

# MACHINE DIAGNOSTICS

Due to production and assembling tolerances, wear and load variation, the moving parts in any rotating machine will sooner or later cause annoying vibrations that eventually lead to breakdowns.

Machine Diagnostics is the PULSE configuration containing the basic tools addressing vibration problems in rotating machines:

- Tachometer
- FFT Analysis
- FFT Order Analysis
- Order Tracking Analysis
- Signal Enhancement
- Envelope Analysis
- Cepstrum Analysis

The tools can be used in run-up/down sessions and some of the tools can be combined, e.g.,

Cepstrum analysis of order spectra or envelope spectra for diagnostics of multiple faults.

Extended with PULSE Auxiliary Parameter Logging, all data can be tagged with, e.g., temperature, oil pressure, position, wind speed, etc., and all results can be shown versus auxiliary parameters.

All analyses can be performed simultaneously and extended with Data Recorder and PULSE Time File Management. The raw signals can be recorded for subsequent analyses.

Time Capture, comprising Short Time Fourier Transform, is the right extension for diagnostics of transient phenomena.



Picture Courtesy of Rolls-Royce Plc.

TYPE 3560 C-S38

## Machine Diagnostics (2 In)

3560 C  
7533  
3032-A  
7770-N2  
7773

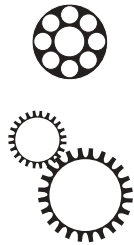
### Basic Machine Diagnostics:

- Multi-tachometer
- FFT Analysis
- Order Tracking
- Signal Enhancement
- Envelope Analysis
- Cepstrum Analysis

### Displays:

- Waterfall
- Colour contour
- Order and frequency slices
- RPM Profiles

\* One year SW maintenance

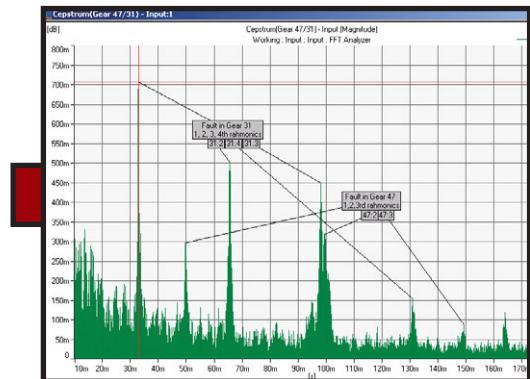
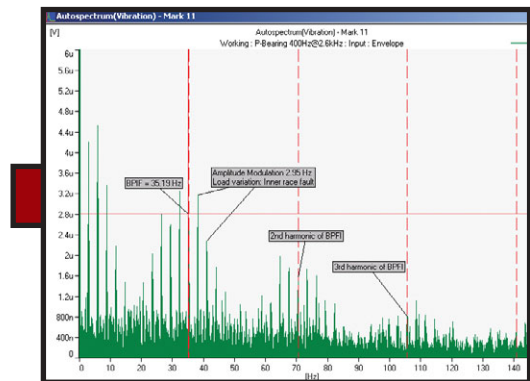


The configuration comprises a two-channel Order Analysis License Type 7702-N2. See Order Analysis on page 46 for properties and capabilities.

As Machine Diagnostics and Order Analysis address the same kind of machinery, the hardware accessories for the two configurations are also the same. See Order Analysis on page 46.

*Envelope analysis for amplitude demodulation and detection of local faults in rolling element bearings and gearboxes*

*Cepstrum analysis to differentiate multiple faults that are difficult or impossible to see in the different primary spectra, i.e., FFT, Order, Envelope and Enhanced spectra. Well-matched tool for gearbox analyses*



### SW ACCESSORIES

- 7701 Data Recorder
- 7705 Time Capture
- 7767 PULSE Data Manager
- 7769 PULSE Auxiliary Parameter Logging
- 7789 PULSE Time File Management
- 7755 B Bridge to MATLAB®

### SW UPGRADING ACCESSORIES

- 7707 Unlimited Analysis Engine
- 7700-Nnn Noise and Vibration Channel Licenses
- 7770-Nnn FFT Analysis Channel Licenses
- 7771-Nnn Order Analysis Channel Licenses