

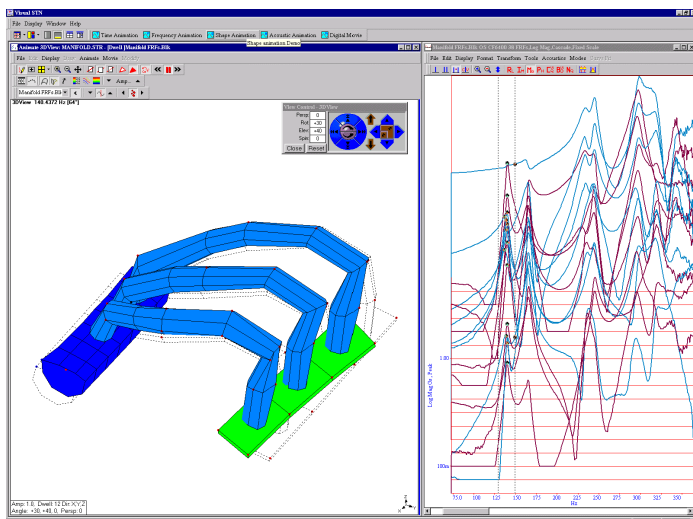
ME'scopeVES™

Visual Engineering Series

VSI Rotate Option

(VT-1200)

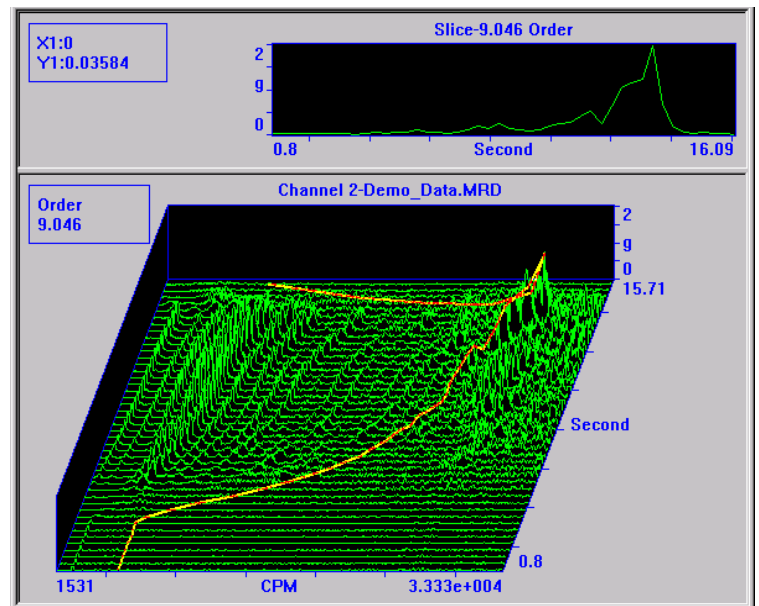
The ME'scopeVES VSI Rotate option combines the strengths of two powerful post-test analysis packages running in the user friendly Windows environment, to provide you with the unique tool for analyzing and visualizing vibration problems in rotating machinery. This option performs order tracking on multi-channel response waveforms, and displays ordered related operating deflection shapes in animation on a 3D model of the machine or structure. This allows you to quickly locate and document excessive vibration levels that are being excited by orders.



ME'scopeVES

ME'scopeVES is new 32-bit Windows post-test analysis tool that displays spatially acquired engineering data on a 3D model of a test structure. With it, you can display scalar data (pressure, temperature), vector data (vibration), or tensor data (stress, strain).

With ME'scopeVES, it's as easy as moving a cursor through your measurements and looking at an animated display of your data on a 3D model, in real time.



VSI Rotate 2

VSI Rotate 2 has unique analysis capabilities that are especially useful for post-processing measurement data taken from rotating machinery. Its capabilities include Tachometer signal Analysis, Waterfall Calculation & Display, and Computed Order Tracking.

Multi-channel order tracked time waveforms are easily exported from VSI Rotate 2 into ME'scope Data Blocks. Any exported Data Block of order-based, spatially acquired time responses can then be conveniently opened and displayed in animation using ME'scopeVES.

This combination of two powerful analysis and display packages provides a very cost effective solution for any product development or machinery maintenance organization. It is particularly useful for **resonance searches, signature analysis, performance analysis, dynamic fatigue, balancing and general troubleshooting.**

VSI Rotate 2 Features

VSI Rotate 2 analysis capabilities include Tachometer Analysis, Waterfall Calculation, and Computed Order Tracking. Graphical capabilities include, 2D plotting with cursoring, 3D Waterfall Plotting with advanced cursoring, Color contour and intensity plotting with advanced cursoring.

Tachometer Analysis

The unique Tachometer Analysis in VSI Rotate 2 computes a smooth estimate of a machine's rotating speed by utilizing sampled data from a pulse type tachometer sensor, (optical tachometer, eddy current displacement probe, etc.) Initial RPM estimates are made by measuring the time between tachometer pulses. Then, a series of cubic splines, which enforce continuity at their boundaries, is curve fit to the data to develop a smooth estimate of the machine's rotating speed as a function of time.

A unique technology can be employed which allows the removal of "outliers" from the initial estimate, and the spline fit can then be re-computed. This technology allows noisy tachometer signals or signals with pulse dropout to still be used.

Waterfall Calculation.

The Waterfall Calculation uses a standard FFT (Fast Fourier Transform) to develop a series of digital frequency spectra from a time varying signal. These spectra can then be displayed as a waterfall and color contour map. The spectrum calculation allows for standard parameters such as Block Size, averaging, windowing, weighting (A, B and C), and frequency domain integration/differentiation. Spectra can be computed as a function of time or RPM.

Computed Order Tracking

Computed Order Tracking is a method of obtaining from response data the **amplitude & phase** of time varying sine waves, which are related to the machine's speed. The order tracked functions obtained are leakage free.

3D Waterfall & Contour Map

VSI Rotate 2's 3D Waterfall and color contour mapping contain a number of convenient features, including dynamic orientation of the waterfall, order cursors that can be displayed with either the time or RPM axis, and cursor cuts displayed in a 2D plot region.

ME'scopeVES Features

ME'scopeVES has been designed to make it easier for you to observe and analyze a variety of vibration, acoustics, and strength of materials problems in machinery and structures. It utilizes multi-channel time or frequency domain experimental data, acquired during the operation of a machine, or the static or dynamic loading of a structure. It displays operating deflection shapes (ODS's), mode shapes, or engineering data shapes (EDS's) at a moment in time or at a specific frequency, directly from the measured data.

By animating the measured responses of a structure in slow motion, you can see what can't be seen any other way; a structure's overall motion, and the motion of one part relative to another. By animating vibro-acoustic data you can observe the relationship between measured acoustic levels and structural vibration. By animating strain gage data, you can observe static or dynamic strain levels on a structural surface.

How Does ME'scopeVES Work?

ME'scopeVES is a unique PC based product that allows you to interactively move a cursor in a set of time or frequency domain measurements, and observe the structure's shapes in animation on a 3D structure model, in real time.

ME'scopeVES can **sweep** through a set of time histories and animate a 3D model of the test structure, allowing you to observe its response; whether it be sinusoidal, random, transient, linear or non-linear, stationary or non-stationary. ME'scope can also **dwell** at a specific time or frequency in a set of measurements, and display those values using sinusoidal animation.



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