

ArtemiS SUITE
Signal Processing

Code 51004

ASP 004

Advanced Analysis vs. Control Channel

Advanced Analysis vs. Control Channel of ArtemiS SUITE provides sophisticated analyses which can be calculated depending on different control channels (RPM, force, ...).

OVERVIEW

ASP 004 Advanced Analysis vs. Control Channel

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Advanced Analysis vs. Control Channel enables the use of advanced, highly sophisticated examination analysis methods versus a number of different control channels that go beyond the normal analysis such as the FFT vs. RPM analysis, for example.

The High-Resolution Spectral Analysis (HSA) is better suited than the FFT for an analysis of tonal components in nonstationary signals. The HSA offers a high time and frequency resolution at the same time by the reduce of the influence of the window spectrum on the analysis result. The VFR can be used as ear-related analysis and it is similar to human hearing optimized for the analysis of the low-frequency spectral components of an audio signal.

In addition, other analyses for special applications are available.

KEY FEATURES

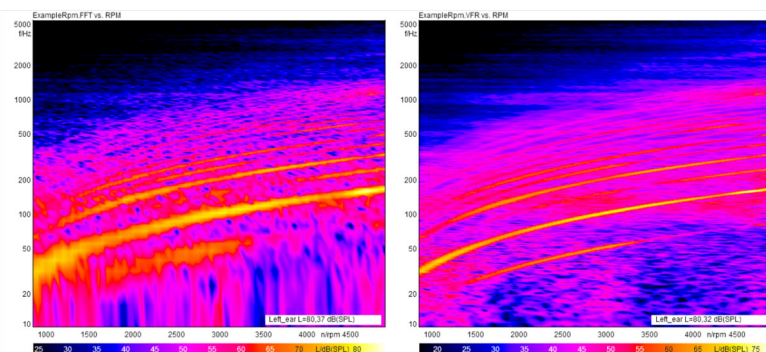
Advanced Analysis vs. Control Channel includes several advanced analyses, which can be calculated versus RPM, force, temperature, or other control channels

- › Spectral analyses
 - › HSA vs. RPM
 - › VFR vs. RPM
- › Other analyses
 - › Cepstrum vs. RPM
 - › Kurtosis vs. RPM
- › Usage
 - › The VFR vs. RPM analysis can be used especially when a spectrum includes short, transient or tonal sound components
 - › The HSA vs. RPM analysis can be used especially to examine low-frequency tonal sound components

The analyses can be used in Pool Projects (require APR 010), Automation Projects (require APR 050), Standardized Test Projects (require APR 220), and Metric Projects (require APR 570)

APPLICATIONS

- › Troubleshooting
- › Sound-Engineering



DETAILS

The provided advanced analyzes facilitate the sophisticated examination of input signals.

HSA vs. RPM

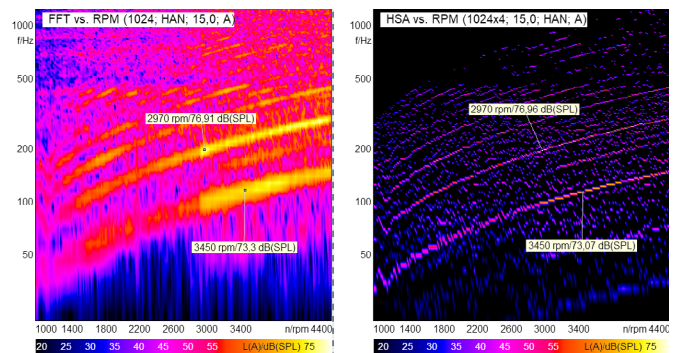
The HSA (High-resolution Spectral Analysis) method is a special signal estimation algorithm, which improves the analysis of tonal components in a signal versus a control channel. This applies especially to short signal sections, where HSA has great advantages compared to the conventional FFT analysis. Frequency and level can be seen more accurately and the „smearing“ due to windowing is removed.

