000 condition monitoring firmware – with 640-025-005-000 machinery protection firmware only)
• Improve system recovery (640-031-003-006 recovery firmware)
• Improve proof testing (640-032-001-001 proof test firmware).
See 2.3 MPC4Mk2 + IOC4Mk2 module for further information. A firmware upgrade is required in order to run VibroSight 7.0.0 or later.
Note: For reference, earlier versions of VibroSight / VM600^{Mk2} MPC4^{Mk2} supported machinery protection only, that is, no condition monitoring firmware (640-033-vvv-ppp) was available.

Table 2: VibroSight software and VM600^{Mk2} CPUM^{Mk2} firmware compatibility

	VM600^{Mk2} CPUM^{Mk2} firmware See note 1	
VibroSight software version	Base-system / Applications firmware (`*.tgz`)	
Part number (PNR)	`640-034-001-000`	`640-034-001-001`
6.1.0 609-004-000-051	✓ See note 2	
7.0.0 609-004-000-052		✓ See note 3

Notes for Table 2

1. VM600 CPUR2 firmware is packaged and distributed as a *.tgz* file (a compressed archive file format) with PNRs such as *640-034-001-xxx* for the base system firmware. In these PNRs, the *xxx-xxx-001-xxx* denotes the firmware is packaged in the tgz file format.

After the *.tgz* file is unpacked by VibroSight System Manager and the firmware is uploaded to a VM600 CPUM^{Mk2} module, the dialog box displayed by the VibroSight System Manager's Change Firmware command shows the current version of firmware using PNRs such as *640-034-000-xxx* for the base system firmware, which correspond to the actual unpacked firmware that is running on the module.

2. This version of VM600^{Mk2} CPUM^{Mk2} firmware is the official launch release of firmware supporting VM600^{Mk2} systems. (Refer to the VibroSight 6.1 release notes for further information.) A firmware upgrade is required in order to run VibroSight 6.1.0 or later.

3. For information on this version of VM600^{Mk2} CPUM^{Mk2} firmware, see 2.4 CPUMMk2 + IOCNMk2 module.
A firmware upgrade is required in order to run VibroSight 7.0.0 or later.

Table 3: VibroSight software and VM600 CPUR2 firmware compatibility

	VM600 CPUR2 firmware See note 1			
VibroSight software version Part number (PNR)	Base-system firmware (`*.tgz`)			
	`640-014-001-001`	`640-014-001-002`	`640-014-001-003`	`640-014-001-005`
	Applications firmware (`*.tgz`)			
	`640-015-001-001`	`640-015-001-002`	`640-015-001-003`	`640-015-001-005`
3.4.0 609-004-000-041	✓ See note 2	✓ See note 3	✓	
3.5.0 609-004-000-042	✓	✓	✓	
3.6.0 609-004-000-043	✓	✓	✓	
3.7.0 609-004-000-044	✓	✓	✓	
3.8.0 609-004-000-045	✓	✓	✓	
4.0.0 609-004-000-046	✓	✓	✓	
4.1.0 609-004-000-047	✓	✓	✓ See note 4	
5.0.0 609-004-000-048	✓	✓	✓	
5.1.0 609-004-000-049	✓	✓	✓	
6.0.0 609-004-000-050	✓	✓	✓	
6.1.0 609-004-000-051	✓	✓	✓	
7.0.0 609-004-000-052				✓ See note 5

Notes for Table 3 (see the next page)

Notes for Table 3

1. VM600 CPUR2 firmware is packaged and distributed as a *.tgz* file (a compressed archive file format) with PNRs such as *640-014-001-xxx* for the Base System and *640-015-001-xxx* for the (Applications) Firmware. In these PNRs, the *xxx-xxx-001-xxx* denotes the firmware is packaged in the tgz file format.

After the *.tgz* file is unpacked by VibroSight System Manager and the firmware is uploaded to a VM600 CPUR2 card, the dialog box displayed by the VibroSight System Manager's Change Firmware command shows the current version of firmware using PNRs such as *640-014-000-xxx* for the Base System and *640-015-000-xxx* for the Firmware, which correspond to the actual unpacked firmware that is running on the card.

