



VELO 3A

Release Note



VELO 3A

New features and tools common for the entire platform

- **Ability to export several results at once**

Any curve (spectra, transfer function, order) calculated within the software can now be selected along with any other curve. Press the “CTRL” key and click on several curves to select them. Afterwards, by right clicking on any one of the curves you can call a context menu. Any option you choose from this context menu will apply to all selected curves.

- **Keyboard shortcuts known from MS Office applications related to copying, cutting and pasting are now working within the Velo platform.**

If you have multiple plots on one figure, you may now manipulate them using known keyboard shortcuts: “CTRL+C” for copying, “CTRL+V” for pasting, “CTRL+X” for cutting. Thanks to this feature exporting of multiple data sets at once is now possible.

- **Plot colours can be changed by holding down the “ALT” key and selecting a particular plot.**

Another way to change the colour of a particular curve, is to double click on it.



VELO 3A Analyzer

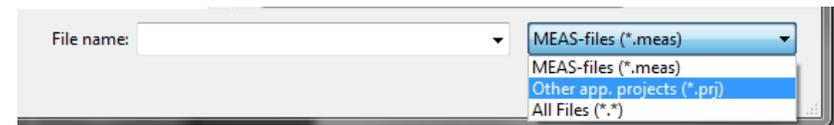
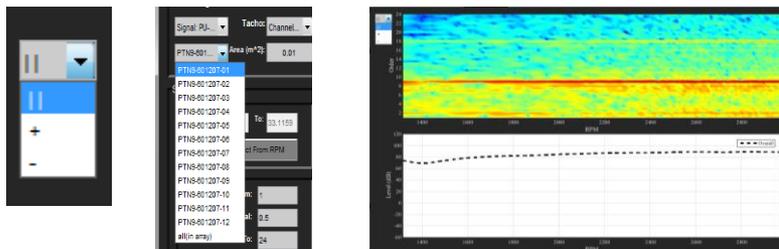
New features and tools implemented in the VELO 3A Analyser package

- Measurements carried out with other Velo applications can now be loaded into the Analyzer

If you carried out a measurement with the Scan & paint system, and you would like to process it using the analyzer, this is now possible. Any data acquired with any of the applications that are part of the Velo platform can be processed with the Analyzer app.

- Order analysis module of the analyser can now calculate and plot the sound power per each order.

Sound Power, in Order analysis module of the analyser, can now be calculated and displayed for any order. The module also provides an option to separate the negative and positive sound power. Absolute sound power can also be chosen.

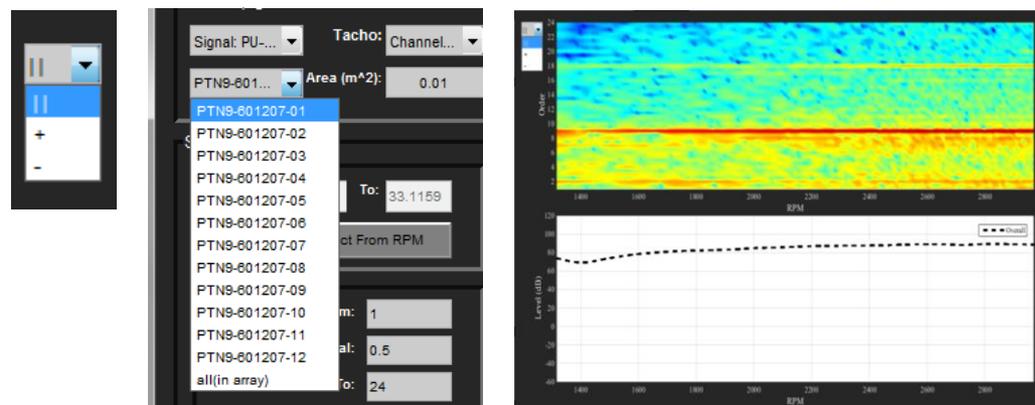


VELO 3A Acoustic Camera

New features and tools implemented in the VELO 3A Acoustic Camera package

- Order analysis module of the Acoustic Camera system can now calculate and plot the sound power per each order.

