RELEASE NOTES

VibroSight ® software
version 2.12.5

VibroSight
Total Monitoring
Solution

Meggitt SA
Route de Moncor 4
PO Box 1616
CH - 1701 Fribourg
Switzerland

REVISION RECORD SHEET

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PREFACE

About these release notes

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

- VibroSight software version 2.12.5 (CD part number 609-004-000-033).

This document contains information about changes to the software since the previously released version (VibroSight 2.12.4), 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 condition monitoring system (CMS), refer to the following Meggitt Sensing Systems (MSS) documentation:

 *VibroSight software* data sheet
(MSS document ref. 660-020-005-218A)

 *Getting started with VibroSight* installation guide
(MSS document ref. 660-010-006-216A)

 *VibroSight* help

 *XMV16 / XIO16T extended vibration monitoring card pair* data sheet
(MSS document ref. 660-020-010-208A)

 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 2.9.0 (MSS document ref. VIBROSIGHT-RN/E)
- VibroSight 2.9.1 (MSS document ref. VIBROSIGHT-RN/E)
- VibroSight 2.9.2 (MSS document ref. VIBROSIGHT-RN/E)
- VibroSight 2.9.4 (MSS document ref. VIBROSIGHT-RN/E)
- VibroSight 2.9.5 (MSS document ref. VIBROSIGHT-RN/E)
- VibroSight 2.9.6 (MSS document ref. VIBROSIGHT-RN/E)
- VibroSight 2.9.7 (MSS document ref. VIBROSIGHT-RN/E)
- VibroSight 2.10.0 (MSS document ref. VIBROSIGHT-RN/E)
- VibroSight 2.10.1 (MSS document ref. 660-010-013-201A)
- VibroSight 2.11.0 (MSS document ref. 660-010-013-203A)
- VibroSight 2.11.1 (MSS document ref. 660-010-013-204A)
- VibroSight 2.11.2 (MSS document ref. 660-010-013-205A)

- VibroSight 2.11.3 (MSS document ref. 660-010-013-206A)
- VibroSight 2.11.4 (MSS document ref. 660-010-013-207A)
- VibroSight 2.11.5 (MSS document ref. 660-010-013-208A)
- VibroSight 2.11.6 (MSS document ref. 660-010-013-209A)
- VibroSight 2.12.0 (MSS document ref. 660-010-013-210A)
- VibroSight 2.12.1 (MSS document ref. 660-010-013-211A)
- VibroSight 2.12.2 (MSS document ref. 660-010-013-212A)
- VibroSight 2.12.3 (MSS document ref. 660-010-013-213A)
- VibroSight 2.12.4 (MSS document ref. 660-010-013-214A).

Structure of the release notes

This document presents information in the following order: general items first, then in terms of the software modules that constitute VibroSight, such as Configurator, Event Viewer, Mimic, Scope, Server, System Manager and Vision.

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:

- Major release identifier: **x**.x.x.x
- Minor release identifier: x.**x**.x.x
- Update release identifier: x.x.**x**.x
- Maintenance (build) release identifier: x.x.x.**x**

For each scheduled release of VibroSight, at least one of the first three digits changes (**x**.**x**.**x**.x). For unscheduled releases, that are occasionally required to solve urgent problems, only the fourth 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 Sensing System products that can be used with the VibroSight software, the following terminology is used in this document:

- VM600 card – to refer to the VibroSight-software compatible cards that are installed in a VM600 rack. The currently available VM600 cards that are designed for operation with the VibroSight software are the XMx16 card pairs (XMC16 / XIO16T, XMV16 / XIO16T and XMVS16 / XIO16T).

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

- VibroSmart DMS module or VibroSmart DMS device – to refer to VibroSight-software compatible modules or devices that are used in a distributed monitoring system. The currently available VibroSmart DMS modules and devices that are designed for operation with the VibroSight software are the VSI010, VSN010 and VSV300.

  Where VibroSmart DMS module is used in this document, it refers to VSI010 and VSV300 modules, unless otherwise stated.

  Where VibroSmart DMS device is used in this document, it refers to the VSN010 device, unless otherwise stated.

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1 Licensing

In general, the licence key required to enable purchased product options remains unchanged between update or maintenance level releases. For example, from version 2.12.4 to version 2.12.5.

However, a new licence key is required for upgrades between major or minor level releases. For example, from version 2.11.x to version 2.12.x.

To obtain a new VibroSight licence key file or for further information on licence keys, contact Meggitt Sensing Systems customer support. See 7 Customer support.

2 Features

VibroSight Vision

2.1 Display of separate curves for a single measurement

For certain types of plot working with historical data, a single measurement (extracted data entity) can now be displayed as separate curves based on machine states or alarms, with one entry in the plot legend per curve.

Previously, a single measurement could only be displayed as a single curve with one entry in the plot legend. Even if multiple machine states or alarms were selected as the time range, a single curve was always displayed (with gaps in the plotted measurement points corresponding to gaps in the time range).

This new feature makes it easier to compare and analyse the changes in a measurement over time by superimposing (overlaying) multiple separate curves based on the machine states or alarms selected as the time range to be displayed. For example, measurements from specific machine operating conditions (such as a run-up, normal operation or run-down) can be compared in order to monitor gradual evolution over time, and measurements before and after a maintenance outage can be compared in order to evaluate the maintenance.

The display of separate curves for a single measurement based on machine states or alarms is supported by the following VibroSight Vision plot types:

- Trend
- Bode
- Polar
- Correlation
- Shaft centerline.

For these plot types, separate curves for a single measurement based on machine states or alarms can be displayed using either the existing **Speed** x-axis quantity option or the new **Elapsed Time** x-axis quantity option.

Either the x-axis quantity option in the quick access toolbar at the bottom of a plot or the Plot Properties window can be used to select **Elapsed time** or **Speed** (or **Time/APHT**, **Time** or

Speed/Bode, as appropriate) for the x-axis of a plot. In addition, the Options window can be used to configure the default plot settings for each plot type to use **Elapsed time** or **Speed**, as required.

When a plot's x-axis quantity option is configured as **Elapsed Time** or **Speed**, a separate curve is generated for each machine state or alarm selected in the Time Range window. Depending on the grouping option selected for a plot, the separate curves are either displayed superimposed on a single plot (**Grouping: Group all**) or displayed individually with one curve per plot area (**Grouping: Ungroup all**).

When **Elapsed Time** is used for the x-axis, each separately generated curve uses a relative time and timestamps where the start of each curve corresponds to the start of the associated machine state or alarm and is given a timestamp of zero (0). All data points in each separately generated curve are given a timestamp relative to the zero of the associated machine state or alarm in order to maintain the timing relationship defined by the original absolute timestamps of the measurements. While in the plot legend, the row entry for each separately generated curve uses absolute time and timestamps that correspond to the time when a measurement was acquired.

NOTE: The **Elapsed time** x-axis quantity option uses a relative time and timestamps in the plot that correspond to the start of the machine state or alarm associated with each separately generated curve. While in the plot legend, the timestamps use absolute time and correspond to the time when a measurement was acquired.

The **Speed** x-axis quantity option uses a speed in the plot that corresponds to the rotational speed at the time when each data point of each separately generated curve was acquired. While in the plot legend, the timestamps use absolute time and correspond to the time when a measurement was acquired.

The **Time** x-axis quantity option uses absolute time and timestamps in the plot and in the plot legend that correspond to the time a measurement was acquired.

So in a plot using **Elapsed Time**, the time displayed along the x-axis uses Elapsed time (a relative time) and always starts at 0, while in the plot legend, the timestamps displayed use absolute time corresponding to the actual time when a measurement was acquired.

In the plot legend for a plot using **Elapsed Time** or **Speed**, the name of each separately generated curve is displayed as `<name>@<time range name><start time>`, where `<name>` is the name of the measurement (as displayed in the Hardware view or Machinery view) and `<time range name>` is the name of the corresponding machine state or alarm (as displayed in the Time Range window). `<start time>` is only used to differentiate curves when the name of the corresponding machine state or alarm is the same and would otherwise have resulted in duplicate curve names.

Also in the plot legend for a plot using **Elapsed Time** or **Speed**, the default order of row entries for each separately generated curve goes from the latest measurement data (top row) to the oldest measurement data (bottom row). Although, of course, clicking any column title in a plot legend sorts the row entries in the ascending or descending order of that column.

Finally, the following limitations apply to the display of separate curves for a single measurement based on machine states or alarms:

- The display of separate curves for a single measurement is based on machine states or alarms, which require *historical* data, so this new feature cannot be used with *live* data.

- The display of separate curves for a single measurement based on machine states or alarms can be used with multiple measurements (extracted data entities) at the same time, up to a maximum limit of 64 separately generated curves per plot.