2. This is the first official release of VM600 CPUR2 firmware and includes features such as the management of XMx16 card configurations for applications such as control systems and the implementation of the PROFIBUS protocol for the fieldbus interfaces. A firmware upgrade is required in order to run VibroSight 2.12.7 or later.

3. This version of VM600 CPUR2 firmware includes improvements such as changing the PROFIBUS polling rate for the Modbus server to 100 ms (was 200 ms) and a bug fix for a known VM600 CPUx time counter wraparound (overflow) issue. A firmware upgrade is strongly recommended in order to run VibroSight 3.4.0 or later.

4. This version of VM600 CPUR2 firmware includes improvements such as overall performance, responsiveness and stability, and support for CPUR2/IOCR2 card pair relays, and the ability to download the GSD file directly from the card. A firmware upgrade is strongly recommended but is not required in order to run VibroSight 4.1.0 or later.
Note: VibroSight 4.1.0 or later must be used in order to download the VM600 CPUR2 GSD file directly from the CPUR2 card.

5. For information on this version of VM600^{Mk2} CPUR2 firmware, see 2.5 CPUR2 + IOCR2 module.
A firmware upgrade is required in order to run VibroSight 7.0.0 or later.

Table 4: VibroSight software and VM600 CPUR firmware compatibility

	VM600 CPUR firmware See note 1	
VibroSight software version Part number (PNR)	Base-system firmware (`*.tgz`)	
	`640-011-001-004`	`640-011-001-005`
	Applications firmware (`*.tgz`)	
	`640-012-001-004`	`640-012-001-005`
4.0.0 609-004-000-046	✓ See note 2	✓
4.1.0 609-004-000-047	✓	✓ See note 3
5.0.0 609-004-000-048	✓	✓
5.1.0 609-004-000-049	✓	✓
6.0.0 609-004-000-050	✓	✓
6.1.0 609-004-000-051	✓	✓
7.0.0 609-004-000-052	✓	✓

Notes for Table 4

1. VM600 CPUR firmware is packaged and distributed as a *.tgz* file (a compressed archive file format) with PNRs such as *640-011-001-xxx* for the Base System and *640-012-001-xxx* for the (Applications) Firmware. In these PNRs, the *xxx-xxx-001-xxx* denotes the firmware is packaged in the tgz file format.

After the *.tgz* file is unpacked by VibroSight System Manager and the firmware is uploaded to a VM600 CPUR card, the dialog box displayed by the VibroSight System Manager's Change Firmware command shows the current version of firmware using PNRs such as *640-011-000-xxx* for the Base System and *640-012-000-xxx* for the Firmware, which correspond to the actual unpacked firmware that is running on the card.

2. This is the latest official release of VM600 CPUR firmware (that is, the earlier version of the CPUx card with support for card pair redundancy (PNR 600-007-000-VVV)), which was discontinued in VibroSight 2.12.0 and reintroduced in VibroSight 4.0.x).

3. This version of VM600 CPUR firmware includes a bug fix for a known VM600 CPUx time counter wraparound (overflow) issue and the addition of relay outputs to the diagnostics logs. A firmware upgrade is strongly recommended but is not required in order to run VibroSight 4.1.0 or later.

Table 5: VibroSight software and VM600 XMx16 firmware compatibility

	VM600 XMx16 firmware See note 1
VibroSight software version Part number (PNR)	Base-system firmware (`*.tgz`)
	`640-003-001-016`
	Applications firmware (`*.tgz`)
	`640-010-001-016`
3.4.0 609-004-000-041	✓ See note 2
3.5.0 609-004-000-042	✓
3.6.0 609-004-000-043	✓
3.7.0 609-004-000-044	✓
3.8.0 609-004-000-045	✓
4.0.0 609-004-000-046	✓
4.1.0 609-004-000-047	✓
5.0.0 609-004-000-048	✓
5.1.0 609-004-000-049	✓
6.0.0 609-004-000-050	✓
6.1.0 609-004-000-051	✓
7.0.0 609-004-000-052	✓

Notes for Table 5 (see the next page)

Notes for Table 5

1. VM600 XMx16 firmware is packaged and distributed as a *.tgz* file (a compressed archive file format) with PNRs such as *640-003-001-xxx* for the Base System and *640-010-001-xxx* for the (Applications) Firmware. In these PNRs, the *xxx-xxx-001-xxx* denotes the firmware is packaged in the tgz file format.