Sound Power, in Order analysis module of the Acoustic Camera, can now be calculated and displayed for any order. The module also provides an option to separate the negative and positive sound power. Absolute sound power can also be chosen.



VELO 3A Acoustic Camera

The pressure on the hologram plane:

$$p^T(r) = p^T(r_h)C_{pp} = p^T(r_h)(A^H A + \theta^2 I)^{-1} A^H \alpha(r)$$

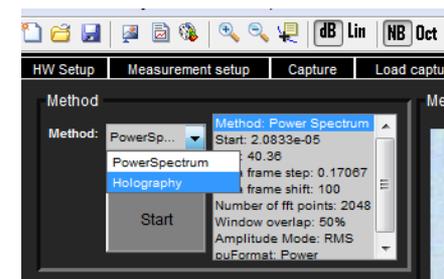
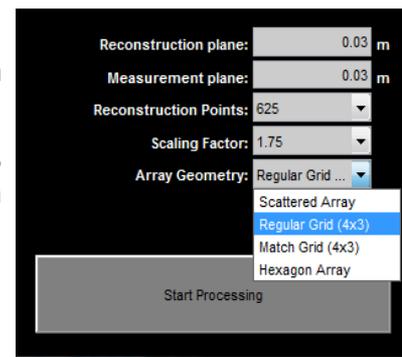
The velocity on the hologram plane:

$$u_z^T(r) = u_z^T(r_h)C_{uu} = u_z^T(r_h)(A^H A + \theta^2 I)^{-1} A^H \alpha(r)$$

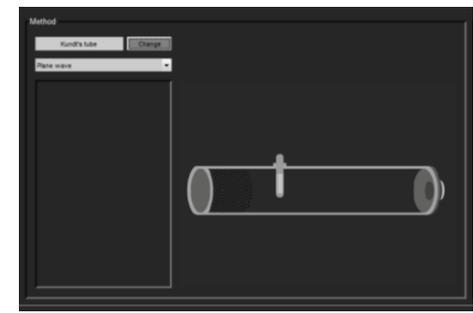
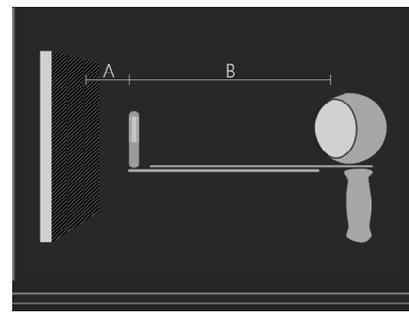
- New processing technique based on the Near field acoustic holography has been implemented in the Acoustic Camera software

The new near field acoustic holography (NAH) processing is implemented next to exiting processing tools. The NAH is sold as a separate processing module. NAH calculation results are presented as a colour coded map which overlays a movie, or a static image. Images created this way can visualise the sound field with respect to sound pressure, particle velocity, sound intensity and sound power. NAH processing will have the following advantages over conventional acoustic camera processing tools:

- Improved spatial resolution
- Extended array coverage area as compared to conventional processing technique (colour map can cover a wider area)
- Noise field can be estimated at a different distance then the position of the sensor array.
- NAH based on particle velocity sensors performs better, in the presence of background noise, than NAH based on a sound pressure microphone array



