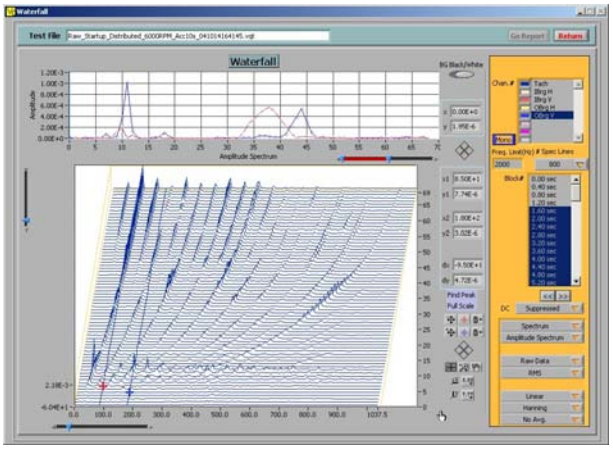
Turnkey Training Packages



Turnkey training packages for machinery diagnostics

SpectraQuest, Inc.
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www.spectraquest.com

Turnkey Packages

Turnkey Training Packages For Machinery Diagnostics

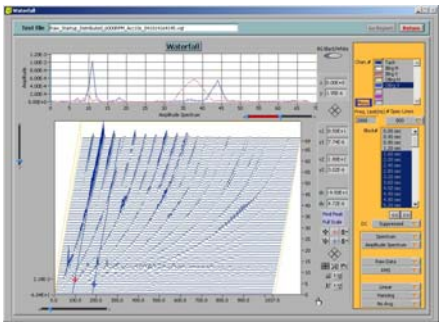
SpectraQuest simulators and software are conveniently sold as comprehensive training packages. The purchase of a training package provides you with all of the components necessary (simulator, training manuals, transducers, and data acquisition and analysis software) for a fully functional, turnkey training system.

- ❖ Turn your present engineers into vibration experts
- ❖ Accurate machinery problem assessment and identification as to root cause
- ❖ Improve process and machinery reliability and satisfy ISO and QS expectations
- ❖ Practice and experiment in laboratory environment to accelerate the learning process
- ❖ Experiment to clear doubts to achieve correct diagnosis every time.

Simulator

Training Manuals

Data Acquisition Hardware and Software



Transducers

SpectraQuest: A Valuable Resource for Keeping Companies Productive

SpectraQuest offers a wide range of machinery simulators for productivity enhancement. We also continue to develop new applications and improvements for our products so that the investment you make in this important training tool will continue to provide value for many years to come. To learn more about the SpectraQuest and how it can help you to keep your plant operating profitably, please call or e-mail us.

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Balancing

Turnkey Package 1

Basic Balancing Studies

This turnkey training package focuses on the vibration response to balancing

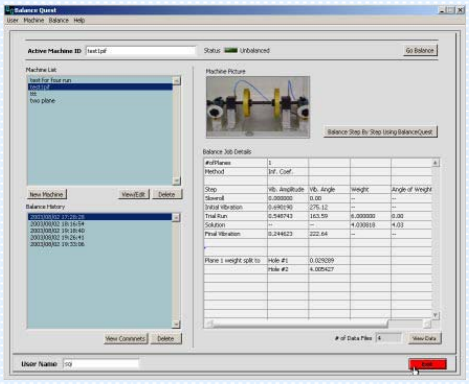
BBS Simulator

- Portable, robust, cost-effective balance and bearing vibration trainer
- Ideal for teaching multi-plane balancing with centerhung / overhung rotors
- Can be setup to exhibit bearing fault frequencies both further away from, and closer to multiples of the shaft rotational speed
- Develop signal processing techniques to identify bearing fault frequencies in the presence of defects, at multiples of shaft speed, without using high-resolution spectra
- Use the BBS to recognize the vibration spectra of different bearing faults

Study Kits Included:

- Training curriculum
- Eccentric and cocked rotors
- Centrally bent rotor shaft for balance studies

Data Acquisition System



BalanceQuest Software:

- Most common methods of balancing
- Maintains machine data and balancing history
- Solutions available both graphically and in spreadsheet format
- Step by step procedure provided on screen
- Import digital pictures for future balancing reference
- Simple, intuitive user interface
- ISO tolerance is embedded to check balance quality
- Four run method allows balancing with a vibration meter

Hardware:

- 4 Channel 20kHz Frequency range Portable USB.
- Analog input, 24 bit resolution, 4 channel simultaneous, IEPE sensor input, high speed Tachometer input

Transducers

- Two industrial ICP accelerometers, 0.3-10KHz, 100mV/G

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Turnkey Package 2

Balancing
Alignment
Resonance
Bearing defects

Basic Vibration Studies

This turnkey training package focuses on the vibration response to alignment, balancing, resonance, and bearing defects issues.

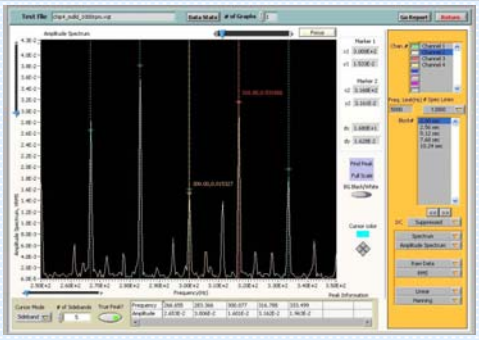
MFS-Lite Simulator

- Bench top machine for hands-on training.
- Study vibration spectra of common faults.
- Learn machine fault diagnosis techniques.
- Learn machine condition monitoring and PdM.
- Learn resonance and variable speed diagnostics.
- Learn to determine vibration transmission path and perform root-cause analysis.
- Validate balancing procedures above and below the first critical resonance.

Study Kits Included:

- Training curriculum
- Eccentric and cocked rotors
- Four coupling types
- Centrally bent rotor shaft for balance studies
- Coupling-end bent rotor shaft for alignment studies
- Rolling bearing resonance/critical
- Sleeve bearing resonance
- 5/8" shaft bearing fault
- 5/8" shaft bearing loader
- 1" shaft bearing
- 1" shaft bearing fault
- 1" shaft bearing loader
- Cocked bearing housing
- 5/8" shaft sleeve bearing

Data Acquisition System



VibraQuest Software:

- Multi-channel data acquisition, analysis, & modeling system
- Analysis functions include amplitude spectrum, power spectrum, frequency response, coherence, statistical analysis, data comparison.
- Data Presentation include time waveform, FFT spectrum, power spectrum, Bode plot, Orbit plot.

Hardware:

- 4 Channel 20kHz Frequency range Portable USB.
- Analog input, 24 bit resolution, 4 channel simultaneous, IEPE sensor input, high speed Tachometer input

Transducers

- Four industrial ICP accelerometers, 0.3-10KHz, 100mV/G

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Turnkey Package 3

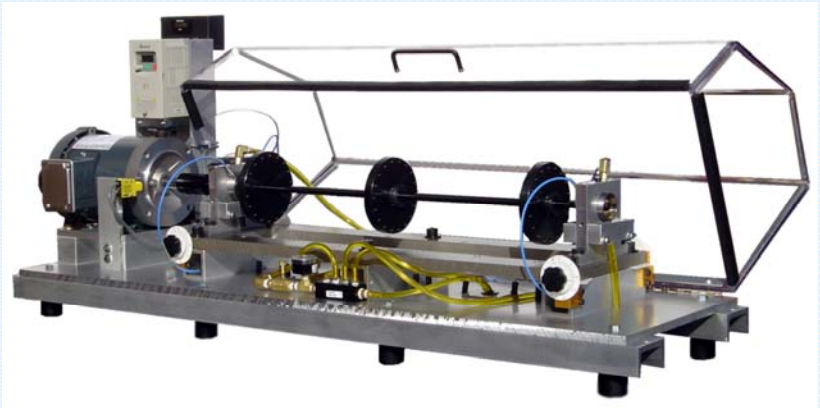
Balancing
Alignment
Resonance
Bearing defects
Rotor dynamics

Rotor Vibration Studies

This turnkey training package focuses on the vibration response to alignment, balancing, resonance, bearing defects, and rotor dynamics issues.