After the *.tgz* file is unpacked by VibroSight System Manager and the firmware is uploaded to a VM600 XMx16 card, the dialog box displayed by the VibroSight System Manager's Change Firmware command shows the current version of firmware using PNRs such as *640-010-000-xxx* for the Firmware and *640-003-000-xxx* for the Base System, which correspond to the actual unpacked firmware that is running on the card.

2. This version of VM600 XMx16 firmware includes relaxed constraints for dynamic data retention time, that is, optimised memory to reduce the possibility of missing data in data intensive VibroSight applications running on less powerful computers. A firmware upgrade is required in order to run VibroSight 3.3.0 or later.

6.2.2 VibroSmart device firmware

The latest VibroSmart device firmware files are copied to a directory on your computer as part of the VibroSight software installation process.

NOTE:	The default firmware directory for VibroSmart devices is: C:\Program Files\Meggitt\VibroSight\Firmware\VibroSmart

The firmware files for a VibroSmart device can be found in the appropriate subfolder and identified by their `.*fw` file name extension. For example, the VSV30x subfolder contains the firmware for use by VSV30x modules. Any additional firmware updates received from Meggitt SA should also be stored in these directories.

Table 6 shows the compatibility between VibroSight software and the VibroSmart VSI010 firmware.

Table 7 shows the compatibility between VibroSight software and the VibroSmart VSN010 firmware.

Table 8 shows the compatibility between VibroSight software and the VibroSmart VSV30x firmware.

NOTE:	It is strongly recommended to use the most recent version of the VibroSmart firmware that is compatible with the version of VibroSight software being used.

Table 6: VibroSight software and VibroSmart VSI010 firmware compatibility

	VSI010 firmware (`*.xmsifw`) See note 1				
VibroSight software version Part number (PNR)	`642-002-000-009`	`642-002-000-010`	`642-002-000-011`	`642-002-000-012`	`642-002-000-013`
3.4.0 609-004-000-041	✓ See note 2	✓ See notes 2 and 3			
3.5.0 609-004-000-042	✓	✓			
3.6.0 609-004-000-043	✓	✓			
3.7.0 609-004-000-044	✓	✓			
3.8.0 609-004-000-045	✓	✓			
4.0.0 609-004-000-046	✓	✓			
4.1.0 609-004-000-047	✓	✓			
5.0.0 609-004-000-048	✓	✓	✓ See notes 2 and 4	✓ See notes 2 and 5	
5.1.0 609-004-000-049	✓	✓	✓	✓	
6.0.0 609-004-000-050	✓	✓	✓	✓	
6.1.0 609-004-000-051					✓ See notes 2 and 6
7.0.0 609-004-000-052					✓

Notes for Table 6 (see the next page)

Notes for Table 6

1. VibroSmart VSI010 firmware is distributed as a single *.xmsifw* file (a proprietary file format) with a PNR such as *642-xxx-000-xxx*. In these PNRs, the *xxx-xxx-000-xxx* denotes that the firmware is not packaged (compressed or archived). VibroSight System Manager always uses and displays information about VibroSmart device firmware using PNRs such as *642-xxx-000-xxx*, which correspond to the actual firmware that is running on the device.

2. Updating to this version of VibroSmart VSI010 firmware requires a specific process:

Notes:

For a VibroSmart consisting of different types of device, the devices should be updated in the following order: first VSN010 real-time Ethernet switches, then VSV30x vibration monitoring modules and finally VSI010 communications interface modules. In addition, VibroSight System Manager should be exited (closed) and restarted after updating the firmware for each type of device, before continuing. And after updating the firmware, the configuration on the VibroSmart devices should be re-applied (re-activated) and the VibroSmart devices should be restarted.

Procedure:

(1) Ensure that a copy of the configuration for the VibroSmart is available before updating any device firmware. For example, using the currently installed version of VibroSight (that is, before any updates to the VibroSight software corresponding to updates to VibroSmart devices), VibroSight Configurator can be used to obtain a copy of the configuration as follows:
• For a VibroSmart using a VibroSight Server, the **File > Open > Server / Database** command can be used to read the configuration from the VibroSight Server.
• For a VibroSmart not using a VibroSight Server (that is, a “stand-alone” VibroSmart), the **File > Open > Device** command can be used to read the configuration directly from the VibroSmart modules.
Then the **File > Save As > File** command can be used to store a copy of the configuration for the VibroSmart.