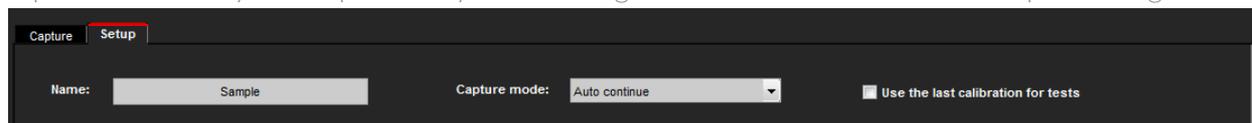
VELO 3A In-Situ Absorption



New features and tools implemented in the VELO 3A In-situ absorption package

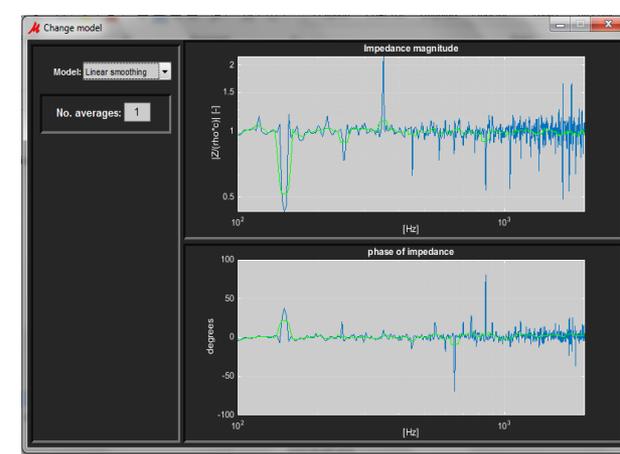
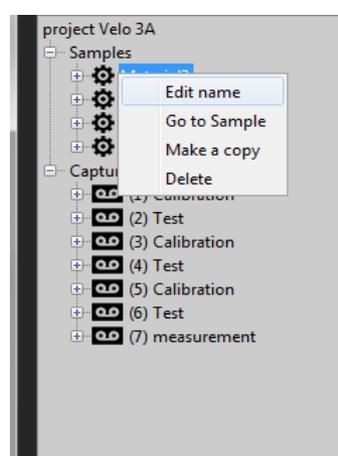
- The entire In-Situ absorption software is now part of the Velo 3A software package
- User interface of the In-situ absorption software had been entirely rebuilt
- New measurement philosophy was introduced.

A test with the in-situ absorption system is still carried out with the same two steps. Calibration test followed by a measurement over the studied sample. However, before you can start your measurements you need set the “Capture mode”. Two settings are provided: “Single test” or “Average test”. In a Single test mode one calibration file and one measurement file are going to be associated with one material sample. In the “Average test” the software assumes you will be measuring the same material several times, or at different measurement points. In the average test mode the software will produce an average measured absorption, or reflection coefficients based on all measurements that were taken. This new philosophy greatly improves the ability to compare many datasets together and decreases the overall processing time.



- Possibility to use the PU probe along with a standing wave tube is now included in the software
Before starting any measurements you have the option to define whether you want to use the In-Situ absorption system for measurements, or if you would like to place the PU probe in a standing wave tube and determine the absorption and reflection coefficients using the principles valid for this setup.

VELO 3A In-Situ Absorption



- Concept of a “Sample” had been introduced

The new software is equipped with a tree structure. In this structure all measurements (both calibration and measurements over the sample) are divided into two groups: Samples and captures. Calibration tests and “over the sample” tests are interchangeable within one or more samples. The capture section simply consist of a list of calibration tests and “over the sample tests” A project can consist of many samples. Curve smoothing operations and data export are now accessible through the “sample” section of the tree structure. Thanks to this change comparing multiple samples is a easy as selecting them from the tree structure. Samples are not interchangeable within projects. If a need exists to compare data from several projects, the “Snapshot” tool along with copy/paste functions can be used. All data gathered within a project can be exported all at once to Excel or “.txt” file. The ability to export data from a single sample within a project is always available.