MFS-RDS Simulator

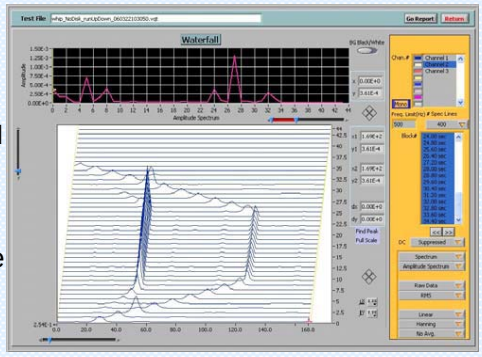
- Rotor shaft specially designed for fluid film bearing rotor dynamics.
- Oil whirl and whip in fluid film bearings.
- Bearing clearance selection and controllable lubrication oil pressure.
- Convenient installation of proximity probes.
- Rigid, slippage-free operation.
- Split bracket bearing housing for easy rotor assembly interchanges
- Specialized bearings and rotors with split collar ends for easy replacement and installation.
- Convenient alignment with jackscrew.



Study Kits Included:

- Training curriculum
- 1/2" shaft oil whirl/whip
- 3/4" shaft oil whirl/whip
- 3/4" shaft rolling bearings
- Eccentric and cocked rotors
- Four coupling types
- Centrally bent rotor shaft for balance studies
- Coupling-end bent rotor shaft for alignment studies
- Rolling bearing resonance/critical
- Sleeve bearing resonance
- 3/4" shaft bearing fault
- 3/4" shaft bearing loader
- 1" shaft bearing
- 1" shaft bearing fault
- 1" shaft bearing loader
- Cocked bearing housing
- 3/4" shaft sleeve bearing

Data Acquisition System



VibraQuest Pro Software:

- Multi-channel data acquisition, analysis, & modeling system
- Analysis functions include amplitude, auto power spectrum and cross spectrums, power and amplitude spectral density, frequency response, coherence, statistical analysis, data comparison, impulse response.
- Data Presentation include time waveform, FFT spectrum, powe spectrum, Bode, orbit plot, Nyquist , polar, waterfall plots.

Hardware:

- 4 Channel 20kHz Frequency range Portable USB.
- Analog input, 24 bit resolution, 4 channel simultaneous, IEPE sensor input, high speed Tachometer input

Transducers

- Four industrial ICP accelerometers, 0.3-10KHz, 100mV/G
- Two Eddy current proximity probe with demodulator and power supply

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Turnkey Package 4

Balancing
Alignment
Resonance
Bearing defects
Machinery defects

Machinery Vibration Studies

This turnkey training package focuses on the vibration response to alignment, balancing, resonance, bearing defect, gearbox, belt, reciprocating mechanism, mechanical rub, shaft crack, and damping.

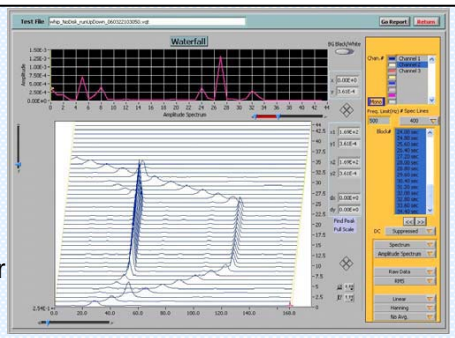
MFS Simulator

- Bench top machine for hands-on training.
- Study vibration spectra of common faults.
- Learn machine fault diagnosis techniques.
- Learn machine condition monitoring and PdM.
- Learn resonance and variable speed gearbox, and belt drive diagnostics.
- Simultaneous reciprocating and rotating mechanisms.
- Determine vibration transmission path.
- Validate balancing procedures above and below the first critical resonance.
- Study correlation among vibration, motor current, and noise.