(2) Start VibroSight System Manager, select the device or devices of the same type to be updated (for example, VSI010 modules) and run the Change Firmware command.
When updating multiple VibroSmart devices of the same type to use the same firmware, CTRL+click or SHIFT+click can be used to select multiple devices in the Devices tree structure of the System Explorer window. This way, when the Change Firmware command is run, all of devices that were selected will be updated at the same time. Otherwise, each device must be selected and updated individually.

(3) When the VibroSmart Module(s) Firmware Upgrade window displays a “Firmware upgrade terminated. The firmware has been upgraded successfully …” message, click the **Finish** button to continue.
If after 10 minutes, the VibroSmart Module(s) Firmware Upgrade window does not display a successful message, click the **Cancel** button to close the window and continue.
Then exit (close) VibroSight System Manager.

(4) Restart VibroSight System Manager and verify that the correct version of firmware is reported for each device that was updated. (When a device is selected in the System Explorer window, this information is available in the main window (centre) under Module PNR. It is also available in the VibroSmart Module(s) Firmware Upgrade window when a device is selected and the Change Firmware command is run).
If a device does not report the correct version of firmware, rerun the Change Firmware command for this device.
Then exit (close) VibroSight System Manager.

(5) Repeat steps (2), (3) and (4) for each type of device to be updated (for example, VSN010 and VSV30x modules).

(6) Start VibroSight Configurator, open the configuration for the VibroSmart (see step (1)), then apply (activate) the configuration. (If required, VibroSight Configurator will automatically update the configuration to the latest version and inform the user.)
Then exit (close) VibroSight Configurator.

(7) Turn the power supply to the VibroSmart off and wait for a few seconds. Then turn the power supply back on and verify that the system operates as expected.

During this firmware update process, the behaviour of the LEDs on the front panel of the VibroSmart devices can be inconsistent and should be ignored. Normal LED behaviour resumes after the firmware update is complete (after step (7)).

3. This version of VibroSmart VSI010 firmware has no limit on the number of constants per VSI010 module.
A firmware upgrade is recommended but is not required in order to run VibroSight 3.8.0 or later.

4. This version of VibroSmart VSI010 firmware adds support for Modbus function code 03.
A firmware upgrade is required in order to run VibroSight 5.0.0 or later.

5. This version of VibroSmart VSI010 firmware adds support for module lock and the GOOSE communications protocol (IEC 61850).
A firmware upgrade is required in order to run VibroSight 5.0.0 or later.

6. For information on this version of VibroSmart VSI010 firmware, refer to the VibroSight 6.1 release notes.
A firmware upgrade is required in order to run VibroSight 6.1.0 or later.

Table 7: VibroSight software and VibroSmart VSN010 firmware compatibility

	VSN010 firmware (`*.redboxfw`) See note 1
VibroSight software version Part number (PNR)	`642-004-000-011`
3.4.0 609-004-000-041	✓ See note 2
3.5.0 609-004-000-042	✓
3.6.0 609-004-000-043	✓
3.7.0 609-004-000-044	✓
3.8.0 609-004-000-045	✓
4.0.0 609-004-000-046	✓
4.1.0 609-004-000-047	✓
5.0.0 609-004-000-048	✓
5.1.0 609-004-000-049	✓
6.0.0 609-004-000-050	✓
6.1.0 609-004-000-051	✓
7.0.0 609-004-000-052	✓

Notes for Table 7 (see the next page)

Notes for Table 7

1. VibroSmart VSN010 firmware is distributed as a single *.redboxfw* file (a proprietary file format) with a PNR such as *642-xxx-000-xxx*. In these PNRs, the *xxx-xxx-000-xxx* denotes that the firmware is not packaged (compressed or archived). VibroSight System Manager always uses and displays information about VibroSmart device firmware using PNRs such as *642-xxx-000-xxx*, which correspond to the actual firmware that is running on the device.

