DEWESoft®

ROTATING MACHINERY

FFT ANALYZER

PRODUCT DATA

FFT2019 - V1.1.

DETECT FAULTS, DETERMINE AND ANALYZE NOISE AND VIBRATION WITH EASE USING ADVANCED FUNCTIONS. THE IDEAL SOLUTION FOR MACHINERY QUALITY ASSURANCE.

INTRODUCTION

Machinery and its components are vibrating during operation. FFT (Fast Fourier Transform) analysis is a measurement tool to identify, predict, and prevent failures in rotating machinery.

FFT is very useful for analysis of time-dependent phenomena. The vibrations may be displayed by plotting the amplitude against frequency. To perform a frequency analysis the vibration signals are broken down into individual frequencies.

The Dewesoft FFT analyzer based on a combination of first-class data acquisition units and powerful software has it all: top performance, advanced cursor functions, high freely selectable line resolution, flexible averaging as well as many advanced functions for in-depth analysis.

APPLICATIONS

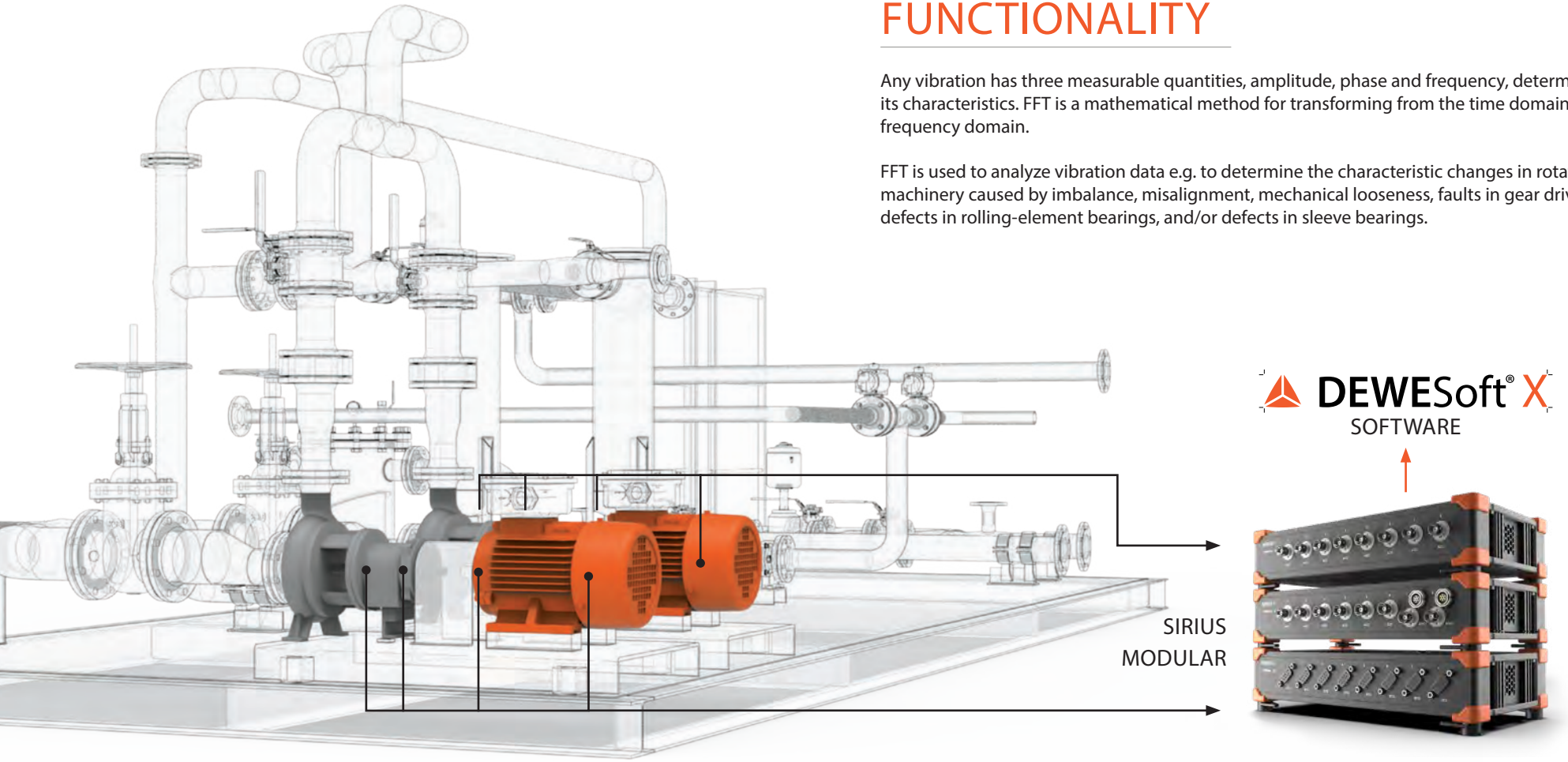
Frequency analysis is the base for any task in noise and vibration. FFT is the foundation for analyzing, monitoring, and controlling various systems and is widely used in engineering, science, and mathematics. A wide variety of application areas benefit from FFT; in addition to mechanical analysis, for example also to conventional radar, sonar, communications and speech signal-processing, biomedical engineering, imaging, spectroscopy, and geophysical analysis.