Study Kits Included:

- Training curriculum
- Eccentric and cocked rotors
- Four coupling types
- Center and end bent shafts
- Rolling bearing resonance/critical
- Sleeve bearing resonance
- 3/4" and 1” shaft bearing fault
- 3/4" and 1” shaft bearing loader
- 1" shaft bearing
- Cocked bearing housing
- 3/4" shaft sleeve bearing
- Multi-Belt drive, and straight tooth gearbox, and adjustable particle magnetic brake system
- Belt-drive mounting block
- Defective gearbox pinions
- Worn straight tooth gearbox
- Eccentric sheave
- Reciprocating mechanism
- Direct driven belt drive, gearbox, and reciprocating mechanism
- Mechanical rub
- Damped bearing housing
- Crack shaft

Data Acquisition System



VibraQuest Pro Software:

- Multi-channel data acquisition, analysis, & modeling system
- Analysis functions include amplitude, auto power spectrum and cross spectrums, power and amplitude spectral density, frequency response, coherence, statistical analysis, data comparison, impulse response.
- Data Presentation include time waveform, FFT spectrum, power spectrum, Bode, orbit plot, Nyquist , polar, waterfall plots.

Hardware:

- Desktop PC with securely mounted DAQ board, 24 bit resolution, 8 channel simultaneous sampling at 102.4 kHz, IEPE sensor power, Anti-Aliasing filter, eight 8 foot SMB to BNC cables.

Transducers

- Eight industrial ICP accelerometers, 0.3-10KHz, 100mV/G
- One industrial ICP tri-axial accelerometer, 0.4 - 5 kHz , 100 mV/g
- AC motor current probe

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Turnkey Package 5

Balancing
Alignment
Resonance
Bearing defects
Machinery defects
Motor defects

Motor and Machinery Vibration Studies

This turnkey training package focuses on the vibration response to alignment, balancing, resonance, bearing defect, gearbox, belt, reciprocating mechanism, mechanical rub, shaft crack, damping, induction motor, pump, fan, and compressor.

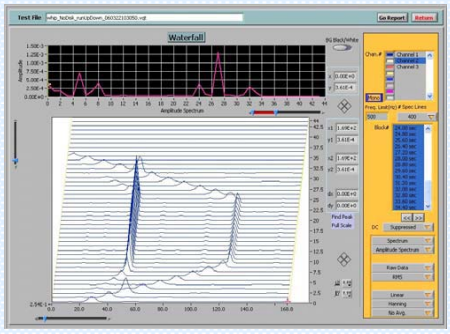
MFS Simulator

- Bench top machine for hands-on training.
- Study vibration spectra of common faults.
- Learn machine fault diagnosis techniques.
- Learn machine condition monitoring and PdM.
- Learn resonance and variable speed gearbox, and belt drive diagnostics.
- Simultaneous reciprocating and rotating mechanisms.
- Determine vibration transmission path.
- Validate balancing procedures above and below the first critical resonance.
- Study correlation among vibration, motor current, and noise.

Study Kits Included:

- Training curriculum
- Eccentric and cocked rotors
- Four coupling types
- Center and end bent shafts
- Rolling bearing resonance/critical
- Sleeve bearing resonance
- 3/4" and 1” shaft bearing fault
- 3/4" and 1” shaft bearing loader
- 1" shaft bearing
- Cocked bearing housing
- 3/4" shaft sleeve bearing
- Multi-belt drive and gearbox
- Belt-drive mounting block
- Eccentric sheave
- Reciprocating mechanism
- Mechanical rub
- Damped bearing housing
- Crack shaft
- Fan vibration
- Centrifugal pump
- Reciprocating compressor
- Faulted gearbox, pump, compressor
- Direct driven belt drive, gearbox, reciprocating, pump, compressor
- Seven AC motor with faults

Data Acquisition System



VibraQuest Pro Software:

- Multi-channel data acquisition, analysis, & modeling system
- Analysis functions include amplitude, auto power spectrum and cross spectrums, power and amplitude spectral density, frequency response, coherence, statistical analysis, data comparison, impulse response
- Data Presentation include time waveform, FFT spectrum, power spectrum, Bode, orbit plot, Nyquist , polar, waterfall plots

Hardware:

- PC with securely mounted DAQ board, 24 bit resolution, 8 channel simultaneous sampling at 102.4 kHz, IEPE sensor power, Anti-Aliasing filter, eight 8 foot SMB to BNC cables.