2. Updating to this version of VibroSmart VSN010 firmware requires a specific process:

Notes:

For a VibroSmart consisting of different types of device, the devices should be updated in the following order: first VSN010 real-time Ethernet switches, then VSV30x vibration monitoring modules and finally VSI010 communications interface modules. In addition, VibroSight System Manager should be exited (closed) and restarted after updating the firmware for each type of device, before continuing. And after updating the firmware, the configuration on the VibroSmart devices should be re-applied (re-activated) and the VibroSmart devices should be restarted.

Procedure:

(1) Ensure that a copy of the configuration for the VibroSmart is available before updating any device firmware. For example, using the currently installed version of VibroSight (that is, before any updates to the VibroSight software corresponding to updates to VibroSmart devices), VibroSight Configurator can be used to obtain a copy of the configuration as follows:
• For a VibroSmart using a VibroSight Server, the **File > Open > Server / Database** command can be used to read the configuration from the VibroSight Server.
• For a VibroSmart not using a VibroSight Server (that is, a “stand-alone” VibroSmart), the **File > Open > Device** command can be used to read the configuration directly from the VibroSmart modules.
Then the **File > Save As > File** command can be used to store a copy of the configuration for the VibroSmart.

(2) Start VibroSight System Manager, select the device or devices of the same type to be updated (for example, VSN010 modules) and run the Change Firmware command.
When updating multiple VibroSmart devices of the same type to use the same firmware, CTRL+click or SHIFT+click can be used to select multiple devices in the Devices tree structure of the System Explorer window. This way, when the Change Firmware command is run, all of devices that were selected will be updated at the same time. Otherwise, each device must be selected and updated individually.

(3) When the VibroSmart Module(s) Firmware Upgrade window displays a “Firmware upgrade terminated. The firmware has been upgraded successfully …” message, click the **Finish** button to continue.
If after 10 minutes, the VibroSmart Module(s) Firmware Upgrade window does not display a successful message, click the **Cancel** button to close the window and continue.
Then exit (close) VibroSight System Manager.

(4) Restart VibroSight System Manager and verify that the correct version of firmware is reported for each device that was updated. (When a device is selected in the System Explorer window, this information is available in the main window (centre) under Module PNR. It is also available in the VibroSmart Module(s) Firmware Upgrade window when a device is selected and the Change Firmware command is run).
If a device does not report the correct version of firmware, rerun the Change Firmware command for this device.
Then exit (close) VibroSight System Manager.

(5) Repeat steps (2), (3) and (4) for each type of device to be updated (for example, VSI010 and VSV30x modules).

(6) Start VibroSight Configurator, open the configuration for the VibroSmart (see step (1)), then apply (activate) the configuration. (If required, VibroSight Configurator will automatically update the configuration to the latest version and inform the user.)
Then exit (close) VibroSight Configurator.

(7) Turn the power supply to the VibroSmart off and wait for a few seconds. Then turn the power supply back on and verify that the system operates as expected.

During this firmware update process, the behaviour of the LEDs on the front panel of the VibroSmart devices can be inconsistent and should be ignored. Normal LED behaviour resumes after the firmware update is complete (after step (7)).

Table 8: VibroSight software and VibroSmart VSV30x firmware compatibility

	VSV30x firmware (`*.xtranfw`) See note 1				
VibroSight software version Part number (PNR)	`642-001-000-016`	`642-001-000-017`	`642-001-000-018`	`642-001-000-000DEV_SVN14937_2020-05-20`	`642-001-000-019`
3.4.0 609-004-000-041	✓ See notes 2 and 4				
3.5.0 609-004-000-042	✓				
3.6.0 609-004-000-043	✓				
3.7.0 609-004-000-044	✓				
3.8.0 609-004-000-045	✓				
4.0.0 609-004-000-046	✓				
4.1.0 609-004-000-047	✓				
5.0.0 609-004-000-048		✓ See notes 2 and 5	✓ See notes 2 and 6		
5.1.0 609-004-000-049		✓	✓	✓ See notes 2 and 7	
6.0.0 609-004-000-050		✓	✓	✓	
6.1.0 609-004-000-051					✓ See notes 2 and 8
7.0.0 609-004-000-052					✓

Notes for Table 8 (see the next page)

Notes for Table 8

1. VibroSmart VSV30x firmware is distributed as a single *.xtranfw* file (a proprietary file format) with a PNR such as *642-xxx-000-xxx*. In these PNRs, the *xxx-xxx-000-xxx* denotes that the firmware is not packaged (compressed or archived). VibroSight System Manager always uses and displays information about VibroSmart device firmware using PNRs such as *642-xxx-000-xxx*, which correspond to the actual firmware that is running on the device.

