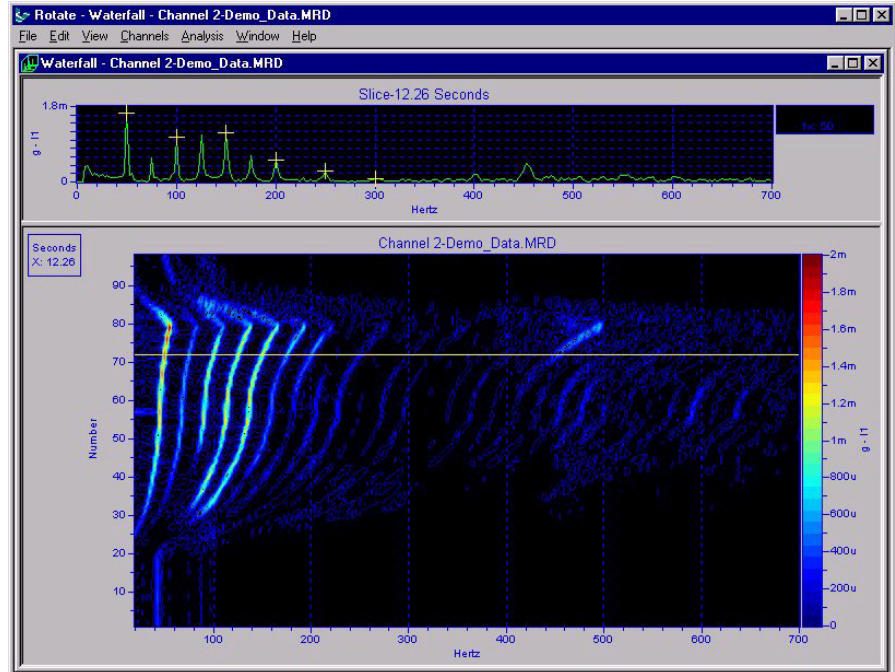
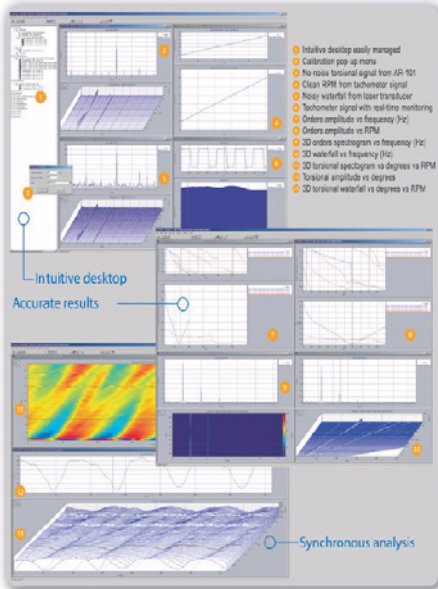




VSA Rotate-Plus™ and Rotate™ v2.61

For Rotating and Reciprocating Machinery
Vold Solutions Automation

▼ ROTATE/ROTATE PLUS offers an intuitive desktop interface for graphical visualization of analyses and clear, accurate results.



What is Rotate-Plus?

Rotate-Plus is a software package for analyzing noise and vibration from time waveform and tachometer (or other machine speed) signals. Rotate-Plus post-processes vibration and other types of data from many different data recorders.

Who can benefit from Rotate-Plus?

Anyone who diagnoses and troubleshoots machinery with rotating or reciprocating parts, or who analyzes acoustic data. This includes engineers, machinery vibration technicians, and consultants engaged in product development, predictive maintenance, and troubleshooting. Some of the industries include automotive, aviation, pulp and paper, rolling mills, power generation, manufacturing and marine.

Companies that already use Rotate include AK Steel, Alcoa, Bosch, Caterpillar, Cummins, Delphi, John Deere, General Motors, Ford Motor, Hyundai, Mercury Marine, Mitsubishi Polyester Films, Visteon and National Renewable Energy Lab.

Which problems need Rotate-Plus?

Rotate-Plus provides high-resolution spectral and order-based analysis of your data that enable you to diagnose the causes of your machinery problems. Rotate-Plus is the tool you need for difficult machinery problems requiring detailed analysis.

Problems that require Rotate-Plus include the following:

- Identifying individual vibration frequencies in Hz, RPM, or Orders.
- Identifying resonances.

- Dynamic fatigue analysis on the sprung side.
- Torsional vibration analysis without the use of slip rings, shaft-mounted transducers, or telemetry.
- Identifying problems in variable-speed machinery, particularly when the speed changes rapidly or over a large range.
- Troubleshooting intermittent problems that may require hours of data recording.
- Identifying early-stage bearing and gearbox defects.
- Creating a machine speed (RPM) history from vibration data alone (without a tachometer signal).
- Separating order-related vibration from non-order related vibration.
- Identifying problems in crowded, noisy signals from gearboxes and transmissions with closely-spaced and crossing orders.
- Diagnosing machinery when there is a noisy tachometer signal, or no tachometer signal at all.
- Performing advanced machinery diagnosis away from the machinery by “slicing and dicing” time waveform data with powerful analysis tools.
- Creating impressive plots and tables of data to use in reports and presentations.