2.2 Improved Polar plot functionality

The functionality available in a Polar plot has been improved to include the following operations in the polar chart:

- Zooming – It is now possible to zoom in and out on a polar chart, with a fixed 1:1 aspect ratio, using the zoom controls available on the VibroSight Vision Plot toolbar (**Zoom Mode** and **Zoom Reset**). Alternatively, the mouse shortcut of dragging the pointer in a plot can be used. When zoomed, the pan control available on the VibroSight Vision Plot toolbar (**Panning**) can be used to navigate around the polar chart.
  When the maximum zoom is reached, a message is displayed in the status bar at the bottom of VibroSight Vision.
  Note: For a polar plot, the zoom on the polar chart and the zoom on the trend charts are independent.
- Setting the cursor position with a point and click operation – It is now possible to move directly to any point or region of a curve on a polar chart with a point and click of the mouse. Previously, the cursor position could only be set by dragging the cursor or using the keyboard shortcuts.

2.3 Improved Trend plot phase-wrapping

The phase wrapping implemented for the phase component of a Trend plot has been improved by drawing the curve connecting two consecutive plotted measurement points via the shortest path, with the curve crossing through the top and bottom (or bottom and top) of the plot area as necessary.

VibroSight System Manager

2.4 VibroSight database copy option to automatically limit the number of databases

Copying VibroSight Server databases can result in a large number of (large) database files that could fill a hard disk drive and lead to a disk-full situation, with the possible loss of data. To avoid this, the VibroSight database copy operation now includes an option that can be used to automatically limit the number of databases that can exist in a folder to a maximum specified by the user, thereby helping to reduce the possibility of a disk-full situation and ensure the continued operation of a system.

The new VibroSight database copy option limits the number of databases in the destination folder by automatically keeping the specified number of newer (or older) copied databases and deleting all other older (or newer) databases as appropriate, based on the file names of the copied databases.

NOTE:	The VibroSight database copy option to automatically limit the number of databases requires that the file names of the copied databases use a standard naming convention, including a timestamp (date-time string) that is appended to the name of the copied database when the -t option is specified. For example, this gives a file name in the format `<name>_yyyyMMddHHmmss.vssrvdb`.

The new VibroSight database copy options can be used as follows:

- From VibroSight System Manager, with the Database copy command –
  On the **Select the Log Report File you want to create** page of the database copy wizard, select **Limit number of kept output files** in order to automatically limit the number of databases that can exist in a folder: use **Keep n** to specify the maximum number (*n*) of copied databases in the destination folder and use either **Newest** to keep the databases with the latest (newest) timestamps or **Oldest** in order to keep the databases with the earliest (oldest) timestamps.
- From the equivalent command line tool (`VibroSightDataCopy.exe`) –
  The relevant options for the command are:

  `-keep_newest [=<count>]`

  Limits the number of copied databases in the destination folder to the specified number of databases with the latest (newest) timestamps.

  `-keep_oldest [=<count>]`

  Limits the number of copied databases in the destination folder to the specified number of databases with the earliest (oldest) timestamps.

VibroSight Configurator

2.5 File name extension and behavioural changes for configuration files

The file name extension used for a configuration file for a VibroSight Server generated by VibroSight Configurator when the configuration is saved using **File > Save As > File** is now `*.vscfg` (previously, it was `*.xml`).

In addition, double-clicking a configuration file for a VibroSight Server (*.vscfg), a VibroSight Modbus Server (*.mscfg) or a VibroSight OPC Server (*.opcscfg) in a Windows Explorer will now start VibroSight Configurator and automatically open the configuration.

2.6 Improved messages in the consistency checker

In the Consistency Checker, messages related to the configuration of parameters containing time information, such as a decay time or an update rate, have been improved in order to display the time information in a more easily understood manner.

For example, when a decay time is configured incorrectly, the Consistency Checker now displays a message such as:

```
The Decay Time value is out of range. The value has to be between
100 millisecs and 1 minute 40 secs.
```

Previously, the Consistency Checker now displayed a message such as:

```
The Decay Time value is out of range. The value has to be
>= 00:00:00.1000000 and <= 00:01:40.
```

2.7 Keyboard shortcuts for the edit menu commands

The Edit menu commands used for the modification of elements (nodes) in the hierarchical tree structures in the Data Storage view, Hardware view and Machinery view now have equivalent keyboard shortcuts in order to more quickly perform common operations:

- The **Copy** command is now also available using the **CTRL+C** keyboard shortcut.
- The **Paste** command is now also available using the **CTRL+V** keyboard shortcut.
- The **Delete** command is now also available using the **DELETE** key.

2.8 Item count of selected entities for data storage groups and event storage groups

In the Data Storage view, Data Storage Goups and Events Storage Groups now include an items count that displays the number of entities selected from those available in the group.

In the Data Storage view:

- When a Data Storage Goup is selected, the number of entities selected in the Data Entities folder for the group is automatically displayed as ***n* items**.
- When an Events Storage Goup is selected, the number of entities selected in the Event Entities folder for the group is automatically displayed as ***n* items**.

General

2.9 Tools, examples and templates

VibroSight 2.12.5 includes tools, examples and templates to help users starting to work with VibroSight and its associated hardware in different typical machinery monitoring applications.

2.9.1 Tools

The `C:\VibroSight Data\Tools` folder contains VibroSight Server databases intended as tools (utilities) that can be used to help users work with and/or debug systems containing VM600 XMx16 cards.

Oscilloscope tool

The `C:\VibroSight Data\Tools\Oscilloscope` folder contains a configuration file for a VibroSight Server database (`*.vssrvcfg`) and a VibroSight Server database (`*.vssrvdb`) for each of the VM600 XMx16 cards that is compatible with the VibroSight software:

- `OscilloscopeXMC` files for use with a VM600 XMC16 card.
- `OscilloscopeXMV` files for use with a VM600 XMV16 card.
- `OscilloscopeXMVS` files for use with a VM600 XMVS16 card.

This “oscilloscope” tool provides a basic configuration for the 16 dynamic channels and 4 tacho channels of a VM600 XMx16 card, featuring fixed-frequency sampling, a bandwidth of 10 kHz and resolution of 1024 points / 400 lines (for the waveforms / spectra).

The configuration (Input Channels and Processing Blocks in the Hardware view) takes voltage input signals from the J2, J3 and J4 connectors on the XIO16T card associated with the XMx16 and provides dynamic (waveform and spectra) and static (DC voltage, overall RMS and overall true peak measurements) outputs for the dynamic channels and a static (speed measurement) output for the tacho channels.

In the Data Storage view, the configuration includes basic time-based data logging rules to log the static data every 1 second and the dynamic data every 1 minute. There is also an events group with some event logging based on alarms and other systems events using a severity and level based event logging rule. If required, this data and event logging can be used by enabling data logging for the VibroSight Server using the **Data > Logging > Database logging** command.

The “oscilloscope” tool can be used to quickly see and monitor the signals available on the input connectors of a VM600 XMx16/XIO16T card pair, by effectively using the dynamic input channels to emulate a 16 channel oscilloscope.

NOTE:	More detailed information about the “oscilloscope” tool’s configuration can be obtained by starting a `OscilloscopeXMx` VibroSight Server, then using VibroSight Configurator to open the configuration from the server and examine the Hardware, Machinery and Data Storage views.

Wiring quality tool

The `C:\VibroSight Data\Tools\WiringQuality` folder contains a configuration file for a VibroSight Server database (`*.vssrvcfg`) and a VibroSight Server database (`*.vssrvdb`) for each of the VM600 XMx16 cards that is compatible with the VibroSight software:

- `WiringQualityXMC` files for use with a VM600 XMC16 card.
- `WiringQualityXMV` files for use with a VM600 XMV16 card.
- `WiringQualityXMVS` files for use with a VM600 XMVS16 card.

This “wiring quality” tool provides a basic configuration for the 16 dynamic channels of a VM600 XMx16 card, featuring fixed-frequency sampling, a bandwidth of 1 kHz and resolution of 4096 points / 1600 lines (for the waveforms / spectra).

The configuration (Input Channels and Processing Blocks in the Hardware view) takes voltage input signals from the J3 and J4 connectors on the XIO16T card associated with the XMx16 and provides

dynamic (waveform and spectra) and static (DC voltage, minimum and maximum measurements) outputs.

In the Data Storage view, the configuration includes a basic time-based data logging rule to log the static data every 1 second. There is also an alarm-event data logging rule to log the static data and waveforms for the 5 seconds leading up to a danger alarm severity event, which is triggered by large signals ("spikes") on the minimum and maximum measurements. If required, this data logging can be used by enabling data logging for the VibroSight Server using the **Data > Logging > Database logging** command.

The "wiring quality" tool can be used to quickly see and monitor the signals available on the input connectors of a VM600 XMx16/XIO16T card pair, capturing more data when there is noise or spikes on an input. If there are doubts about the quality of the wiring or connections to a VM600 XIO16T card, running the "wiring quality" tool while moving the cables and connectors going to the XIO16T will help investigate typical field wiring issues such as bad or intermittent contacts, and spurious noise due to unreliable connections.

