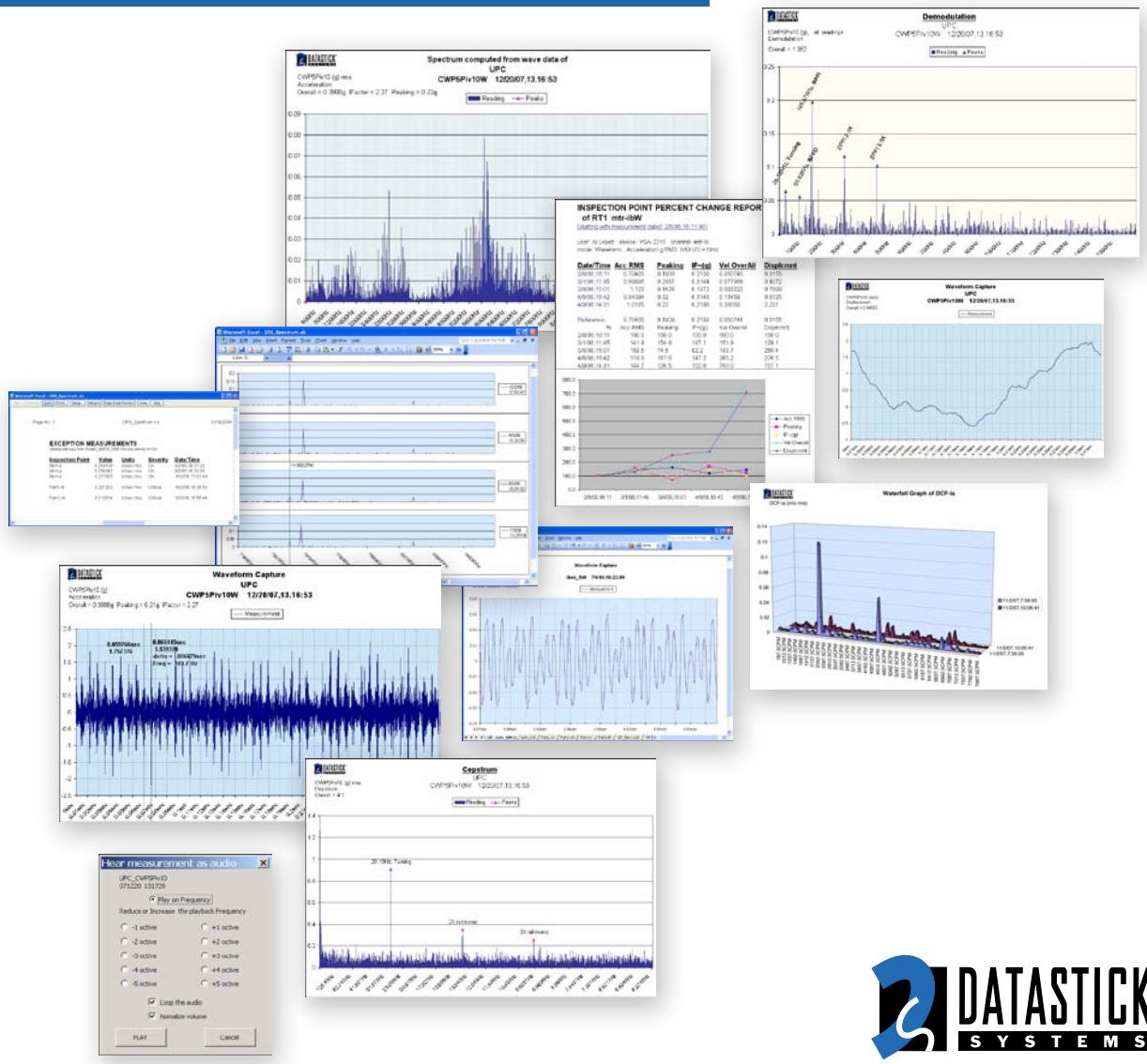
Advanced analytical and reporting tools

for vibration analysts

DAART™ Datastick

Advanced Analysis and Reporting Toolkit



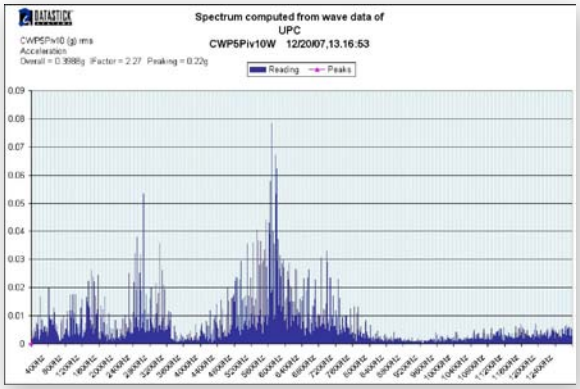
DATASTICK® SYSTEMS

www.datastick.com

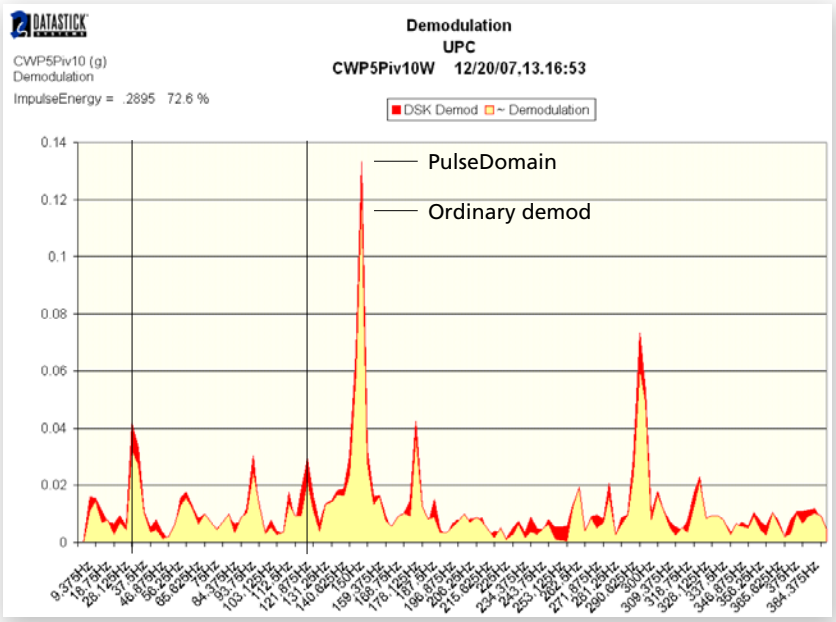
See what's inside

DAART is the next-best thing to taking a machine apart and looking inside. It lets you take vibration apart and see it more clearly than ever before.

PulseDomain™ Demodulation

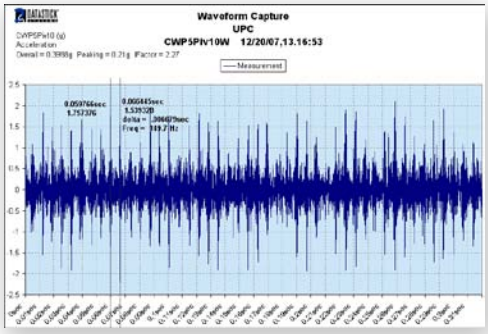


The haystack in this acceleration FFT shows you that *something* is going on with the bearing, but it doesn't tell you *what* is going on. You need demodulation to pull impact pulses out of the random noise so you can spot bearing faults early.