VFR vs. RPM

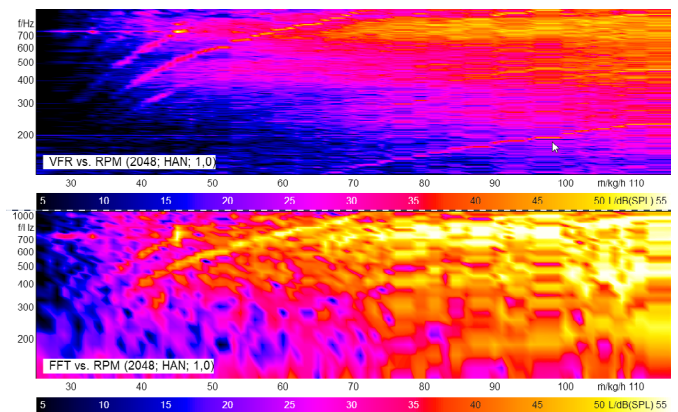
The VFR (Variable Frequency Resolution) vs. RPM analysis is based on the FFT analysis, but features a variable frequency resolution, which is better suited for analyzing low-frequency spectral components of a time-domain signal than the FFT vs. RPM. While the FFT delivers a spectral representation with a constant frequency resolution across the entire frequency range covered, the VFR is more similar to human hearing in that it has a higher frequency resolution at low frequencies than at higher ones.

Cepstrum vs. RPM

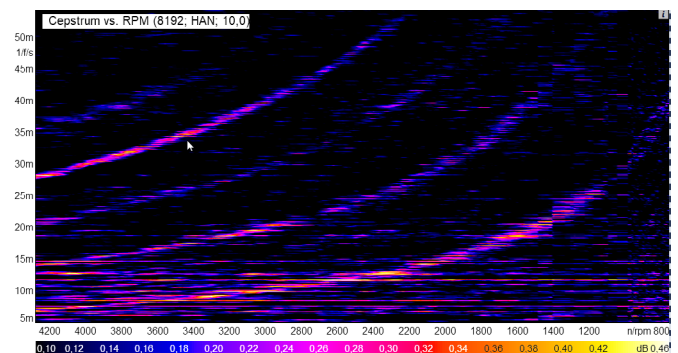
The Cepstrum vs. RPM analysis calculates the “real cepstrum” of an input signal versus a control channel. Therefore, the absolute value of the logarithm of the spectrum is transformed resulting in a symmetric real signal vs. a control channel. Of that signal the positive half is displayed. For example, echoes and other periodicities can be identified in the signal this way.



Comparison: HSA vs. RPM, FFT vs. RPM



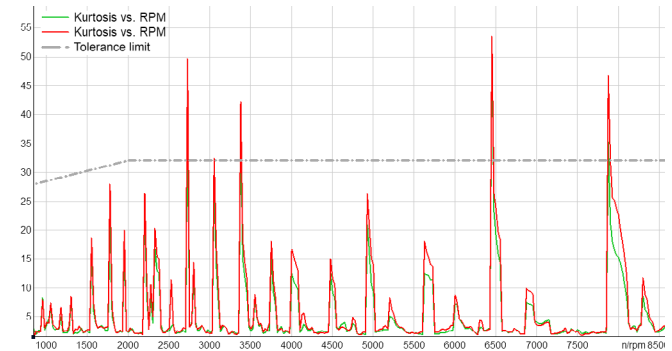
Comparison: VFR vs. RPM, FFT vs. RPM



Cepstrum vs. RPM

Kurtosis vs. RPM

The Kurtosis vs. RPM analysis can be used as a measure for the impulsiveness of a signal. If a sufficiently large set of reference signals has shown a corresponding correlation, Kurtosis vs. RPM can be used very well as quick determination criterion of the form "good"/"bad" or "OK"/"not OK".



Kurtosis vs. RPM

Required: APR Framework (Code 50000)

and/or: HEAD System Integration and Extension (ASX) programming interfaces



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