NOTE:	More detailed information about the "wiring quality" tool's configuration can be obtained by starting a `WiringQualityXMx` VibroSight Server, then using VibroSight Configurator to open the configuration from the server and examine the Hardware, Machinery and Data Storage views.

Using the oscilloscope and wiring quality tools

In order to use the oscilloscope or wiring quality tools, it is necessary to adapt the configuration for operation with the VM600 XMx16 card being used.

To start the oscilloscope or wiring quality tool:

1. Start the required VibroSight Server database by double-clicking a `*.vssrvcfg` or `*.vssrvdb` file. For example, `C:\VibroSight Data\Tools\Oscilloscope\OscilloscopeXMV.vssrvcfg`.
   The VibroSight Server starts and tries to start communicating with the hardware (VM600 XMV16 card). `Trying to discover …` and `Failed to discover …` messages should be listed by the VibroSight Server.
2. Start VibroSight Configurator and open the configuration for the VibroSight Server by using the **File > Open > Server / Database** command to select the appropriate Local VibroSight Server, for example, *OscilloscopeXMV*.
3. In VibroSight Configurator, log in to the configuration at the Admin user level by using the **Login** toolbar button. This is necessary in order to be able to modify and activate a configuration.
4. In VibroSight Configurator, select the XMV16 card in the Hardware view (right), then use the **Serial Number** field to identify the VM600 XMx16 card to be used with the oscilloscope or wiring quality tool.

NOTE: As an IP address can be easily changed, a VM600 card such as an XMx16 should be identified by its serial number (xxxxxxx).
The serial number of a card can be found using either VibroSight System Manager or by inspecting a label (sticker) on the card (SER xxxxxxx).

The **Connection Mode** field is used to decide how the card will initially be discovered and identified by VibroSight:

- If Automatic Discovery is selected, the card will be identified using the serial number that is entered manually in the Serial Number text box. The card's IP address will then automatically be read by the VibroSight software and used to complete the IP Address text box.
- If IP Address is selected, the card is identified by the IP address that is entered manually in the IP Address text box (in which case, the Serial Number is not used).

5. In VibroSight Configurator, activate the updated configuration on the VibroSight Server using the **Activate** toolbar button. This is necessary in order to be able to communicate the changes in the configuration to the VibroSight Server.
   In VibroSight Server, the messages listed should indicate that the configuration has been activated, the VM600 XMx16 card has been discovered and data acquisition has started.

To use VibroSight Vision to display data from the oscilloscope or wiring quality tool:

1. Start VibroSight Vision and connect to the VibroSight Server using the **Connect to a VibroSight Server or Device** command on the VibroSight Vision Home page. Choose VibroSight Server as the data source type, then select the appropriate Local VibroSight Server, for example, *OscilloscopeXMV*.
   In VibroSight Vision, the status of the connection and the name of the VibroSight Server that it is connected to are displayed in the status bar (bottom right).
2. In VibroSight Vision, in the Hardware View or Machinery View (left) select the required measurement to plot, and in the Time Range window (right) select Live Data in order to plot the live data for a VM600 XMx16 card channel.

   For example, to use the oscilloscope tool to view all of the VM600 XMx16 card's dynamic input channels:

   - In the Hardware View or Machinery View (top), click **Dyn01**, then SHIFT+click **Dyn16**.

   NOTE: CTRL+click and/or SHIFT+click can be used to select multiple data entities (rows) before selecting or clearing the check box.

   - In the Hardware View or Machinery View (bottom), double-click on the WF (waveform) measurements. (Note that there are 16 waveform (WF) measurements available as 16 channels were selected in the top of the Hardware View or Machinery View (top).)
   - In the Time Range window, ensure that Live data is selected, as the oscilloscope and wiring quality tools are intended for use with live data and are supplied with VibroSight Server databases that do not contain any historical data.

     A Waveform plot containing the selected measurements is automatically added to VibroSight Vision (centre).

Note: If the waveform plot displays a `There is no available data to display` message or the plot remains blank, it may be necessary to use the the x-axis quantity control on the quick access toolbar (available underneath the plot legend) to set **Time** to **Revolutions** or **Poles** and then back to **Time** again.

Underneath the plot, a plot legend is displayed containing information about the individual measurements (curves) in the plot, including values at the main and delta cursor positions.

Underneath the plot legend, a quick access toolbar is displayed that can be used to access the most often used plot properties. By default, the x-axis quantity control is set to **Time** to and the grouping control is **Group all** by default, which displays all of the curves overlaid on the same area of the plot.

Changing **Group all** to **Ungroup all** displays each curve separately in a separate sub-plot, divided into "pages" that can be viewed individually. When the measurements are ungrouped, a page layout control becomes available that can be used to display multiple sub-plots on a single page. For example, changing **1 x 1** to **4 x 4** displays all 16 measurements at the same time.

Note: The controls available on the quick access toolbar are also available via the plot properties window that is displayed by double-clicking in a plot or by right-clicking in a plot and selecting **Plot Properties**.

2.9.2 Templates

The `C:\VibroSight Data\Templates` folder contains configuration files for VibroSight Servers (`*.vscfg`) intended as templates (references) that can be used to help users create systems with similar requirements, for their own applications.

Turbine template

The `Turbine template` configuration file provides a basic template for a turbine, which typically uses journal/sleeve bearings and therefore requires shaft relative vibration monitoring.

NOTE:	Shaft relative vibration monitoring measures the radial motion of the shaft and is typically measured using two proximity transducers (X and Y) mounted orthogonally on a machine bearing at approximately 90° to each other.

Accordingly, the configuration uses a VM600 XMV16 card to provide:

- A tacho (speed) measurement and a 1/rev pulse (phase reference).

  The signal for these measurements typically come from a proximity probe and requires 1 tacho channel and 1 tacho processing block.

- Relative vibration measurements with order-tracked waveforms and spectra, and frequency domain extractions (0.5X, 1X, 2X, NOT 1X), time domain extractions (OVR) and DC extractions (DC gap, DC voltage)

These signals for these measurements typically come from proximity probes and require 1 dynamic channel and 1 dynamic processing block per orthogonal measurement point (X, Y). There are two relative vibration measurement points using two proximity transducers (X and Y) per machine bearing plane.

Note: The `Turbine template` has 6 bearing planes, so it uses 12 dynamic channels and 12 dynamic processing blocks.

NOTE: In VibroSight Configurator, dual shaft relative processing blocks can used with orthogonal measurement points (X, Y) in order to provide additional measurements such as orbit, filtered orbit, shaft centreline, S_{max} and full spectrum.

The `Turbine template` provides the same configuration for each of the 12 dynamic channels of a VM600 XMV16 card, featuring order-tracked sampling, a bandwidth of 25 nX and resolution of 1024 points / 400 lines (for the waveforms / spectra).

The configuration (Input Channels and Processing Blocks in the Hardware view) takes voltage input signals from the J2, J3 and J4 connectors on the XIO16T card associated with the XMV16 and provides order-tracked waveforms, spectra and 0.5X, 1X, 2X, NOT 1X, OVR, DC gap and DC voltage measurements.

In the Data Storage view, there is a time-based data logging rule that logs data every 1 second and a value-based data logging rule that logs data based on changes to the speed of the turbine, both of which depend on machine operating conditions. There is also an alarm-event data logging rule that logs events related to changes to the machine operating conditions.

In the Machinery view, the machine unit with machine operating conditions, shaft with operating parameters such as orientation and direction of rotation, bearing planes and measurement points are defined.

NOTE: More detailed information about the `Turbine template` configuration can be obtained by using VibroSight Configurator to open the configuration and examine the Hardware, Machinery and Data Storage views.

2.9.3 Examples

The `C:\VibroSight Data\Examples` folder contains example VibroSight Server databases intended as references that can be used to help users create systems with similar requirements, for their own applications.

Balance of plant

`C:\VibroSight Data\Examples\Balance_of_Plant`

This folder contains a configuration file for a VibroSight Server (*.vscfg), a VibroSight Server database (*.vssrvdb) and a Mimic project file (*.vsmimic).

Francis turbine

`C:\VibroSight Data\Examples\Francis_Turbine`

This folder contains a configuration file for a VibroSight Server (*.vscfg), a VibroSight Server database (*.vssrvdb) and a Mimic project file (*.vsmimic).

Gas turbine

`C:\VibroSight Data\Examples\Gas_Turbine`

This folder contains a configuration file for a VibroSight Server (*.vscfg), a VibroSight Server database (*.vssrvdb) and a Mimic project file (*.vsmimic).

Steam turbine

`C:\VibroSight Data\Examples\Steam Turbine`

This folder contains a configuration file for a VibroSight Server (*.vscfg), a VibroSight Server database (*.vssrvdb) and a Mimic project file (*.vsmimic).

VM600 MPC4 card communicating via a VM600 CPUM card

`C:\VibroSight Data\Examples\MPC4_via_CPUM`

This folder contains a configuration file for a VibroSight Server (*.vscfg) and a VibroSight Server database (*.vssrvdb).