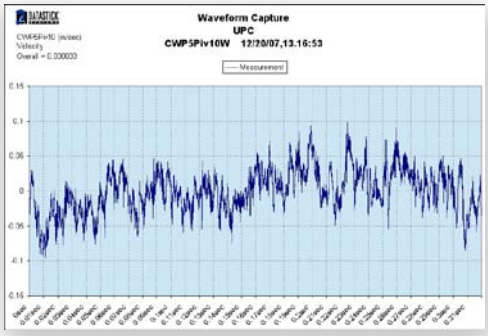


Datastick's exclusive PulseDomain demodulation's optimized signal to noise ratio can make the difference between seeing impact-pulse peaks easily and missing them. Using the same data as shown at left, here's the difference between ordinary demodulation (yellow) and PulseDomain demodulation (red). You might miss the importance of the peaks at 37.5 Hz and 118 Hz without PulseDomain.

Time-Domain Transforms In Any Direction



Here's the same bearing as above shown as an acceleration waveform. DAART lets you transform it into a velocity waveform, or a displacement waveform.

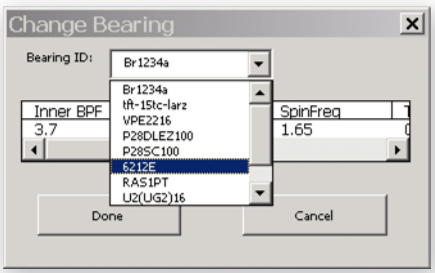


Velocity waveforms can transform either way: to acceleration or displacement waveforms.

Suppose all you have is displacement data. You can create accurate velocity or acceleration waves with a single click.

Use any bearing database

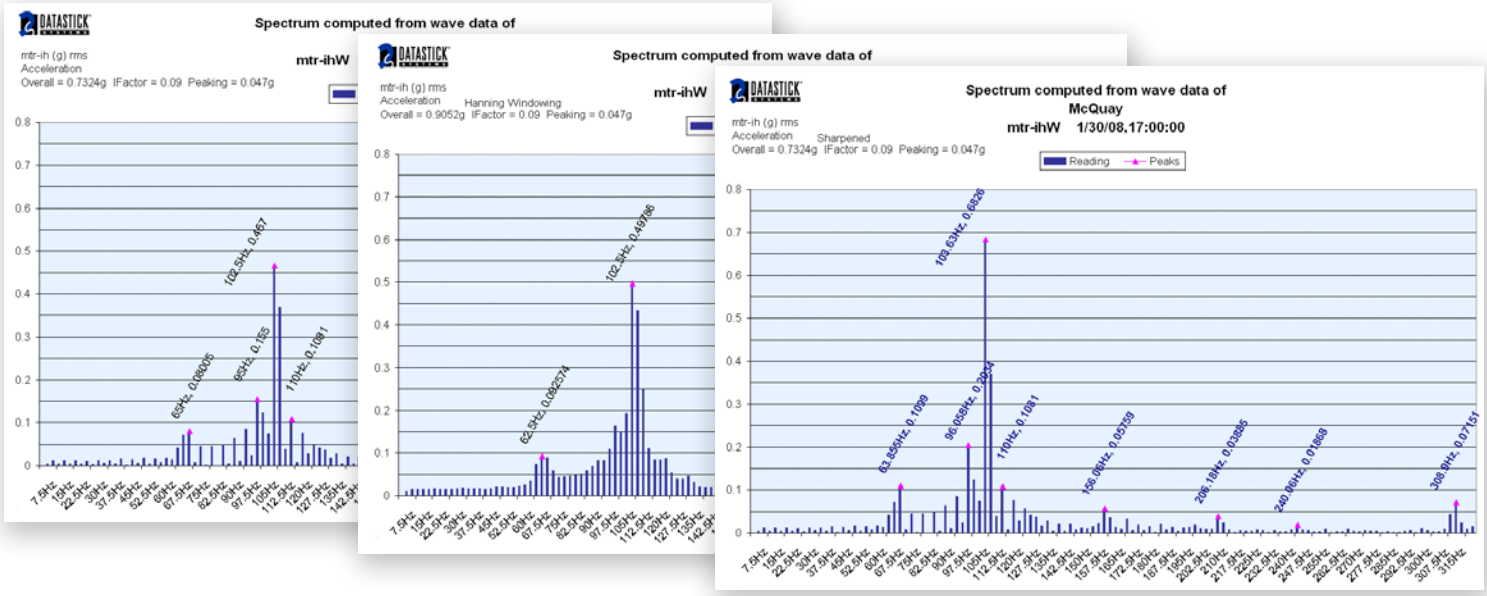
DAART allows you to interface with any bearing database that can be converted to a comma- or tab-delimited text file or that comes as an Excel file. This means you can use your own bearing database or Datastick can



supply you with one. In DAART, you make a short list of the bearings you need by simply importing them from your database. To analyze, select your bearing from the list and DAART can label the frequencies on your data tables and graphs

