ENGINEERING DYNAMICS

Training Courses

1 ## Laser Shaft Alignment (ANSI)

Laser Alignment Simulators

XT-Series

E-Series

2 ## Introduction to Basic Vibration Analysis

Single Frequency

X:55 Hz Y:706.8129 mV
Pwr Spec 1
55 Hz

Multiple Time Waveforms

TOTAL VALUE
2.85 mm/s RMS
X-Viber
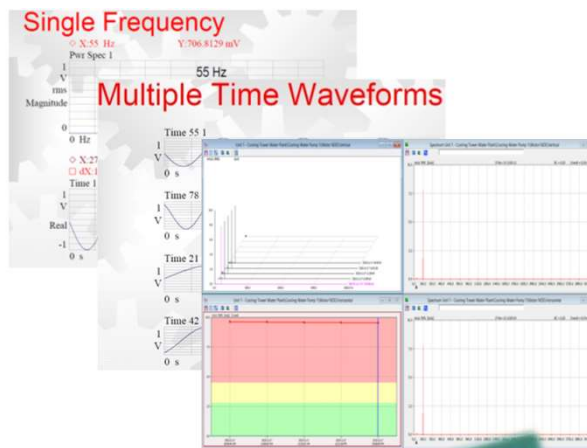
3 ## Field Balancing
(Single and Two plane balancing)
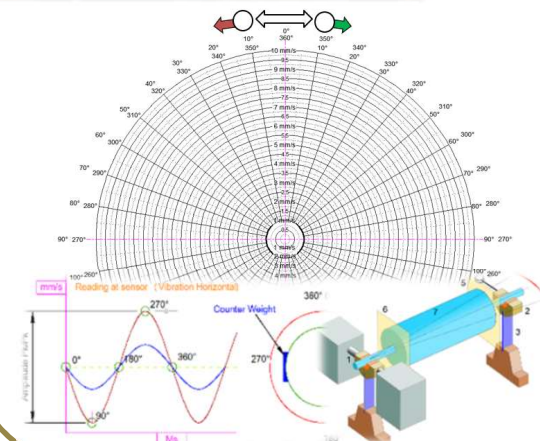
1 **Laser Shaft Alignment**

Laser Alignment Simulators

E-Series

XT-Series

Laser Shaft Alignment (ANSI - Standard)

Principles for Laser Shaft Alignment:
- Misalignment types.
- Methods for shaft alignment.
- Mathematical principle for laser shaft alignment.
- Pre-alignment checks.
- Thermal growth.
- Soft-foot

Laser shaft alignment process:
- Laser alignment for Horizontal.
- Installation for equipment on machine.
- Soft-foot proses, Calculations and Measuring options.
- Thermal growth calculations.
- Horizontal alignment process with steps.
- Shim calculation and Installation.
- Finalising and Reporting

Laser shaft alignment practical:
- Pre-alignment checks and installation of Laser measuring units.
- Configure the system and add user information.
- Measure distance and add into the system.
- Add correct shims as per available shims.
- Remeasure and save to generated report.

Test:
- Theory (1 hour) and Practical (1.5 hour) test (80% to pass)

Single Frequency

Multiple Time Waveforms

Basic Vibration Analysis

1) Principles of Vibration:
- Vibration standard units (rms, peak , peak to peak, frequency and time).
- Vibration measurements (Displacement, Velocity and Acceleration).
- Converting from standard measuring units.
- Spectrum and Waveform explained.
- Natural frequency and frequency simulation.
- Forcing frequency calculation.

2) Data acquisition:
- Transducer and transducer mounting.
- Instrumentation (Handheld and Portable).
- Measuring position and naming conventions.
- Creating a route, uploading and downloading route.
- Data collecting, route structure and repeatability.
- Time planning and route edit.

3) Basic Vibration analysis:
- Overall level measurement.
- Spectrum analysis.
- Harmonics, sidebands and analysis.
- Alarm and Danger limits, trending and reports.
- Defect analysis.
- Vibration analysis for – Imbalance, Misalignment, Looseness, roller element bearing and electrical defect.

2 **Introduction to Basic Vibration Analysis**

Basic Vibration Analysis (Cont.)

4) Data Acquisition:
- Transducer types – Proximity, Velocity and Accelerometer
- Transducer selection for – Application and mounting methods
- Measuring point selection for correct measurement and repeatability.