3 Solved problems and bug fixes

General

3.1 Improvements and bug fixes

General stability improvements across the VibroSight 2.12.5 software, the VM600 XMx16 card firmware and the VibroSmart VSV300 module firmware.

VibroSight Configurator

3.2 VibroSmart VSI010 module: Modbus data encoded as signed data

When a VSI010 communications interface module was used to share data from a VibroSmart DMS measurement block via Modbus, if Modbus data was configured as one of the signed data types – byte (1 byte), short integer (2 bytes), integer (4 bytes) or long integer (8 bytes) – then an incorrect "range offset" was calculated by VibroSight for use by the VSI010's configuration when encoding the data.

This meant that a Modbus client (master device) could not correctly interpret Modbus data from a VSI010 (server/slave device) that was configured as signed data. (Data shared as unsigned data types was correctly encoded and could be interpreted.).

VibroSight Mimic

3.3 Problems displaying a plot in VibroSight Vision from VibroSight Mimic

When a VibroSight Mimic is running, it is possible to automatically display a plot in VibroSight Mimic by right-clicking on a value indicator and clicking **Show … Plot**, then clicking **Open in Vision** on the toolbar in the displayed plot.

However, under certain circumstances, there were problems automatically displaying a plot in this way. For example, when the data source was changed in VibroSight Mimic (using **File > Link to New Data Source**) and when VibroSight Vision was closed between automatically displaying plots in this way.

3.4 Incorrectly displayed value indicators with frequency line measurements

When a value indicator was used to display frequency line measurements (data types containing an amplitude component and a frequency component), the frequency component was not displayed correctly. That is, when the frequency component was selected using the dimension collector, the value indicator included alarm severity levels at the bottom of the mini bar chart, operated like a mini bar graph with value indicator, and included a qualifier (rectifier), none of which are appropriate for a frequency component.

This has been corrected so that the frequency component is displayed with no alarm severity levels, operates like a value indicator and does not include a qualifier.

VibroSight Vision

3.5 Polar Waveform plot functionality with hydro air-gap monitoring data

The functionality available in a Polar Waveform plot for hydro air-gap monitoring measurements has been corrected as follows:

- When displaying live transient data such as a rotor shape or a rotor signature in a Polar Waveform plot, VibroSight Vision could stop responding if the tacho (speed) signal used to generate the 1/rev pulse required by hydro air-gap monitoring was too slow or missing.

NOTE:	Although hydro air-gap monitoring can be used without a Tacho Input Channel (for example, to get an overview of a hydroelectric generator), a 1/rev pulse is required in order to identify the individual rotor poles.

- When displaying historical transient data such as a rotor shape or a rotor signature in a Polar Waveform plot, VibroSight Vision could stop responding if the data was uncomplete (due to too slow or missing tacho (speed) signal).

- When displaying the layer stator shape in a Polar Waveform plot, the auto-scaling for the radial-axis could be incorrect for the data, resulting in a plot in which the curve (layer stator shape) was not visible.
  Note: Using Plot Properties to change the radial-axis to use manual scaling with suitable minimum and maximum values for the air gap was a workaround that allowed the layer stator shape to be displayed.

3.6 Trend plot functionality with hydro air-gap monitoring data

The functionality available in a Trend plot for hydro air-gap monitoring measurements has been corrected as follows:

- When displaying vector measurement data such as rotor eccentricity and rotor ellipticity in a Trend plot, VibroSight Vision incorrectly calculated and displayed the angle component of the measurements in the cursor columns of the plot legend, by applying a phase qualifier (rectifier) to the measurements.
  However, for hydro air-gap monitoring measurements, the angle component of vector measurement data is in fact geometrical data (not phase data) so no phase qualifier should be used.

VM600 XMx16 cards

3.7 Improved resampler

VM600 XMx16 cards implement multi-rate digital resamplers (sample rate converters) that operate in a fixed-frequency or an order-tracked sampling mode, depending on the configuration of the card.

The resamplers implemented on the cards have been reworked to support improved features with more consistent behaviour under different operating conditions. This includes reduced and more consistent time delays, improved timestamping and better data quality indication (status bits/flags).

Specifically for tacho inputs, this also includes better handing of “poor quality” speed signals with noise (“spikes”), signals that are too slow (“underspeed”) or too fast (“overspeed”), and transitions in the input speed signal from “zero speed” to “non-zero speeds”.

It has also helped improve overall card responsiveness, reducing delays related to “underspeed” and “overspeed” conditions. See also 3.9 Improved internal communications.

3.8 Improved phase measurement

The measurement of phase by VM600 XMx16 cards has been improved in order to provide more accurate and precise values of phase for frequency filtered amplitude and phase measurements such as nX extractions, and for the last lines/orders of spectra.

3.9 Improved internal communications

The communications interfaces between the processors and the FPGA on VM600 XMx16 cards have been reworked to support the improved resampler and help ensure more robust behaviour, including more reliable card to VibroSight Server communications.

It has also helped improve overall card responsiveness, reducing delays related to “underspeed” and “overspeed” conditions. See also 3.7 Improved resampler.

VibroSmart DMS devices

3.10 VSV300 module entering fail-safe after period without a tacho signal

After a long period of time without a tacho (speed) signal, a VSV300 module could enter the fail-safe mode (indicating that the module had detected a hardware failure) when the tacho signal became available again, that is, transitions in the input speed signal from “zero speed” to “non-zero speeds”.

Typically, this bug occurred when the machinery being monitored was stopped for more than 8 hours and then restarted (that is, when there was no tacho signal for >8 hours).

NOTE:	Incorrectly installed tachometer probes that provide a “poor quality” input signal with marginal or invalid AC and/or DC components for an input channel of the monitoring system greatly increase the possibility of seeing this bug.

That is, transducer-to-target distance must always be within the measurement range of the proximity transducer in order to ensure the correct operation of the measurement system. For example, a correctly installed TQ 4xx proximity probe with a properly adjusted initial gap for (relative vibration measurement) provides an output voltage (DC component) of −9.6 V_{DC}.

4 Known issues

4.1 Changing a VibroSight Server's maximum RAM cache size when DSNs are not used

Since VibroSight 2.9.7, a VibroSight Server database no longer requires a data source name (DSN), so it is no longer required to use the ODBC Data Source Administrator to manage the underlying connection to the Sybase SQL Anywhere 11 database (which provided convenient access to the start line command that is used to start the SQL Anywhere 11 server).

NOTE: `dbeng11.exe -ch 600m` is the default command used to start the SQL Anywhere 11 server, where the `-ch 600m` option specifies that a maximum RAM cache size of 600 MB should be used. (This option limits the underlying SQL Anywhere's database server cache during automatic cache growth.)

However, for more complex machinery monitoring applications and larger databases, it is recommended that a maximum RAM cache size of 2000 MB (`-ch 2000m`) is used, in order to improve the overall performance of the VibroSight machinery monitoring system.

When a DSN is not used with a VibroSight Server database, the settings usually written to the DSN using the ODBC Data Source Administrator are managed by the VibroSight Server itself and stored in the VibroSight Server configuration file (`*.vssrvcfg`). However, this means that the specification of the maximum cache size to be used by the VibroSight Server database is not as convenient to access by the user.

Presently, the default command used to start the SQL Anywhere 11 server will be used unless:

- In VibroSight Configurator, when saving the configuration as a server / database, the Configure advanced settings option is used to enter a different SQL database start line command.
- In VibroSight System Manager, when copying the database, the Configure advanced settings option is used to enter a different SQL database start line command.

So when DSNs are not used with a VibroSight Server database, the VibroSight Server configuration file (`*.vssrvcfg`) must be edited manually if it is necessary to change the SQL database start line command after a VibroSight Server database has been created or copied:

1. Exit all VibroSight software modules (clients and servers) that use the VibroSight Server database to be modified.
2. Use a text editor program to open the VibroSight Server configuration file (`*.vssrvcfg`) and search for the text string `dbeng11.exe`.
3. Edit the `StartLine="dbeng11.exe -ch 600m"` command in the configuration file to use the new required maximum cache size.
   For example, `StartLine="dbeng11.exe -ch 2000m"`, then save the file.
4. Restart the VibroSight Server.

If the `StartLine="dbeng11.exe -ch 600m"` command cannot be found in the VibroSight Server configuration file being used, then a "dummy" copy of the VibroSight Server database should be

created using VibroSight System Manager's Database Copy command with the Configure advanced settings option selected. A "dummy" VibroSight Server configuration file created in this way will include the SQL database start line command and can be used as an example to edit the VibroSight Server configuration file being used. (After which, the "dummy" files should be deleted.)

NOTE:	It is highly recommended to make a backup copy of the VibroSight Server configuration file being used before manually editing it. Such manual edits must be done carefully in order to ensure that the tags and delimiters used in the VibroSight Server configuration file are used correctly.

4.2 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.