Datastick Sharpener™ peak clarification

DAART's exclusive Sharpener peak-clarification technology shows accurate frequency-domain information in any FFT or PulseDomain demodulation graph. Conventional FFT windowing, such as Hanning, Rectangular, or Flattop, make compromises in frequency or amplitude or both as part of their action. Sharpening is not the same as windowing. It is a completely new way of showing any frequency-domain or demodulation information with far less compromise of frequency or amplitude accuracy than any other method.



The FFT at left uses Rectangular windowing and shows several sidebands around an apparent 0.467 g peak at 102.5 Hz. The frequency display is limited by the 2.5 Hz FFT resolution chosen when the data was originally taken.

The center FFT uses a Hanning window on the same data. It smears the sidebands and makes them completely invisible. If you were looking for sidebands, you would miss them. The peak now appears to be 102.5 Hz, at 0.497 g.

DAART's exclusive Sharpener, at right, shows the sidebands faithfully, while revealing the peak to be 0.6826 g at exactly 103.63 Hz. If accurate harmonic measurement is important to you, you need Datastick's Sharpener.

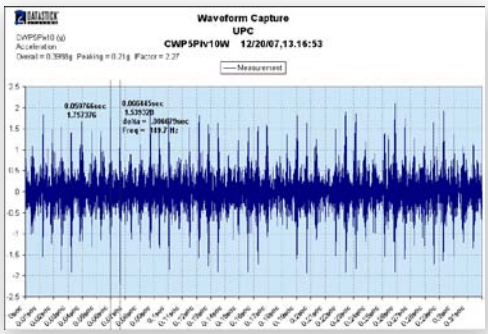
Spot trouble faster

There are two parts of any analysis job:

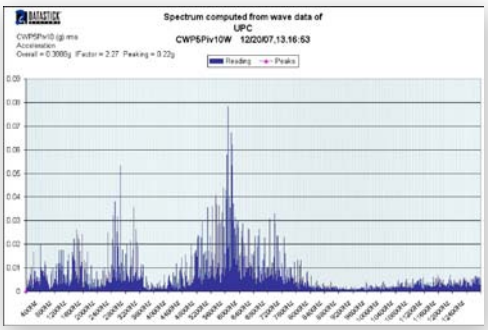
- Finding the trouble areas
- Analyzing them

For years, analysts have used Crest Factor—peak amplitude of a waveform divided by the RMS value—to get a rough idea of how much impacting is occurring in a waveform. However, Crest Factor is often unreliable because it can be significantly swayed by the other factors such as overall dynamic vibration level, so it does not optimally reflect the total amount of damaging peak impact energy. Datastick's DAART gives you two new metrics that provide a more reliable way of finding trouble areas quickly, easily, and reliably.