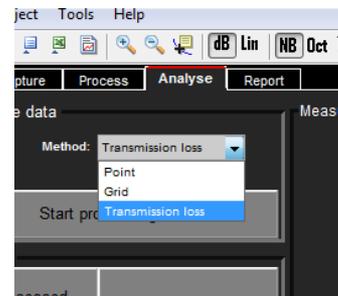
VELO 3A

Scan & Paint – Transmission loss module

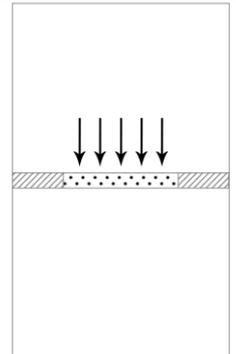
New software module implemented in the VELO 3A Scan & Paint package

- New software module is introduced for the Scan & Paint system. The module allows to calculate the Transmission loss from a set of two scans carried out with the Scan & Paint system

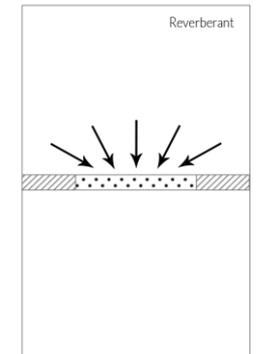
The transmission loss module provides two means by which the transmission loss can be calculated. The first method, is based on the analysis of the squared sound pressure, the second one is based on sound intensity. Both techniques deliver the same results in terms of identification of dominant noise transmission areas. It is up to the user to define which method is more suitable for his needs. The transmission loss module appears as a separate processing technique in the Scan & Paint “Analyse” tab. Two scans need to be carried out. One from the emitter side of the measured surface, and one from the receiver side. Both scans should be loaded into one Scan & Paint project. Results are displayed in a form of color maps showing the dominant noise transmission areas.



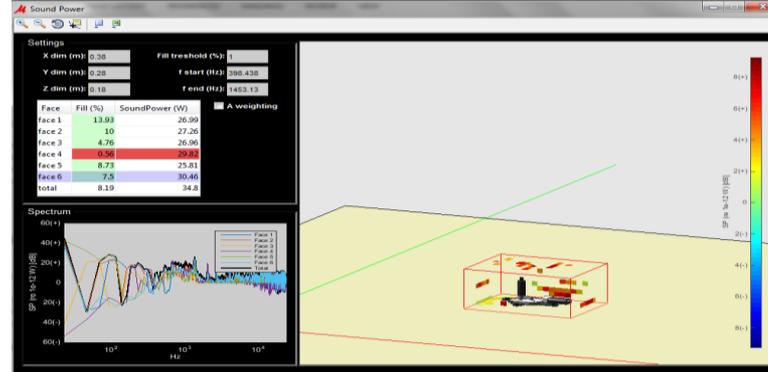
Transmission Loss |I”.



Transmission Loss |P|”.



VELO 3A Scan & Paint 3D



New features and tools implemented in the VELO 3A Scan & Paint 3D package

- **Ability to calculate sound power**

If a full scan (all round the measured device) was completed, you can use the Scan & Paint 3D system to calculate the total sound power. If just part of the measured device was measured, you can still use the software to calculate sound power for only one side of the measured device (or as many sides as were measured).
- **Ability to mask noise sources by removing individual vectors or groups of vectors**

Any vector, or group of vectors can be removed from the visualisation. This feature is particularly useful if a better investigation is necessary for secondary sound sources found on the measured device. It can also be used to remove vectors that were calculated from a data set where an accidental hit occurred.
- **Ability to name, hide and manage 2D slices of the sound field**

Scan & Paint 3D allows to select parts of the measured volume, and average the entire data within the selected volume, to form of a 2D colour map. In Velo 3A tools have been introduced, thanks to which, you will be able to manage the defined sound field slices. A list is now implemented which contains the names of all existing slices. From this list you will be able to name a particular slice, remove it, or simply hide it.
- **Ability to exclude parts of the recorded time data from further processing**

This new function will allow you select a particular vector from the calculated vector field, and preview the time data used to calculate it. The menu, associated with this function, will allow you to preview the waveform recorded by the 3 particle velocity sensors and the sound pressure microphone. The option to playback the recorded signals is also included.