4.3 Small "holes" in plotted data for larger VibroSight Vision projects when viewing live data

Depending on the complexity of a VibroSight application and the performance of the computer running the VibroSight software, the responsiveness of VibroSight Vision can decline under certain situations and affect the display of plots when viewing live data.

In particular, this performance issue has been seen with larger VibroSight Vision projects containing many open plots using live data. It is typically characterised by plots being displayed with small "holes" in the data, corresponding to when the computer has reached its performance limits.

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

- Reduce the number of active plots in the VibroSight Vision project in order to reduce the computational load, as only the currently displayed (foreground) plots are constantly refreshed. Plots that are hidden or minimized (background) are not active and will only be refreshed when they become visible again.
- If it is necessary to view historical data at the same time, consider using a separate VibroSight Vision session to work with the historical data, preferably on a different computer.

4.4 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.

4.5 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 the VibroSight Server database file (`*.vssrvdb` or `*.db)` and the 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 database copies append a timestamp (_yyyyMMddHHmmss) to the Server instance name which 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 database copy is complete.

Also, depending on the VibroSight Server 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 databases being created during automatic data management.

This is particularly important for systems with automated data management and system backup procedures that use script files containing database commands (such as copy and backup) that can automatically generate VibroSight Server database files.

4.6 VibroSight client connections to local and remote VibroSight Servers are mutually exclusive

When a VibroSight Server is running on a (local) computer, a VibroSight client, such as VibroSight Configurator or VibroSight Vision running on the same (local) computer cannot connect to a VibroSight Server running on a different (remote) computer.

4.7 VibroSight Servers listen to a single IP address

A VibroSight Server uses one specific IP address for connections to VibroSight clients and all communications is directed through this VibroSight Server IP address. This IP address can be set to any of the available network adapters or logical addresses on the host computer running the

VibroSight Server. On a computer with a single network adapter, the IP address of the single network adapter is used by default.

In typical applications, the network adapter of the host computer running the VibroSight Server is connected to a dedicated control (industrial) Ethernet network that contains the VibroSight-compatible hardware such as VM600 XMx16 cards and VibroSmart DMS devices.

However, as a VibroSight Server uses one specific IP address (network adapter), this prevents concurrent connections from VibroSight clients running on other separate networks, such as a business (corporate) Ethernet network.

4.8 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).

4.9 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 cards and VibroSmart DMS 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.

4.10 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.

4.11 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.

4.12 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 DMS 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).

5 Compatibility

NOTE: Refer also 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.

As part of the VibroSight software installation process, the installation wizard will automatically check to see if the "Microsoft Visual C++ Redistributable Package" (see section 5.1.6) and the "OPC Core Components Redistributable (x86)" (see section 5.1.7) are available on the computer.

If these items have not previously been installed and they are required by the VibroSight installation's application, then the VibroSight installation wizard can be used to install them.

5.1 VibroSight software

VibroSight 2.12.4 is an update level release in the 2.x.x series and replaces VibroSight 2.12.3.

Compatibility with existing databases is achieved using the database **Update** tool (from VibroSight System Manager's **Database** tools) which supports the continued used of configurations and data from previous versions. See 6.2.1 Updating the internal structure of a VibroSight database.

5.1.1 Microsoft Windows operating systems

VibroSight 2.12.4 is compatible with 32-bit versions and 64-bit versions of Microsoft ® Windows ® operating systems.

NOTE: Since VibroSight 2.9.0, VibroSight can run on 64-bit versions of Windows in order to help eliminate memory and performance issues that can occur due to the limitations of the 32-bit memory space.

VibroSight 2.12.x remains 32-bit software that runs on x64 Windows in the same manner as it does on 32-bit windows, that is, VibroSight is "x64-compatible" software (not "native x64" software).

See the appendix of this document for detailed information on VibroSight software and Windows operating system compatibility.

5.1.2 Microsoft .NET Framework

For most Windows operating systems, VibroSight 2.12.4 requires that Microsoft .NET Framework 4.5 and .NET Framework 2.0 are installed on the computer.

However, since Microsoft .NET Framework 3.5 includes .NET Framework 2.0 and .NET Framework 3.0, installing Microsoft .NET Framework 4.5 and .NET Framework 3.5 Service Pack 1 is the recommended solution for most computers.

NOTE: Microsoft .NET Framework 4.5 is required since VibroSight 2.9.4.

Microsoft .NET Framework 4 (Standalone Installer) is required for VibroSight 2.9.2 and 2.9.3.

Microsoft .NET Framework 3.5 SP1 is required for VibroSight 2.9.1 or earlier. (Microsoft .NET Framework 3.5 SP1 is a full cumulative update that contains many new features building incrementally upon .NET Framework 2.0, 3.0, 3.5, and includes cumulative servicing updates to the .NET Framework 2.0 and .NET Framework 3.0 subcomponents.)

Microsoft .NET Framework 2.0 is required by the OPC Core Components Redistributable that is installed by VibroSight (see 5.1.7 OPC Foundation OPC Core Components Redistributable).

See the appendix of this document for detailed information on VibroSight software's Microsoft .NET Framework requirements.

5.1.3 Sybase SQL Anywhere 11 software

VibroSight uses the Sybase ® SQL Anywhere 11 database software in its standard configuration. VibroSight 2.12.4 remains compatible with the previously deployed version of SQL Anywhere, namely SQL Anywhere version 11.0.1.2044.

NOTE: VibroSight requires the 32-bit version of SQL Anywhere 11 on both 32-bit and 64-bit Windows operating systems.
It is strongly recommended that only the 32-bit version of SQL Anywhere 11 is installed on the computer running VibroSight.

NOTE: Updating SQL Anywhere to version 11.0.1.2867 is **mandatory** in order to avoid potential memory issues (fixed by Sybase). A software update (patch) included on the Sybase CD must be run in order to update Sybase SQL Anywhere from version 11.0.1 to version 11.0.1.2867: *SA11_Full_Win32+x64.1101_2867_EBF.exe*.
See 6.3 Upgrading the Sybase SQL Anywhere 11 software.

5.1.4 VM600 CMS software

The VM600 CMS software from Meggitt Sensing Systems uses Sybase SQL Anywhere 8. Both Sybase SQL Anywhere 8 (VM600 CMS) and Sybase SQL Anywhere 11 (VibroSight) can be installed on the same computer.

However, while SQL Anywhere 8 and SQL Anywhere 11 can be installed on the same computer and run at the same time for standard database operations, certain administrative tasks are mutually exclusive and may block one another.

More specifically, all operations that refer to Sybase ISQL (a command-line Interactive SQL utility) in the background could be directed to the wrong version of Sybase SQL Anywhere. For example, this impacts all user operations and system operations involving the creation, copying and updating of databases.

NOTE:	It is recommended to install and use VibroSight on a computer that does not have the VM600 CMS software installed.

5.1.5 SIMATIC Step 7 software

The SIMATIC Step 7 software from Siemens typically uses Sybase SQL Anywhere 9. Both Sybase SQL Anywhere 9 (SIMATIC Step 7) and Sybase SQL Anywhere 11 (VibroSight) can be installed on the same computer.

However, while SQL Anywhere 9 and SQL Anywhere 11 can be installed on the same computer, they cannot run at the same time.

More specifically, if SIMATIC Step 7 and VibroSight are both installed, certain administrative tasks, such as all user operations and system operations involving the creation, copying and updating of databases, may not work correctly. If this behaviour is seen, the recommended workaround is to manually change or remove the SQLANY environmental variable in order to allow VibroSight to work correctly.

Note: The SQLANY environment variable is used to contain the directory where Sybase SQL Anywhere is installed.

NOTE:	It is recommended to install and use VibroSight on a computer that does not have the SIMATIC Step 7 software installed.

5.1.6 Microsoft Visual C++ Redistributable Package

The Microsoft Visual C++ Redistributable Package is required in order to install and register the Visual C++ libraries required by a VibroSight OPC Server.

If this package does not already exist on the computer, then the VibroSight installation wizard will install it automatically. (The package is included in the ISSetupPrerequisites folder on the VibroSight CD.)

NOTE:	The Microsoft Visual C++ Redistributable Package is required since VibroSight 2.9.4, if VibroSight OPC Servers are being used. The 32-bit version of the package (“vcredist_x86.exe”) is installed on both 32-bit and 64-bit Windows operating systems, as the VibroSight OPC Server is a 32-bit application.

5.1.7 OPC Foundation OPC Core Components Redistributable

The OPC Core Components Redistributable is installed by VibroSight 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.

If this redistributable does not already exist on the computer, then the VibroSight installation wizard will install it automatically. (The redistributable is included in the ISSetupPrerequisites folder on the VibroSight CD.)

NOTE:	The OPC Core Components Redistributable is required since VibroSight 2.9.4, if OPC clients or OPC servers are being used. The 32-bit version of the package (“OPC Core Components Redistributable (x86)”) is installed on 32-bit Windows operating systems and the 64-bit version of the package (“OPC Core Components Redistributable (x64)”) is installed on 64-bit Windows operating systems. The OPC Core Components Redistributable that is installed as part of the VibroSight software installation process requires that the Microsoft .NET Framework 2.0 is available on the computer. (However, since Microsoft .NET Framework 3.5 includes .NET Framework 2.0 and .NET Framework 3.0, installing Microsoft .NET Framework 3.5 Service Pack 1 is the recommended solution for most computers.) See also 5.1.2 Microsoft .NET Framework.

