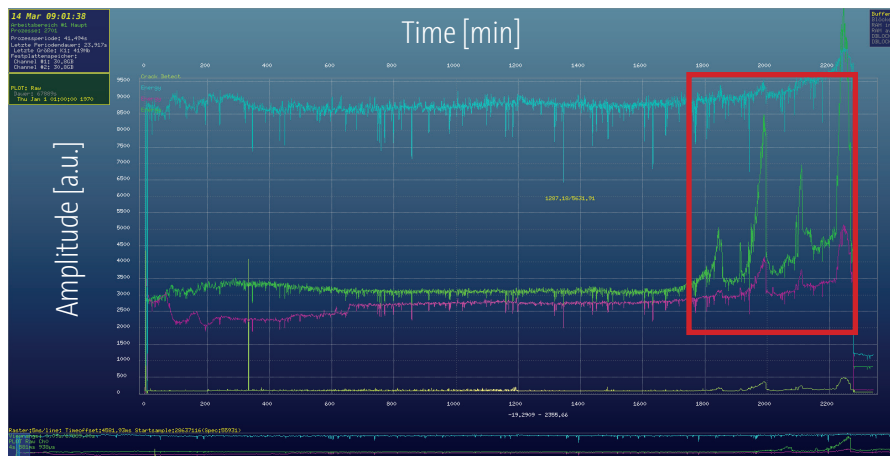
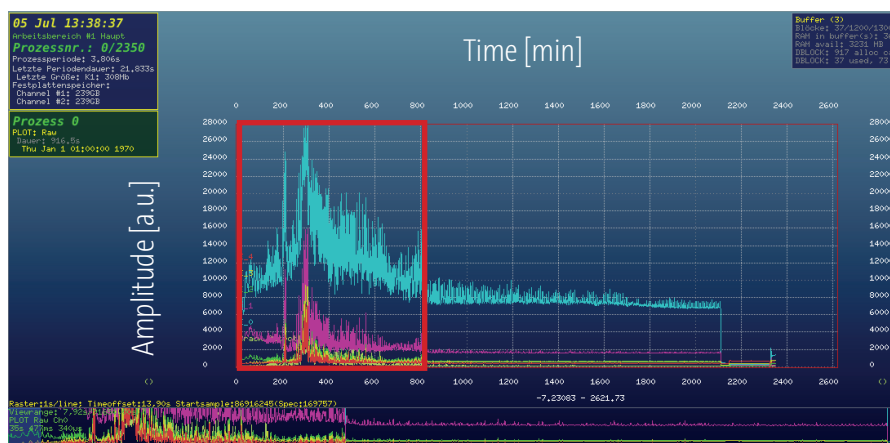


Evaluation Of Bearings & Lubricants



HFIM-signals of the **normal lubricant** with corrosion and abrasion protection additives. After about 1800 minutes strong structure-borne sound emissions can be detected, which are caused by **pitting** in the bearing.



HFIM-signals of the **high-end lubricant** with corrosion protection additives. Initially strong HFIM-signals are detected, during which the high-end lubricant shows noticeable HFIM-signals and thus a strong strain on the bearing. This turbulent beginning phase can be minimized with help of the machine's controls. The long-term strain is crucial here, which speaks for the high-end lubricant in comparison with the normal version. It shows **no damages** to the bearing.

HFIM analyzes the quality of lubricants

Optimizer4D can automatically classify lubricants in terms of their mechanical and dynamic properties. The charts show the difference in structure-borne sound emissions between two different lubricants during a **wear test**, according to DIN51819, of axial cylinder roller bearings.

During the testing at a FE-8 test bench, an axial load has been raised upon a laminated disc spring.

Composition of the **high-end lubricants**: Petroleum SAE 75 W 80, overbased calcium sulfonate, overbased magnesium sulfonate, sodium sulfonate, antioxidants, VI-improver.

Composition of the **normal lubricants**: all components of the high-end lubricant plus zinc dithiophosphate, boracic acid-alkyl esters and triphenyl phosphatonat.

Starting point for this testing in cooperation with Schaeffler was the search for the cause of sudden machine failures without warning (machine failure with consequential loss). Among the results of the testing in May 2014 is the insight, that the Optimizer4D can recognize the impact of different lubricants on the bearing, as the high-frequency-impulse-measuring graphs show.



Process Optimization
Optimizer4D

Cognitive Signal Analysis
100% In-Process

Detection of tool wear
Quality Assurance
High Frequency Impulse Measurement

Tool Monitoring

Documenting Process Quality
Real-Time

Technology Leap

Reduction of reject rate

HIFIM
Crack Detection

Product Quality

Increasing production speed

Process
Evaluation