Transducers

- Eight industrial ICP accelerometers, 0.3-10KHz, 100mV/G
- One industrial ICP tri-axial accelerometers, 0.4 - 5 kHz , 100 mV/g
- AC motor current probe

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Turnkey Package 6

Balancing
Alignment
Resonance
Bearing defects
Rotor dynamics
Machinery defects
Motor defects

Rotor, Motor & Machinery Vibration Studies

This turnkey training package focuses on the vibration response to alignment, balancing, resonance, bearing defect, gearbox, belt, reciprocating mechanism, mechanical rub, shaft crack, damping, induction motor, pump, fan, and compressor and rotor dynamics.

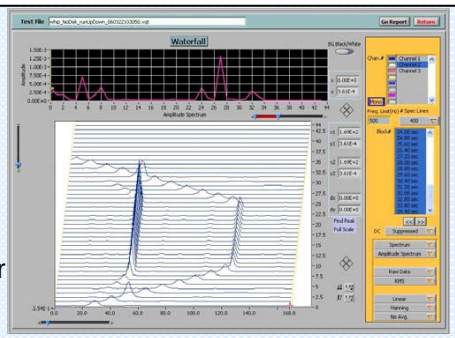
MFS-MG Simulator

- Rotor shaft for fluid film bearing rotor dynamics.
- Oil whirl and whip in fluid film bearings.
- Bearing clearance selection and controllable lubrication oil pressure.
- Learn machine fault diagnosis techniques.
- Learn machine condition monitoring and PdM.
- Learn resonance and variable speed gearbox, and belt drive diagnostics.
- Simultaneous reciprocating and rotating mechanisms.
- Validate balancing procedures above and below the first critical resonance.
- Study correlation among vibration, motor current, and noise

Study Kits Included:

- Training curriculum
- 1/2" and 3/4" shaft oil whirl/whip
- Eccentric and cocked rotors
- Four coupling types
- Center and end bent shafts
- Rolling bearing resonance/critical
- Sleeve bearing resonance
- 3/4" and 1” shaft bearing fault
- 3/4" and 1” shaft bearing loader
- 1" shaft bearing
- Cocked and damped bearing housing
- 3/4" shaft sleeve bearing
- Multi-belt drive and gearbox
- Belt-drive mounting block
- Eccentric sheave
- Reciprocating mechanism
- Mechanical rub
- Crack shaft
- Fan vibration
- Centrifugal pump
- Reciprocating compressor
- Faulted gearbox, pump, compressor
- Direct driven belt drive, gearbox, reciprocating, pump, compressor
- Seven AC motor with faults

Data Acquisition System



VibraQuest Pro Software:

- Multi-channel data acquisition, analysis, & modeling system
- Analysis functions include amplitude, auto power spectrum and cross spectrums, power and amplitude spectral density, frequency response, coherence, statistical analysis, data comparison, impulse response
- Data Presentation include time waveform, FFT spectrum, power spectrum, Bode, orbit plot, Nyquist , polar, waterfall plots

Hardware:

- PC with securely mounted DAQ board, 24 bit resolution, 8 channel simultaneous sampling at 102.4 kHz, IEPE sensor power, Anti-Aliasing filter, eight 8 foot SMB to BNC cables.

Transducers

- Eight accelerometers, 0.3-10KHz, 100mV/G and one tri-axial accelerometers, 0.4 - 5 kHz , 100 mV/g
- Four Eddy current proximity probe with demodulator and power supply
- AC motor current probe

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