5.2 VM600 cards

5.2.1 Firmware

There are firmware updates for some VM600 cards corresponding to VibroSight 2.12.5.

NOTE:	Starting with VibroSight 2.12.0, support for the existing VM600 CPUR card was deprecated.

The latest firmware for the XMC16, XMV16 and XMVS16 is now:

- Base System: base-system-640-003-001-012.tgz
- Applications: applications-640-010-001-012.tgz.

Therefore, for current versions of the VibroSight-compatible VM600 cards, firmware upgrades are recommended. See 6.4 Updating the VibroSight hardware.

Improvements to this latest VM600 XMx16 card firmware includes the resamplers (sample rate converters), the measurement of phase and internal communications. See sections 3.7, 3.8 and 3.9.

5.3 VibroSmart DMS devices

5.3.1 Firmware

There are firmware updates for some VibroSmart DMS modules corresponding to VibroSight 2.12.5.

The latest firmware for the VSI010 module remains:

- 642-002-000-008.xmsifw.

The latest firmware for the VSN010 device remains:

- 642-004-000-010.redboxfw.

The latest firmware for the VSV300 module is now:

- 642-001-000-013.xtranfw.

Therefore, for current versions of the VibroSmart VSV300 module, firmware upgrades are recommended. See 6.4 Updating the VibroSight hardware.

Improvements to this latest VibroSmart VSV300 module firmware includes a specific bug fix to stop a VSV300 module entering fail-safe after a long period of time without a tacho (speed) signal.
See section 3.10.

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 DMS modules and devices) before starting a VibroSight system upgrade, in order to establish if any firmware updates are also required. See 6.4.3 Updating the firmware using VibroSight System Manager.

NOTE:	It is strongly recommended to ensure that a copy of the configuration for a VibroSmart DMS is available before updating the firmware of any of the VibroSmart DMS modules used in the DMS. See 6.4.3 Updating the firmware using VibroSight System Manager.

6.1 VibroSight software user settings

The VibroSight Software generates and uses some files on the hard disk 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 2, 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 Upgrading the VibroSight software

NOTE: Since VibroSight 2.9.6, VibroSight Server instance names are limited to 18 characters (previously, it was 27). So VibroSight installations with VibroSight Server instance names of more than 18 characters will experience problems with VibroSight 2.12.x until the existing VibroSight Server instance names (and any references to them) are manually edited to be 18 characters or less.
See also 4.5 Length limitation of VibroSight Server instance names.

1. If it is not necessary for the VibroSight-based system to remain operational during the upgrade procedure, back up any important (required) VibroSight databases in the following way:
   - Exit all VibroSight software modules (clients and servers) – no VibroSight software modules, such as Vision, Configurator or Server, should be running.
   - Copy the files (`*.vssrvdb, *.vssrvcfg` and optionally, `*.log`) from the directory where your database files are located to another location, for example, to a specific backup directory.

NOTE: The default data (data path) directory is `C:\VibroSight Data`

Or if it is necessary for the VibroSight-based system to remain operational for as long as possible during the upgrade procedure, back up any important (required) VibroSight databases in the following way:

- Exit all VibroSight software modules (clients) – no VibroSight software modules, such as Vision or Configurator, should be running.
- Start VibroSight System Manager and use the database  **Backup** tool from VibroSight System Manager's  **Database** tools, and follow the instructions presented by the Database Backup Wizard.

NOTE: It is necessary to be logged in to System Manager as 'Admin' in order to have the user rights to access the database tools:

Select your  VibroSight Host (computer) in the System Explorer tree structure and click  **Login** (from VibroSight System Manager's  **Access Rights** tools).

Refer also to the *Backing up a database* topic in the  *VibroSight help*.

2. Make backup copies of any important (required) VibroSight Vision projects in the following way:
   - Create an archive file (for example, `*.zip`) containing all of the files (`*.xml` and `*.xmsproj`) in the directory where your project files are located.

NOTE: The default project directory is:
`C:\Documents and settings\username\My Documents\VibroSight\Projects`

3. Ensure that no VibroSight software modules are running.
4. Remove the currently installed version of the VibroSight software (for example,  VibroSight Standard Edition) using Windows Add or Remove Programs, in one of the following ways:
   - Click **Start > Settings > Control Panel** and then double-click **Add or Remove Programs**.
   - Or click **Start**, click **Control Panel** and then double-click **Add or Remove Programs**.
5. Install the latest version of the VibroSight software by inserting the VibroSight CD into the CD/DVD drive of the computer and follow the instructions presented by the VibroSight installation wizard.

NOTE: Refer to the  *Getting started with VibroSight* installation guide for detailed information on installing the VibroSight software – including prerequisites and compatibility.

6. Restart VibroSight Server and ensure that the required communications are enabled. For example, enable card and module device drivers according to the hardware in the system:
   - For example, click **Data > Acquisition > XMC16/XMV16 Card Driver** or **Data > Acquisition > VibroSmart Module Driver**.
7. Restart VibroSight Vision and ensure that live data is being received from the hardware and displayed in Vision.
8. The VibroSight system is now up and running.

6.2.1 Updating the internal structure of a VibroSight database

When VibroSight Server is started, it checks the status of the database and will automatically inform the user if any internal structures of the database need to be updated before proceeding.

1. Update a VibroSight database in the following way:
   - Start VibroSight System Manager and use the database  **Update** tool from VibroSight System Manager's  **Database** tools, and follow the instructions presented by the Database Update Wizard.

NOTE: It is necessary to be logged in to System Manager as 'Admin' in order to have the user rights to access the database tools:

Select your VibroSight Host (computer) in the System Explorer tree structure and click **Login** (from VibroSight System Manager's **Access Rights** tools).

Refer also to the *Updating a database* topic in the *VibroSight help*.

6.3 Upgrading the Sybase SQL Anywhere 11 software

VibroSight software is compatible (and extensively tested) with Sybase SQL Anywhere versions 11.0.0 and 11.0.1.

However, with the release of SQL Anywhere version 11.0.1.2867, Sybase has fixed some previously known memory issues. Therefore, it is **mandatory** to upgrade all VibroSight systems to this version of SQL Anywhere 11.

Determine the version of the SQL Anywhere 11 database engine installed on a computer in the following way:

1. From the Start menu, click **Start > All Programs > SQL Anywhere 11 > Sybase Central**.

   The Sybase Central window appears. Sybase Central is a GUI-based management tool for Sybase products.

2. Click **Help > About Sybase Central**.

   The About Sybase Central windows appears, displaying the version information for SQL Anywhere 11 (and any other installed Sybase products).

NOTE: Refer also to the *Determining the version of SQL Anywhere 11 installed on a computer* topic in the *VibroSight help*.

If SQL Anywhere 11 version 11.0.0 is installed on the computer, it is necessary to first remove version 11.0.0, then install version 11.0.1 from the Sybase CD.

If SQL Anywhere 11 version 11.0.1 is installed on the computer, simply update to version 11.0.1.2867 by running the software update (patch) included on the Sybase CD.

When SQL Anywhere 11 software version 11.0.0 is installed on the computer:

NOTE: Do not use the SQL Anywhere 11.0.1 setup to upgrade directly to software version 11.0.1 from software version 11.0.0. Instead, it is necessary to upgrade the Sybase database software as follows:

1. Remove SQL Anywhere 11.0.0, using the Windows Add or Remove Programs tool.

2. Install SQL Anywhere 11.0.1, using the Sybase SQL Anywhere 11.0.1 CD.

Refer also to the *Getting started with VibroSight* installation guide for information on installing the Sybase software.

1. Exit all VibroSight software modules (clients and servers) – no VibroSight software modules, such as Vision, Configurator or Server, should be running – as this also stops the SQL Anywhere 11 database engine.

   The lightning icon that appears in the notification area (at the far right of the task bar) to indicate that a Sybase database engine is running should no longer be shown.

2. Remove the currently installed version of Sybase SQL Anywhere 11 using Windows Add or Remove Programs, in one of the following ways:

   - Click **Start > Settings > Control Panel**, then double-click **Add or Remove Programs**
   - Or click **Start**, click **Control Panel** and then double-click **Add or Remove Programs**.

   And remove SQL Anywhere 11.

3. Restart the computer.

4. Install Sybase SQL Anywhere VibroSight 11.0.1.2044 by inserting the Sybase CD into the CD/DVD drive of the computer and following the instructions presented by the SQL Anywhere 11 installation wizard.

5. Restart the computer.

   Without this final computer restart, VibroSight Server may not be able to start the SQL Anywhere 11 database engine.

