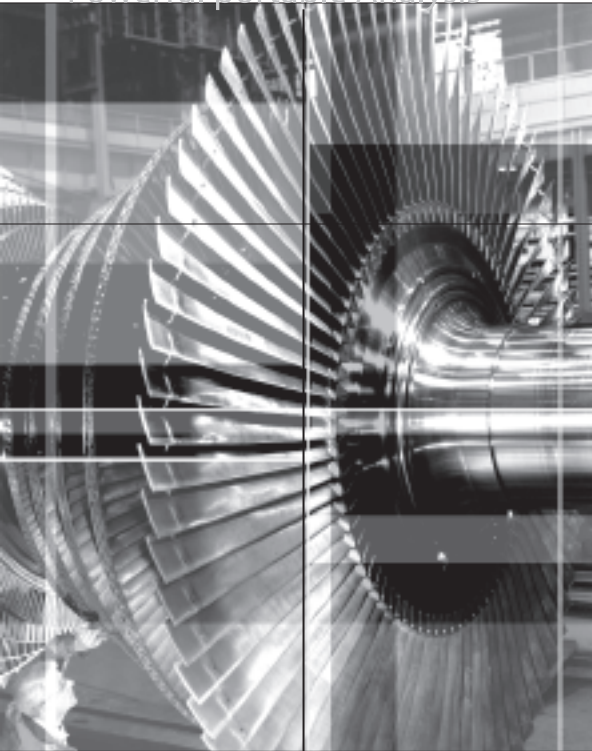Powerful portable Analysis

SignalCalc ® **Turbo**

Based on Quattro:
2 – 4 measurement channels
1 tachometer input
Ultra portable

Based on Abacus:
4 – 32 measurement channels per chassis
2 – 8 tachometer channels per chassis
Unlimited expandability

SignalCalc
Dynamic
Signal
Analyzers

Turbomachinery Vibration Analyzer

powered by
ABACUS

dp Data Physics
Corporation

SignalCalc®
Dynamic Signal Analyzers

Turbo

SignalCalc Turbo brings you a wealth of features that meet the most demanding requirements for turbomachinery testing.

Standard Features

- Convenient Setup of Project, Hardware, Measurement, Acquisition and Default Annotation
- Built in database for Channel Names, Machine Names, Phase Trigger Name and Transducers
- Reference information
  - Slow Roll Vector Reference
  - Waveform Reference
  - Gap Voltage Reference
- Auto Tach Triggering
- Shaft Absolute Vibration
- Plot Types
  - Orbit
  - Orbit + Timebase
  - DC Orbits
  - Time Trend
  - X-Y
  - Polar
  - Bode
  - Shaft Centerline
  - Cascade
  - Waterfall
  - Spectrum
  - Full Spectrum
  - Tables
- Default and Custom Layouts

Optional Features

- Disk recording and playback analysis
- Signal alarms with external relay output interface
- Live data export
- Self-calibration software

SignalCalc Turbo is a portable vibration measurement and analysis system for rotating machinery, with special consideration for fluid film bearing machines. Armed with the powerful measurement and analysis functions available with SignalCalc Turbo, the diagnostics engineer is ready to tackle the most difficult measurement and diagnostic challenges encountered in situ on the machine deck. Unlimited expandability and ease of configuration also make SignalCalc Turbo well suited for the most demanding factory acceptance test environment.

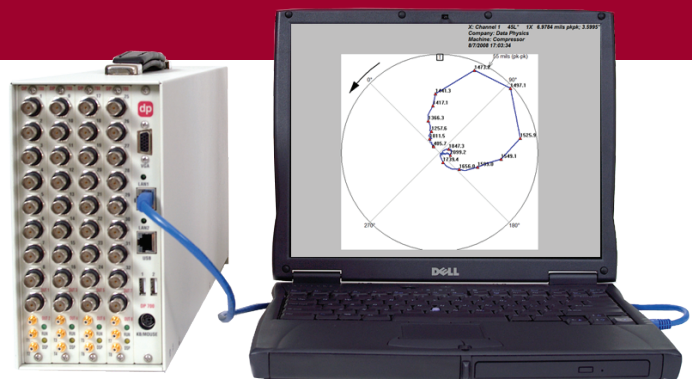## The new standard for portable turbomachinery vibration analysis

Designed with critical input from highly experienced turbomachinery analysis professionals, the graphical user interface is straighforward and efficient. Intuitive organization of project definition, sampling parameter selection, and data plotting enable the user to begin capturing data and displaying results within minutes.

Flexible data management utilities allow users to choose how measurements are captured and stored. Data from virtually any type of transducer combined with multiple phase triggers (tachometers) may be simultaneously acquired and processed. Acquisition can be paced by time interval, speed changes, or both, to accurately characterize machine vibration under any operating condition. Users may choose from a variety of options to initiate data sampling and may freely define how often waveform and vector sampled data are acquired. For extended duration tests, multiple "runs" can be automatically captured and stored where they are available for comprehensive analysis. With the optional throughput recording to disk, the user can also record and "playback" continuously streamed raw data when needed to fine-tune sampling and display parameters for optimum results.

A project browser enables comparative display of data from multiple runs and saves in any project in the database. Measurements can also be automatically exported to online modal analysis or animation programs in their native data formats.