2. Updating to this version of VibroSmart VSV30x firmware requires a specific process:

Notes:

For a VibroSmart consisting of different types of device, the devices should be updated in the following order: first VSN010 real-time Ethernet switches, then VSV30x vibration monitoring modules and finally VSI010 communications interface modules. In addition, VibroSight System Manager should be exited (closed) and restarted after updating the firmware for each type of device, before continuing. And after updating the firmware, the configuration on the VibroSmart devices should be re-applied (re-activated) and the VibroSmart devices should be restarted.

Procedure:

(1) Ensure that a copy of the configuration for the VibroSmart is available before updating any device firmware. For example, using the currently installed version of VibroSight (that is, before any updates to the VibroSight software corresponding to updates to VibroSmart devices), VibroSight Configurator can be used to obtain a copy of the configuration as follows:
• For a VibroSmart using a VibroSight Server, the **File > Open > Server / Database** command can be used to read the configuration from the VibroSight Server.
• For a VibroSmart not using a VibroSight Server (that is, a “stand-alone” VibroSmart), the **File > Open > Device** command can be used to read the configuration directly from the VibroSmart modules.
Then the **File > Save As > File** command can be used to store a copy of the configuration for the VibroSmart.
(2) Start VibroSight System Manager, select the device or devices of the same type to be updated (for example, VSV30x modules) and run the Change Firmware command.
When updating multiple VibroSmart devices of the same type to use the same firmware, CTRL+click or SHIFT+click can be used to select multiple devices in the Devices tree structure of the System Explorer window. This way, when the Change Firmware command is run, all of devices that were selected will be updated at the same time. Otherwise, each device must be selected and updated individually.
(3) When the VibroSmart Module(s) Firmware Upgrade window displays a “Firmware upgrade terminated. The firmware has been upgraded successfully …” message, click the **Finish** button to continue.
If after 10 minutes, the VibroSmart Module(s) Firmware Upgrade window does not display a successful message, click the **Cancel** button to close the window and continue.
Then exit (close) VibroSight System Manager.
(4) Restart VibroSight System Manager and verify that the correct version of firmware is reported for each device that was updated. (When a device is selected in the System Explorer window, this information is available in the main window (centre) under Module PNR. It is also available in the VibroSmart Module(s) Firmware Upgrade window when a device is selected and the Change Firmware command is run).
If a device does not report the correct version of firmware, rerun the Change Firmware command for this device.
Then exit (close) VibroSight System Manager.
(5) Repeat steps (2), (3) and (4) for each type of device to be updated (for example, VSI010 and VSN010 modules).
(6) Start VibroSight Configurator, open the configuration for the VibroSmart (see step (1)), then apply (activate) the configuration. (If required, VibroSight Configurator will automatically update the configuration to the latest version and inform the user.)
Then exit (close) VibroSight Configurator.
(7) Turn the power supply to the VibroSmart off and wait for a few seconds. Then turn the power supply back on and verify that the system operates as expected.
During this firmware update process, the behaviour of the LEDs on the front panel of the VibroSmart devices can be inconsistent and should be ignored. Normal LED behaviour resumes after the firmware update is complete (after step (7)).

3. This version of VibroSmart VSV30x firmware adds support for hydro air-gap monitoring.
A firmware upgrade is required in order to run VibroSight 3.4.0 or later.

4. This version of VibroSmart VSV30x firmware adds support for latched alarms.
A firmware upgrade is recommended but is not required in order to run VibroSight 3.6.0 or later.

5. This version of VibroSmart VSV30x firmware adds support for configurable tacho ratios, flexible input channel to processing block mapping, and up to two tacho processing blocks. A firmware upgrade is required in order to run VibroSight 5.0.0 or later.

6. This version of VibroSmart VSV30x firmware adds support for module lock, PTP (precision time protocol) time synchronisation, channel bypass and pre-trigger data logging. A firmware upgrade is required in order to run VibroSight 5.0.0 or later.

7. This version of VibroSmart VSV30x firmware improves support for hydro air-gap and magnetic-flux monitoring with a minor bug fix.
A firmware upgrade is required in order to run VibroSight 5.1.0 or later.