When SQL Anywhere 11 software version 11.0.1 is installed on the computer:

1. Update to Sybase SQL Anywhere VibroSight 11.0.1.2867 by inserting the Sybase CD into the CD/DVD drive of the computer, running the *SA11_Full_Win32+x64.1101_2867_EBF.exe* software update (patch) and following the instructions presented by the SQL Anywhere 11 installation wizard.

2. Restart the computer.

6.4 Updating the VibroSight hardware

Appropriate files and tools are included in the installation package to allow VM600 cards (XMx16) and VibroSmart DMS devices (VSI010, VSN010 and VSV300) to be updated to the latest firmware, in order to take advantage of improvements to the VibroSight software.

Updating the firmware VM600 cards or VibroSmart DMS 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 DMS 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.

6.4.1 VM600 card firmware

The latest VM600 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 cards is: `C:\Program Files\Meggitt\VibroSight 2\Firmware\VM600`

The firmware files for a VM600 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 Sensing Systems should also be stored in these directories.

Table 1 shows the compatibility between VibroSight software and VM600 XMx16 card hardware (that is, XMC16, XMV16 and XMVS16 card pair firmware).

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

Table 1: VibroSight software and VM600 XMx16 card firmware compatibility

	VM600 XMx16 firmware (see note 1)				
VibroSight software version	Base-system (*.tgz)				
	640-003-001-009	640-003-001-010	640-003-001-011		640-003-001-012
CD part number	Applications (*.tgz)				
	640-010-001-008	640-010-001-009	640-010-001-010	640-010-001-011	640-010-001-012
2.11.0 609-004-000-020	✓ See notes 2 and 3				
2.11.1 609-004-000-021		✓ See note 4			
2.11.2 609-004-000-022		✓			
2.11.3 609-004-000-023		✓			
2.11.4 609-004-000-024		✓			
2.11.5 609-004-000-025		✓			
2.11.6 609-004-000-026		✓			
2.12.0 609-004-000-027			✓ See note 5		
2.12.1 609-004-000-028				✓ See note 6	✓ See note 7
2.12.2 609-004-000-029				✓	✓
2.12.3 609-004-000-030				✓	✓
2.12.4 609-004-000-032				✓	✓
2.12.5 609-004-000-033				✓	✓

Notes for Table 1 (see the next page)

Notes for Table 1

1. VM600 XMx16 card 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. Updating to these versions of VM600 XMx16 card firmware requires a two-step process:

(i) VibroSight System Manager's Change Firmware command should be used to update the base-system firmware (640-003-001-00*.tgz) only.

(ii) Then the Change Firmware command should be used again to update the applications firmware (640-010-001-00*.tgz) only.

3. This version of VM600 XMx16 card firmware introduces support for the direct measurement mode that is used to acquire direct data (digitised waveform) before an event.

4. This version of VM600 XMx16 card firmware introduces support for the operation of a VibroSight system without an NTP server (NTP-free).

5. This version of VM600 XMx16 card firmware introduces support for hydro air-gap monitoring.

6. This version of VM600 XMx16 card firmware introduces support for 1 s time-boxed peak-hold processing (that is, spectral data aggregation).

7. This version of VM600 XMx16 card firmware implements improved multi-rate digital resamplers (sample rate converters). A firmware upgrade is recommended but not required in order to run VibroSight 2.12.5.

6.4.2 VibroSmart DMS device firmware

The latest VibroSmart DMS 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 DMS devices is: `C:\Program Files\Meggitt\VibroSight 2\Firmware\VibroSmart`

The firmware files for a VibroSmart DMS device can be found in the appropriate subfolder and identified by their .*fw file name extension. For example, the `VSV300` subfolder contains the firmware for use by VSV300 modules. Any additional firmware updates received from Meggitt Sensing Systems should also be stored in these directories.

Table 2 shows the compatibility between VibroSight software and the VibroSmart VSI010 module firmware.

Table 3 shows the compatibility between VibroSight software and the VibroSmart VSN010 device firmware.

Table 4 shows the compatibility between VibroSight software and the VibroSmart VSV300 module firmware.

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

Table 2: VibroSight software and VibroSmart VSI010 module firmware compatibility

	VibroSmart VSI010 firmware (see note 1)				
VibroSight software version CD part number	642-002-001-004.xmsifw	642-002-001-005.xmsifw	642-002-000-006.xmsifw	642-002-000-007.xmsifw	642-002-000-008.xmsifw
2.10.1 609-004-000-019	See note 2				
2.11.0 609-004-000-020					
2.11.1 609-004-000-021					
2.11.2 609-004-000-022	✓ See note 3				
2.11.3 609-004-000-023	✓				
2.11.4 609-004-000-024		✓			
2.11.5 609-004-000-025		✓			
2.11.6 609-004-000-026			✓ See note 4		
2.12.0 609-004-000-027			✓		
2.12.1 609-004-000-028				✓ See note 4	
2.12.2 609-004-000-029				✓	
2.12.3 609-004-000-030					✓ See note 4
2.12.4 609-004-000-032					✓
2.12.5 609-004-000-033					✓

Notes for Table 2 (see the next page)

Notes for Table 2

1. VibroSmart VSI010 module 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 DMS device firmware using PNRs such as *642-xxx-000-xxx*, which correspond to the actual firmware that is running on the device.

2. VibroSight 2.10.1, 2.11.0 and 2.11.1 included features that were activated in order to ensure compatibility with development versions of VibroSmart DMS device firmware. However, only the later versions of each should now be used, that is, VibroSight 2.12.5 and the VSI010 642-002-000-008 firmware.

3. Updating to this version of VibroSmart VSI010 firmware requires a two-step process:

(i) All VSI010 devices in the DMS should be upgraded to the latest *.xmsifw* firmware and all VSV300 devices in the DMS should be upgraded to the latest *.xtranfw* firmware.
Note: It is necessary to wait until these VibroSmart DMS modules have automatically restarted after the firmware update before continuing, that is, for up to 10 minutes (up to 5 minutes for the firmware update and up to 5 minutes for the duration of the restart (reboot)).

(ii) Then all VSN010 devices in the DMS should be upgraded to the latest *.redboxfw* firmware.

As this version of VibroSmart DMS device firmware enables the rapid spanning tree protocol (RSTP), this sequence is necessary in order to avoid broadcast storms on the network.

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

Notes:
For a VibroSmart DMS consisting of different types of device, the devices should be updated in the following order: first VSN010 real-time Ethernet switches, then VSV300 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 DMS devices should be re-activated and the VibroSmart DMS devices should be restarted.

Procedure:
(1) Ensure that a copy of the configuration for the VibroSmart DMS 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 DMS devices), VibroSight Configurator can be used to obtain a copy of the configuration as follows:
• For a VibroSmart DMS using a VibroSight Server, the **File > Open > Server / Database** command can be used to read the configuration from the VibroSight Server.
• For a VibroSmart DMS not using a VibroSight Server (that is, a “stand-alone” VibroSmart DMS), the **File > Open > Device** command can be used to read the configuration directly from the VibroSmart DMS modules.
Then the **File > Save As > File** command can be used to store a copy of the configuration for the VibroSmart DMS.

(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 DMS 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 VSV300 modules).

(6) Start VibroSight Configurator, open the configuration for the VibroSmart DMS (see step (1)), then 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 DMS 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 DMS devices can be inconsistent and should be ignored. Normal LED behaviour resumes after the firmware update is complete (after step (7)).

Table 3: VibroSight software and VibroSmart VSN010 device firmware compatibility

	VibroSmart VSN010 firmware (see note 1)				
VibroSight software version CD part number	642-004-001-006.redboxfw	642-004-001-007.redboxfw	642-004-000-008.redboxfw	642-004-000-009.redboxfw	642-004-000-010.redboxfw
2.10.1 609-004-000-019	See note 2				
2.11.0 609-004-000-020					
2.11.1 609-004-000-021					
2.11.2 609-004-000-022	✓ See note 3				
2.11.3 609-004-000-023	✓				
2.11.4 609-004-000-024		✓			
2.11.5 609-004-000-025		✓			
2.11.6 609-004-000-026			✓ See note 4		
2.12.0 609-004-000-027			✓		
2.12.1 609-004-000-028				✓ See note 4	
2.12.2 609-004-000-029				✓	
2.12.3 609-004-000-030					✓ See note 4
2.12.4 609-004-000-032					✓
2.12.5 609-004-000-033					✓

Notes for Table 3 (see the next page)

Notes for Table 3

1. VibroSmart VSN010 device 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 DMS device firmware using PNRs such as *642-xxx-000-xxx*, which correspond to the actual firmware that is running on the device.

2. VibroSight 2.10.1, 2.11.0 and 2.11.1 included features that were activated in order to ensure compatibility with development versions of VibroSmart DMS device firmware. However, only the later versions of each should now be used, that is, VibroSight 2.12.5 and the VSN010 642-004-000-0010 firmware.