Two NEW metrics: *Peaking*™ and *Impact Factor*™



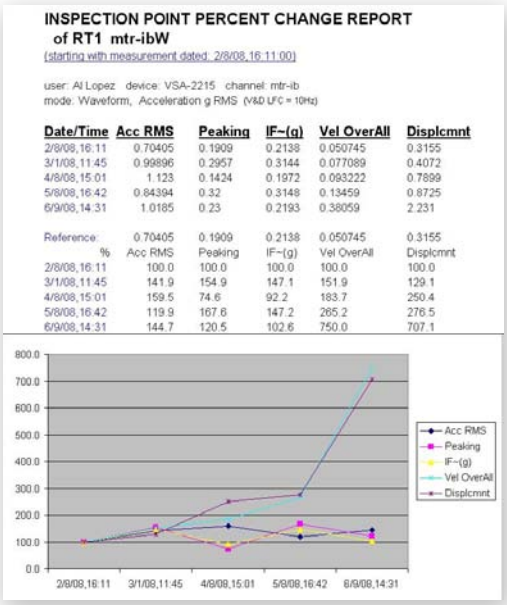
Both new metrics focus on the high-frequency energy where damaging impact forces occur. **Peaking** shows the energy contained in high-frequency peaks. **Impact Factor** concentrates on periodic bursts of energy. Both of these graphs are from the same test data. Overall vibration is 0.39 g. Peaking is 0.21 g (more than 53% of the total energy). Impact Factor is 2.27 on a scale of 4. For more technical information, see www.datastick.com/support.



Trending, reports, and sound: Look, show, and hear

DAART's trending and reporting features make it easy to see the long-term health of your assets. Just as importantly, it's easy to communicate the health of your assets to others. Besides the powerful reporting tools shown below, there is one more key ingredient: DAART is built on Microsoft Excel, so you have immediate use of Excel's own powerful reporting tools: You can easily export reports to Microsoft Word or PowerPoint, save reports as PDF files—and you can save reports as HTML files for publication on your company intranet or on the Web. You can even output individual tests as standard .WAV sound files so you can listen to the vibrations and send them to others by attaching them to email. With DAART, it's as easy to communicate information as it is to analyze your data in the first place.

Click and report. It starts with a click, and from there you can customize reports any way you choose. The sample report at right shows one test point over five months. In this case, the graph shows Acceleration, Velocity, Displacement, Peaking, and Impact Factor all expressed in terms of percent change relative to the first test for instant visual comparison.



You can convert any vibration waveform to a .WAV sound file and listen to it on your computer or music player. You can email it or post it on a website too. And if all you have is a sound recording of a machine, it might save the day, because you can import it and use it to create a waveform and FFT.

DAART features

- Import data from any Datastick VSA-Series vibration spectrum analyzer. (Contact Datastick for assistance with importing data from other analyzers and data collectors.)
- Import data from any bearing database that can be expressed as a tab- or comma-delimited file, plain text, or as an Excel file
- Waveform graphs
- Acceleration, Velocity, and Displacement FFTs
- Post-process FFT spectra from waveforms using Rectangular (Uniform), Hanning, Hamming, or Flattop windowing
- FFT and demodulation waterfalls
- Stacked FFTs, demodulations, and waveforms for fast visual comparison
- Exclusive PulseDomain demodulation
- Cepstrum view for geartrain analysis
- Power Spectral Density (PSD) and/or Power (PWR) dynamically calculated and displayed in selectable frequency spans
- Exclusive Sharpening feature for maximum accuracy of frequency and amplitude in FFT and demodulation graphs
- Cursor tools for instant frequency and amplitude readouts of any data point, delta between points, and harmonic orders
- Bearing-frequency labeling for analysis
- Exclusive Peaking metric makes it easy to spot and trend peak energy levels
- Exclusive Impact Factor provides a reliable numerical value for the degree of impact energy hidden in vibration data
- Waveform integration and de-integration converts any acceleration, velocity, or displacement waveform to or from any other of the above forms—acceleration can be converted to displacement and displacement can be converted to acceleration, for example
- Import standard .WAV sound files and convert to waveform and FFT for analysis
- Export waveforms to .WAV sound files
- Raise or lower the pitch of sound files by up to five octaves to make them audible
- Daily summary reports
- Customizable trend reports for individual inspection points
- Exception reports
- Export to Microsoft Word or PowerPoint
- Export to PDF
- Export to HTML for posting on your intranet or web site
- PC System Requirements: PC running Windows XP or Windows 7, plus Microsoft Office 2003, 2007, or 2010, or standalone Microsoft Excel 2003, 2007, or 2010

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