8. For information on this version of VibroSmart VSV30x firmware, refer to the VibroSight 6.1 release notes.
A firmware upgrade is required in order to run VibroSight 6.1.0 or later.

6.2.3 Updating the firmware using VibroSight System Manager

When performing VibroSight software upgrades, it is strongly recommended to systematically upgrade the firmware of VM600 XMx16 cards and VibroSmart devices to the latest compatible version.

Failure to perform a necessary VibroSight-compatible VM600^{Mk2}/VM600 module/card firmware update may lead to incoherent system behaviour and affect the proper functioning of data acquisition in a system. It is only in systems where the firmware running on the XMx16 cards and VibroSmart devices already corresponds to the latest available version that no firmware update is required. Therefore, it is strongly recommended to verify the version of firmware running on the hardware before starting a VibroSight system upgrade, in order to establish if a firmware update is also required.

NOTE: Changing the firmware of the VibroSight hardware is a special administrative task that can – if performed unintentionally – affect the proper functioning of data acquisition in a system.

It is therefore strongly recommended to change the firmware of the VibroSight hardware only when it is necessary. For example, when the devices must be updated to be compatible with a VibroSight software upgrade.

For VibroSmart modules, each module can be selected and its firmware updated individually. Alternatively, multiple modules of the same type (for example, VSV3x0) can be updated to the same version of firmware at the same time.

NOTE: It is strongly recommended to ensure that a copy of the configuration for a VibroSmart is available before updating the firmware of any of the VibroSmart modules used in the distributed monitoring system.

For example, using the currently installed version of VibroSight (that is, before any updates to the VibroSight software corresponding to updates to VibroSmart modules), VibroSight Configurator should be used to obtain a copy of the configuration as follows:

For a VibroSmart using a VibroSight Server, the **File > Open > Server / Database** command can be used to read the configuration from the VibroSight Server.

For a VibroSmart not using a VibroSight Server (that is, a “stand-alone” VibroSmart), the **File > Open > Device** command can be used to read the configuration directly from the VibroSmart modules.

Then the **File > Save As > File** command should be used to store a copy of the configuration for the VibroSmart distributed monitoring system.

Update the firmware on a VibroSight device using the  **Change Firmware** tool (from VibroSight System Manager’s **Maintenance** tools):

1. Ensure that the computer running the VibroSight software is on the same network as the hardware (XMx16 card or VibroSmart module or device) to be updated.

2. Start VibroSight System Manager and navigate to the Devices tree structure in the System Explorer window.

   The Devices tree lists all of the VibroSight compatible hardware that VibroSight can see on the network. If there are no XMx16 cards or VibroSmart devices in the tree structure or some cards are missing, verify your network connections.

3. Select the card or device that requires its firmware to be changed.

   The Actions tool window updates to show the available tools.

   To change multiple VibroSmart to use the same version of firmware at the same time, use CTRL+click or SHIFT+click to select multiple devices from the Devices tree-view. (Then, when the Change Firmware command is run, all of the devices that were selected will be updated at the same time.)

4. Click  **Change Firmware** in the Maintenance tools group of the Actions window.

   The Change Firmware dialog box appears.

5. Click the **Add** button and select the new firmware files for the card or new firmware file for the device.

NOTE:	The Change Firmware dialog box automatically opens the firmware folder corresponding to the VibroSight-compatible VM600^{Mk2}/VM600 module/card or VibroSmart device selected. In general, .tgz files are for VM600^{Mk2}/VM600 modules/cards and .*fw files are for VibroSmart devices.

6. Click the **Finish** button to start the firmware upgrade process.

   For XMx16 cards and VibroSmart devices, the firmware upgrade process can take up to 5 minutes, during which:

   - The IP address beside the device's serial number in the Devices tree structure can disappear.
   - The LEDs on the front panel of the device can change to reflect the status of the upgrade.

7. Repeat steps 3 to 6 for each device that requires a firmware update.

NOTE:	Although the firmware for each VibroSight device must be changed individually using the  **Change Firmware** tool, as each device updates its firmware independently of the VibroSight software (once the process has started), firmware updates can be performed on several devices in parallel.