FFT is applied for vibration analysis in industries using rotating machinery, e.g. producing paper, clothes or chemicals, generating power, extracting petroleum, or treating water and handling domestic waste. FFT is also used for acoustic analysis e.g. in automotive and transportation industries among others for noise identification and qualification.

FUNCTIONALITY

Any vibration has three measurable quantities, amplitude, phase and frequency, determining its characteristics. FFT is a mathematical method for transforming from the time domain to the frequency domain.

FFT is used to analyze vibration data e.g. to determine the characteristic changes in rotating machinery caused by imbalance, misalignment, mechanical looseness, faults in gear drives, defects in rolling-element bearings, and/or defects in sleeve bearings.



KEY FEATURES

ANY LINE RESOLUTION
Selectable line resolution for most demanding tasks.

ADVANCED MATH
Auto and cross spectrum, complex spectrum, waterfall spectrum, cepstrum, two-sided FFT, short-time Fourier transform, bearing fault analysis.

CURSOR VALUE ESTIMATE
Innovative window interpolation technique allows precise amplitude and frequency estimation.

AVERAGING
Block history with linear, peak, exponential averaging or overall calculation.

MULTI-PURPOSE ADVANCED MARKERS
Maximum marker, free marker, zoom marker, sideband marker, harmonic marker, Kinematic markers.

EXPORT
Data export to most often used formats: UNV, Excel, Matlab, Flexpro, TXT, CSV...).

KINEMATIC MARKERS
Different machinery sets can be created in the database. This simplifies fault detection during measurement through adjustment of all markers when the main frequency is changed.

RESULT DISPLAY
2D or 3D graph visualization.

SPECS

DAQ SYSTEM - SIRIUS ACC TYPE INPUT		
Inputs		
Input types	Voltage, IEPE	
ADC Type	24bit delta-sigma dual core with anti-aliasing filter	
Sampling Rate	Simultaneous 200kS/sec	
Ranges (Dual Core Low Range)	**±10V (±500mV)**	**±500mV (NA)**
Input Accuracy (Dual Core)	±0.1% of reading ±10(1)mV	±0.1 of reading ±1(NA)mV
Dynamic Range@10kS (Dual Core)	140 dB (160 dB)	135 dB (NA)
Typ. SNR@50kS (Dual Core)	107 dB (125 dB)	100 dB (NA)
Typ. CMR @ 50Hz/1kHz	140/120 dB	140/120 dB
Gain Drift	Typical 10 ppm/K, max. 30 ppm/K	
Offset Drift	Typical 0.5 µV/K + 2 ppm of range/K, max 2 µV/K + 10 ppm of range/K	
Gain Linearity	<0.02%	
Inter Channel Phase-mismatch	0.02° * fin [kHz] + 0.1° (@ 200 kS/sec)	
Channel Cross talk	>160 dB @ 1kHz	
Input Coupling	DC, AC 0.1 Hz,1Hz	
Input Impedance	1 MΩ (270kΩ for AC coupling ≥ 1Hz) in parallel with 100pF	
Overvoltage Protection	In+ to In-: 50 V continuous; 200V peak (10msec)	
IEPE mode		
Excitation	2, 4, 8, 12, 16 or 20mA	
Compliance voltage	25 Volt	
Output Impedance	>100 kΩ	
Sensor detection	Shortcut: <4Volt; Open: > 19Volt	
Additional Specifications		
Input connector BNC	BNC	
TEDS support	IEPE mode only	

SOFTWARE: DEWESoft X3	
Recommended	
Processor:	Intel Core i7 with 4 Cores (3rd generation or higher)
RAM:	8 gigabyte (GB)
Hard drive:	Solid-state drive (SSD)
Graphic card:	Compatible with DirectX 11
Display	1280x720 (HD Ready)
Operating system:	Windows 10 64-bit
*Actual requirements may be different due to specific setup configuration.	

TYPICAL CONFIGURATIONS

Basic FFT (4ch):

- Sirius MINI 3xACC, 1xACC+
- Accelerometer (1x-4x)
- Microphone (1x-4x)
- 1x Tacho"

Standard FFT (8ch):

- Sirius Dual core 6xACC, 2xACC+
- Accelerometer (1-8)
- Microphone (1-8)
- Tacho (1-2)"

Advanced FFT:

100+ ACC or CHG channels in configuration of chained Sirius slices or Krypton

RELATED PRODUCTS

- Bearing analysis
- Order tracking
- Torsional vibration
- Balancing

DEWESoft®

LEARN MORE:
dewesoft.com/applications/rotating-machinery/balancing

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