Is Rotate-Plus easy to use?

If you are familiar with other Microsoft Windows® programs, you'll feel right at home in Rotate-Plus. Right-click menus and online help for all commands and dialog boxes simplify use. There is also a User's Guide with a Tutorial.

What are the analysis tools?

Rotate-Plus includes a full suite of analysis and plotting tools. Analysis is fast and efficient.

- **Tachometer processing** creates a smoothed machine speed curve from even noisy tachometer (pulse or DC) or encoder signals.
- **Waterfall analysis** creates a spectral waterfall plot of the data. You can also display the plot in orders of running speed if there is a tachometer signal.
- **RPM from waterfall*** analysis creates a smoothed machine speed curve from the data without a tachometer signal.
- **Order normalization*** cancels the effect of frequency smearing across spectral bins when the shaft speed is changing rapidly (high slew rate) by resampling triggered by tachometer speed. You can “zoom in” on arbitrary order bands with a greatly enhanced resolution.
- **Computed order tracking** creates a Bode plot of the amplitude and phase of the data at each order as a function of time, RPM, and frequency by resampling at a constant shaft angle increment instead of a constant time interval.
- **Torsional analysis** creates a spectral waterfall plot of the torsional vibration from a high-resolution tachometer or encoder signal.
- **Millstrum analysis*** (cepstrum) identifies families of harmonics and sidebands, particularly useful on noisy signals with low-amplitude harmonics or sidebands characteristic of early-stage bearing or gearbox defects.
- **Decimation* and AC Coupling*** to enhance lower frequencies.
- **A, B, and C weighting** for acoustic analysis.
- **Whole Body and Hand Arm weighting** for comfort analysis.
- **Integration and differentiation** display the results in acceleration, velocity, or displacement.
- **Powerful plotting abilities** include time waveform, machine speed curve, waterfall, contour, spectrogram, and Bode plots; overlay machine speed curves for speed profiling along a machine or line; zoom in and autoscale any plot; change the orientation of a waterfall plot.
- **Plot cursors** include single or multiple independent cursors; rolling-element bearing*, harmonic, sideband*, gearbox*, and planetary gearbox* cursors; X or Z axis tracking; time, spectrum number, RPM, or order tracking.
- **Copy plots and data** from Rotate-Plus into other Microsoft® program (such as Word, Excel, and PowerPoint®).
- **Export data** to Matlab and Universal File Format files. You can export the entire channel of data, or extract a section of the data to speed analysis on just the part of interest.

- **Operating deflection shape** analysis is available by exporting order-based data from Rotate-Plus to ME’scope™ from Vibrant Technologies.

Do I need new acquisition hardware?

Rotate-Plus works with data from most time history capture hardware, and reads the following formats: ASCII, B+S MULTIDATA, Teac, Sony, HP-SDF, Zonic Medallion, WAV(Oros and B&K), MATLAB, Dactron, SDRG-UFF, MEGADAC, Nicolet Prism, Nicolet NRF, STAC Rex, SoMat Ease and ME’scopeVES.

If you do not have any hardware for data recording, Vold Solutions Automation (VSA) offers systems featuring our **QuartzACQ™** software, specifically designed to acquire data for use in Rotate-Plus and other analysis products.

How powerful a computer is required?

Rotate-Plus uses powerful mathematical calculations and graphical displays. For that reason, the following are the minimum computer specifications.

- Pentium 200 MHz processor
- 256 Megabytes of RAM (512 or more recommended)
- 10 Megabytes of hard disk space for program files (100 Megabytes or more for data files recommended)
- Super VGA monitor (17-inch monitor recommended)
- Keyboard / Mouse
- Microsoft Windows NT / 2000 / XP / Vista

Performance increases significantly with additional RAM.

How do I get an evaluation copy?

You can get a demonstration copy of Rotate-Plus from Vold Solutions, Inc. in any of these ways:

- Download a copy from the website at www.vold.com.
- Request a copy by email to info@voldautomation.com.
 - Contact Vold Solutions by phone or by writing to
Vold Solutions Automation
4544 St Rt 132
Batavia, OH 45103
513-735-9732

How do I purchase Rotate-Plus?

Contact Vold Solutions Automation for pricing and ordering information. Rotate-Plus does more and costs much less than other high-end analysis packages with similar analysis features. There is also a lower-priced version (Standard Rotate) with a reduced set of analysis tools. The lower-priced version does not include RPM from waterfall analysis, order normalization, Millstrum analysis, and the following plot cursors: rolling-element bearing, sideband, gearbox, and planetary gearbox.

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* Feature available only in Rotate-Plus