8. After the firmware upgrade, verify that the VibroSight system is acquiring data from the cards.

NOTE:	Refer also to the *Changing the firmware* topics in the  *VibroSight* help.

The  **Change Firmware** tool can be used to load a VibroSight device with any version of firmware. It is therefore possible to change a device's firmware to any previously available version, as well as the latest update.

This feature can be useful in certain situations, for example, swapping spare VibroSight hardware between different VM600 racks or VibroSmart distributed monitoring systems, where systems are operating with different versions of VibroSight.

6.3 Final checks

After upgrading the VibroSight software, it is recommended to check that VibroSight has not been inadvertently modified and that it continues to operate normally.

In particular, it is recommended to check any VibroSight Servers in order to ensure that the data acquisition and external interfaces, data post-processing and/or logging are all configured as expected.

In a VibroSight Server user interface:

- On the Status tab under Device drivers, check that the VM600, VibroSmart, OPC and Modbus controls are enabled or disabled as required by your application.
- On the Status tab under Server features, check that the Basic math, Air gap, Combustion monitoring, Duration counters, VSHDA import and Data logging manager controls are enabled or disabled as required by your application.
- On the Log messages tab, check the listed messages (Info level) to ensure that the hardware (VM600^{Mk2}/VM600 modules/cards and /or VibroSmart modules) have been discovered and that data acquisition has resumed.

NOTE: When a VibroSight Server is running as a Windows service, the usual VibroSight Server user interface is not displayed, so VibroSight System Manager must be used to work with the VibroSight Server.

That is, VibroSight System Manager can be used to connect to a VibroSight Server in order to check and configure the operation of the server's drivers and features.

Finally, after an upgrade, it is strongly recommended to use VibroSight Vision to connect to any VibroSight Servers in order to verify that new live and/or historical data is available.

7 Customer support

7.1 Contacting us

Meggitt SA worldwide customer support network offers a range of support including Technical support and Sales and repairs support. For customer support, please contact your local Meggitt representative. Alternatively, contact our main office:

Customer support
Meggitt SA
Route de Moncor 4
Case postale
1701 Fribourg
Switzerland

Telephone: +41 (0) 26 407 11 11
Email: energysupport@ch.meggitt.com
Website: www.meggittsensing.com/energy

7.2 Technical support

Meggitt SA technical support team provide both pre-sales and post-sales technical support, including:

- General advice
- Technical advice
- Troubleshooting
- Site visits.

7.3 Sales and repairs support

Meggitt SA sales team provide both pre-sales and post-sales support, including advice on:

- New products
- Spare parts
- Repairs.

Appendix

VibroSight software and Windows® operating system compatibility

	Windows 11	Windows 10	Windows 8.1
VibroSight software compatible?	Yes	Yes	Yes but not recommended for new installations as Microsoft mainstream support ended in 2018 (extended support will end in 2023)

VibroSight software and Windows® Server operating system compatibility

	Windows Server 2022	Windows Server 2016	Windows Server 2012
VibroSight software compatible?	Yes	Yes	Yes but not recommended for new installations as Microsoft mainstream support ended in 2018 (extended support will end in 2023)

VibroSight software and Microsoft® .NET Framework requirements

VibroSight software version	Microsoft .NET Framework requirements
VibroSight 3.7.0 or later	.NET Framework 4.7.2 See note 1
VibroSight 3.4.0 or later	.NET Framework 4.7.1 See note 2
VibroSight 3.0.0 or later	.NET Framework 4.6
VibroSight 2.12.0 or later	.NET Framework 4.5 and .NET Framework 2.0 See note 3
VibroSight 2.9.4 or later	.NET Framework 4.5
VibroSight 2.9.3 and 2.9.2	.NET Framework 4 (Standalone Installer)
VibroSight 2.9.1 or earlier	.NET Framework 3.5 SP1

Notes

1. Microsoft .NET Framework 4.7.2 replaces .NET Framework versions 4.0 to 4.7.1.

2. Microsoft .NET Framework 4.7.1 replaces .NET Framework versions 4.0 to 4.7.

3. Since Microsoft .NET Framework 3.5 also includes .NET Framework 2.0 and .NET Framework 3.0, installing Microsoft .NET Framework 3.5 SP1 is the recommended solution for most computers (rather than installing Microsoft .NET Framework 2.0).