5) Fault Analysis:
- Natural frequencies and resonances explained
- Imbalance, eccentricity and bent shaft
- Misalignment, cocked bearing, soft-foot and mechanical looseness.
- Rolling element bearing analysis

6) Equipment testing diagnosis:
- Impact testing (bump test)
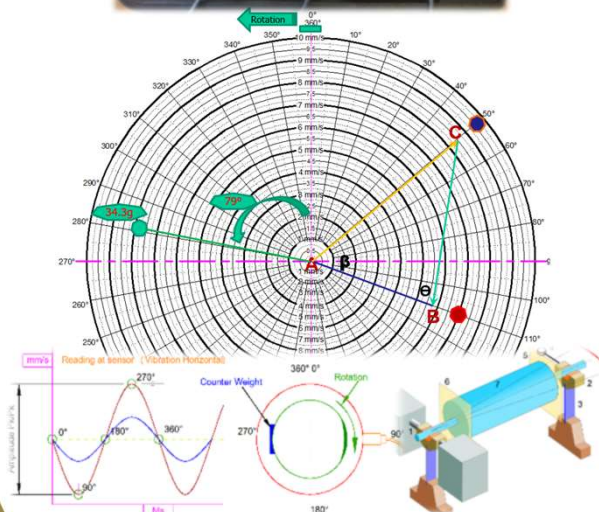- Phase analysis

7) Corrective action:
- Review of the Balancing process.
- Review of shaft alignment procedures

8) Test:
- Test Theory and Practical

3

Field Balancing
(Single and Two plane balancing)

Field Balancing: (Single and Two plane balancing)

Introduction to Balancing:
- Causes of Unbalance
- Spectrum overview for balancing
- Balancing units.
- Field balancing instruments (Viber X5, X-Balancer, CX Balancer).
- Factors that influence field balancing.
- Balancing methods – Polar plot, Trigonometric and Instrument balancing.
- Understanding vibration and phase.

Hardware installation:
- Installing the Vibration and speed sensor.
- Finding the correct radius and angle for the trial weight
- Dividing the rotor or fan into equal sections.

Calculations:
- Calculations for the trail weight mass and the position.
- Calculate balancing sensitivity.
- Trial weight placement position calculation.

Practical Field balancing:
- Using the Polar plot for single plane balancing
- Using the Instrument for two plane balancing

Test:
- Test Theory and Practical

Arrange Training

- Laser Alignment
  4 Days
- Basic Vibration Analysis
  2 Days
- Balancing
  2 Days
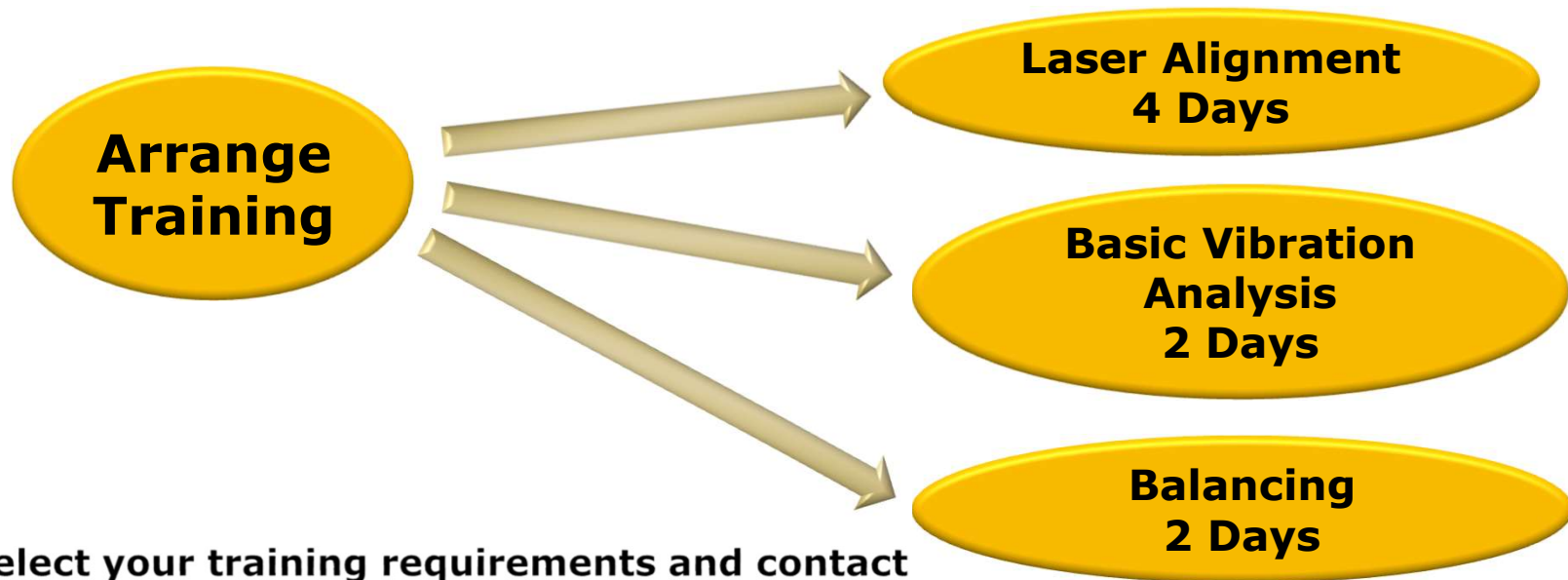
Please select your training requirements and contact our office for a quote and availability.

Contact Information:

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Bookings - Joe (**joe@edprevent.com**)
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All training is done using equipment supplied and supported by Engineering Dynamics.
Training is done using to the OEM standard guidelines and supporting documentation.

ENGINEERING DYNAMICS

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