Effective Display and Analysis Tools

Viewable live during acquisition and post-test, data from the active project may be displayed with a comprehensive suite of standard and custom layouts. The most common graph types are easily accessed via a convenient layout selector. Each layout may have its own unique setup of number of graphs, format and scaling with custom graph templates. A best-in-class 3D display library offers multiple graphing options including color spectrograms and Campbell diagrams.
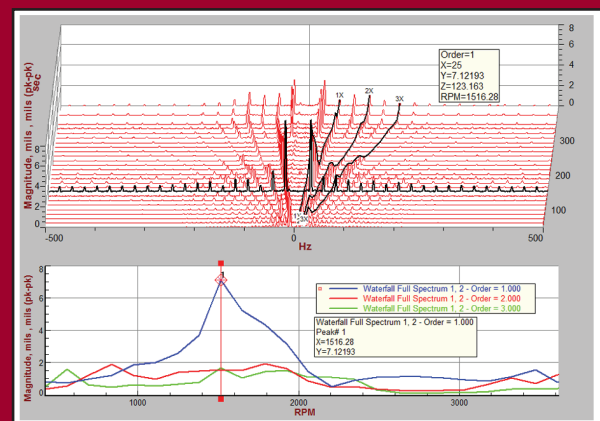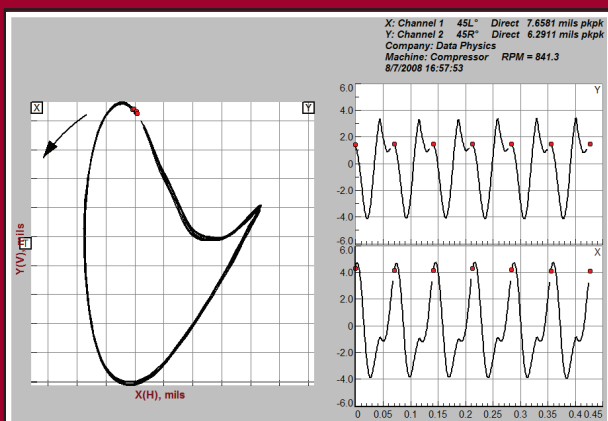
SignalCalc Turbo

Advanced solution for analyzing turbomachinery behavior

Diagnostics of shaft systems supported by fluid film bearings require specialized measurement and analysis techniques. The most fundamental measurements defining shaft relative motion and radial position are derived from pairs of proximity probe displacement transducers placed orthogonally at each bearing location. For fast and effective diagnostics of misalignment and other machinery malfunctions, SignaCalc Turbo provides the necessary measurement and graphical tools to display both shaft orbital motion and position data from each proximity probe pair.

Comprehensive Measurements

Vibration analysis of turbomachinery requires sophisticated measurement hardware and advanced measurement and analysis software functions, rotational phase reference, tachometer measurements, tracking filters and a wide array of time and frequency domain graphical presentations. Designed with the needs of the most discerning analysts in the industry in mind, SignalCalc Turbo handles simultaneous asynchronous and synchronous sampling and provides both vector

and waveform samples, while also recording raw data to disk for optional post processing. Order detection is based on user selectable tracking filters which may be set up as fixed or proportional bandwidth permitting users to optimize accuracy for varying slew rates. In addition to 1x and 2x, up to 6 other tracked orders are available per measurement channel.

Powerful Portable Analysis

Modern Architecture

With two hardware platforms available, SignalCalc Turbo provides the user with a choice of analyzer hardware to suit the test situation.

Ultra Portable Leverage the full power of SignalCalc Turbo in a smaller entry level package with the Quattro hardware platform. Quattro offers up to 4 measurement channels and one tachometer channel in a chassis that weighs less than a pound and is powered by USB connection to a host computer.

Modular and Expandable SignalCalc Turbo on Abacus can be configured with a single module of up to 8 measurement channels and 2 tachometer channels. Each 8 channel module is powered by a 1 GFLOP DSP for high realtime performance. The use of 4 modules provides 32 input channels and 8 tachometers for measuring 8 different shaft speeds in one Abacus chassis. When more than 32 channels are needed, multiple Abacus chassis are easily networked together to deliver an unlimited number of input channels. Special clock synchronization circuitry in the Abacus platform ensures perfect phase match regardless of the number of input channels or chassis.

Integrated Recording & Playback Analysis Vibration testing on turbomachinery is often conducted under severe time constraints and unpredictable operating conditions, making the selection of appropriate sampling parameters a challenge. Additionally, many test situations offer only one chance to capture the data. To ensure that critical measurements taken in these situations are made with optimal setup parameters, the throughput to disk option enables users to record raw data from all measurement channels, along with tachometers, to disk simultaneously while observing the realtime analysis. This high-speed, high-capacity recording option guarantees continuous, gap free recording of all input channels at maximum sampling rate, regardless of the number of channels.

The recorded data presents unlimited possibility for re-analysis. The data may be post processed using different parameters in SignalCalc Turbo or by any measurement suite in the more general purpose SignalCalc dynamic signal analyzers. In addition, playback analysis can be referenced to any of the recorded tachometer channels, giving the user the ability to analyze measurements with respect to multiple shaft speeds with their respective phase triggers.

Simplified Calibration With the optional calibration software and a traceable DVM, hardware can be calibrated by the user to generate calibration certificates as needed to satisfy test requirements. In-house calibration provides more control over the calibration process, removes the hassle of shipping and saves time out of service. Hardware can also be returned to the factory for periodic maintenance and calibration service.

Discover more at www.dataphysics.com

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ISO **9001:2008** certified

Data Physics has been supplying high performance test and measurement solutions for over 25 years. With the addition of a full line of electrodynamic shakers to complement its vibration controllers and dynamic signal analyzers, Data Physics is a total solution supplier for noise and vibration applications.

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