3. Updating to this version of VibroSmart VSN010 firmware requires a two-step process:

(i) All VSI010 devices in the DMS should be upgraded to the latest *.xmsifw* firmware and all VSV300 devices in the DMS should be upgraded to the latest *.xtranfw* firmware.
Note: It is necessary to wait until these VibroSmart DMS modules have automatically restarted after the firmware update before continuing, that is, for up to 10 minutes (up to 5 minutes for the firmware update and up to 5 minutes for the duration of the restart (reboot)).

(ii) Then all VSN010 devices in the DMS should be upgraded to the latest *.redboxfw* firmware.

As this version of VibroSmart DMS device firmware enables the rapid spanning tree protocol (RSTP), this sequence is necessary in order to avoid broadcast storms on the network.

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

Notes:
For a VibroSmart DMS consisting of different types of device, the devices should be updated in the following order: first VSN010 real-time Ethernet switches, then VSV300 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 DMS devices should be re-activated and the VibroSmart DMS devices should be restarted.

Procedure:
(1) Ensure that a copy of the configuration for the VibroSmart DMS 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 DMS devices), VibroSight Configurator can be used to obtain a copy of the configuration as follows:
• For a VibroSmart DMS using a VibroSight Server, the **File > Open > Server / Database** command can be used to read the configuration from the VibroSight Server.
• For a VibroSmart DMS not using a VibroSight Server (that is, a “stand-alone” VibroSmart DMS), the **File > Open > Device** command can be used to read the configuration directly from the VibroSmart DMS modules.
Then the **File > Save As > File** command can be used to store a copy of the configuration for the VibroSmart DMS.

(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 DMS 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 VSV300 modules).

(6) Start VibroSight Configurator, open the configuration for the VibroSmart DMS (see step (1)), then 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 DMS 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 DMS devices can be inconsistent and should be ignored. Normal LED behaviour resumes after the firmware update is complete (after step (7)).

Table 4: VibroSight software and VibroSmart VSV300 module firmware compatibility

	VibroSmart VSV300 firmware (see note 1)					
VibroSight software version CD part number	642-001-001-008.xtranfw	642-001-001-009.xtranfw	642-001-000-010.xtranfw	642-001-000-011.xtranfw	642-001-000-012.xtranfw	642-001-000-013.xtranfw
2.10.1 609-004-000-019	See note 2					
2.11.0 609-004-000-020						
2.11.1 609-004-000-021						
2.11.2 609-004-000-022	✓ See note 3					
2.11.3 609-004-000-023	✓					
2.11.4 609-004-000-024		✓				
2.11.5 609-004-000-025		✓				
2.11.6 609-004-000-026			✓ See note 4			
2.12.0 609-004-000-027			✓			
2.12.1 609-004-000-028				✓ See note 4		
2.12.2 609-004-000-029				✓		
2.12.3 609-004-000-030					✓ See note 4	✓ See note 4
2.12.4 609-004-000-032					✓	✓
2.12.5 609-004-000-033					✓	✓

Notes for Table 4 (see the next page)

Notes for Table 4

1. VibroSmart VSV300 device 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 DMS device firmware using PNRs such as *642-xxx-000-xxx*, which correspond to the actual firmware that is running on the device.

2. VibroSight 2.10.1, 2.11.0 and 2.11.1 included features that were activated in order to ensure compatibility with development versions of VibroSmart DMS device firmware. However, only the later versions of each should now be used, that is, VibroSight 2.12.5 and the VSV300 642-001-000-013 firmware.

3. Updating to these versions of VibroSmart VSV300 firmware requires a two-step process:

(i) All VSI010 devices in the DMS should be upgraded to the latest .xmsifw firmware and all VSV300 devices in the DMS should be upgraded to the latest .xtranfw firmware.
Note: It is necessary to wait until these VibroSmart DMS modules have automatically restarted after the firmware update before continuing, that is, for up to 10 minutes (up to 5 minutes for the firmware update and up to 5 minutes for the duration of the restart (reboot)).

(ii) Then all VSN010 devices in the DMS should be upgraded to the latest .redboxfw firmware.

As these versions of VibroSmart DMS device firmware enable the rapid spanning tree protocol (RSTP), this sequence is necessary in order to avoid broadcast storms on the network.

4. Updating to this version of VibroSmart VSV300 firmware requires a specific process:

Notes:
For a VibroSmart DMS consisting of different types of device, the devices should be updated in the following order: first VSN010 real-time Ethernet switches, then VSV300 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 DMS devices should be re-activated and the VibroSmart DMS devices should be restarted.

Procedure:
(1) Ensure that a copy of the configuration for the VibroSmart DMS 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 DMS devices), VibroSight Configurator can be used to obtain a copy of the configuration as follows:
• For a VibroSmart DMS using a VibroSight Server, the **File > Open > Server / Database** command can be used to read the configuration from the VibroSight Server.
• For a VibroSmart DMS not using a VibroSight Server (that is, a “stand-alone” VibroSmart DMS), the **File > Open > Device** command can be used to read the configuration directly from the VibroSmart DMS modules.
Then the **File > Save As > File** command can be used to store a copy of the configuration for the VibroSmart DMS.

(2) Start VibroSight System Manager, select the device or devices of the same type to be updated (for example, VSV300 modules) and run the Change Firmware command.
When updating multiple VibroSmart DMS 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 DMS (see step (1)), then 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 DMS 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 DMS devices can be inconsistent and should be ignored. Normal LED behaviour resumes after the firmware update is complete (after step (7)).

6.4.3 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 DMS devices to the latest compatible version.

Failure to perform a necessary VibroSight-compatible VM600 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 DMS 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 DMS 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 DMS is available before updating the firmware of any of the VibroSmart DMS modules used in the DMS.

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

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

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

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

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 DMS 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 DMS 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 DMS 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 card or VibroSmart DMS device selected. `.tgz` files are for VM600 cards and `.*fw` files are for VibroSmart DMS devices.

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

   For XMx16 cards and VibroSmart DMS 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 DMSs, where systems are operating with different versions of VibroSight.

6.5 Final checks

After upgrading the VibroSight software, the following checks are recommended to ensure that VibroSight has not been inadvertently modified and that it continues to operate as expected:

- Use VibroSight Configurator to run a consistency check on the configuration in order to ensure that the configuration has not been modified by any changes to the VibroSight software, internal database structure and firmware for the hardware (VM600 cards and VibroSmart DMS modules).
- Use the VibroSight Server window to check that the data acquisition, data post-processing and data logging settings are as expected. (Click **Data > Acquisition**, **Data > Post-processing** and **Data > Logging** and disable/enable the drivers, processing managers and logging as required.)

7 Customer support

7.1 Contacting us

Meggitt Sensing Systems 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 Sensing Systems representative. Alternatively, contact our main office:

Customer support
Meggitt SA
Route de Moncor 4
PO Box 1616
CH-1701 Fribourg
Switzerland

Telephone: +41 (0) 26 407 11 11
Email: energysupport@ch.meggitt.com
Web: www.meggittsensingsystems.com

7.2 Technical support

Meggitt Sensing Systems 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 Sensing Systems 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 XP and Windows Server 2003 R2	Windows Vista and Windows Server 2008	Windows 7 and Windows Server 2008 R2	Windows 8 and Windows Server 2012
VibroSight software compatible?	Yes, but not recommended for new installations as Microsoft support for Windows XP SP3 ended on 08 June 2014	Yes, but not recommended. Windows Server 2008 R8 should be used instead of Windows Server 2008	Yes – recommended for new installations	To be announced

Microsoft .NET Framework versions pre-installed on Windows operating systems

	Windows XP and Windows Server 2003 R2	Windows Vista and Windows Server 2008	Windows 7 and Windows Server 2008 R2	Windows 8 and Windows Server 2012
Microsoft .NET Framework pre-installed on Windows operating system	None on XP. .NET Framework 2.0 on Server 2003 R2	.NET Framework 3.0	.NET Framework 3.0 SP1	.NET Framework 4.5

VibroSight software's Microsoft .NET Framework requirements

VibroSight software version	Windows XP and Windows Server 2003 R2	Windows Vista and Windows Server 2008	Windows 7 and Windows Server 2008 R2	Windows 8 and Windows Server 2012
VibroSight 2.9.1 or earlier	.NET Framework 3.5 SP1	.NET Framework 3.5 SP1	.NET Framework 3.5 SP1	.NET Framework 3.5 SP1
VibroSight 2.9.2 and 2.9.3	.NET Framework 4	.NET Framework 4	.NET Framework 4	.NET Framework 4
VibroSight 2.9.4 or later	.NET Framework 4	.NET Framework 4.5	.NET Framework 4.5	.NET Framework 4.5
VibroSight 2.12.0 or later	.NET Framework 4 and .NET Framework 2.0 See note	.NET Framework 4.5 and .NET Framework 2.0 See note	.NET Framework 4.5 and .NET Framework 2.0 See note	.NET Framework 4.5 and .NET Framework 2.0 See note

Note: Since Microsoft .NET Framework 3.5 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).