Workshop on

"Advanced Turbo Machinery Analysis"

5-Days Online Program

About Us

We are the training providers and deals in Technical, HSEQ, Management and Soft Skills Training.

We have highly knowledgeable and experienced local & foreign subject matter experts. Our team is highly focused and provides the best support as per your requirements and needs.

We provide a platform from where you can add value in you teams. We are highly fascinated on the development of your Technical and Management Teams.

We can provide on-site and classroom training.

About The Trainer

Mr. Salah is our foreign Certified Trainer. He has over 14 years of experience in Power Generation and Oil & Gas including 10 major international projects across 5 countries. Currently he is associated with ALS Industrial – Australia. He has also worked with GE-Australia, Alstrom Power-Australia, Sulzer Dowding and Mills-UAE, BS Steels-Egypt and Ritec-Egypt.

He is also associated with Mobius as their Trainer for Vibration Analysis (Level I-IV) and Asset Reliability Training courses for Middle East. He is also working a freelance trainer for Advance Turbo Machinery Analysis Course globally.

He has been used tools like SKF, Emerson CSI, B&K, GE, Commtest and FAG condition monitoring equipment and data analysis systems. He has been worked with Bently Nevada System 1 online and Siemens vibroexpert CM500 analysis for turbo machinery and online & wireless systems installation/ configuration 3500 Bently Nevada.

He has obtained training and certifications in:

- ISO 18436-2 Vibration Analysis, Level IV
- ISO 18436-7 Thermography, Level II
- ISO 18436-4 Oil Analysis, Level II
- Asset Reliability Practitioner, Level I and II
- Certified Reliability and Maintenance Professional CMRP
- Precision Shaft Alignment and Machinery Balancing
- Bearing Lubrication, Maintenance & Service
- Motor current signature analysis EXP4000
- Machinery Diagnostics - GE
- Field Engineering Program - GE
- Rotor Dynamics - Alstom
- Rotor Dynamics and modal analysis – Vibration Institute

Course Objective:

Covering the most advanced turbo machinery faults diagnostics, operation and maintenance.

Training Content:

Introduction

o Turbo Machinery types o How turbo machines works o ISO standards o Turbo machinery Operating States

Measurement sensors & its applications

o Sensors types o Accelerometer, Velocity Transducers, proximity probes o Proximity probe installations problems o Radial, thrust, and differential expansion probes o Proximity probes other applications o Introduction to machinery Protection systems

Journal Bearings

o Journal bearings types o Design and selection considerations

Phase Analysis

o Relative phase o Absolute Phase o Deflection Shapes o Transducer's convention

Orbit Plots and Average Shaft Centerline

o What is orbit plot? o Direction of precession o Filtered and direct orbit o Orbit shapes and analysis o Average Shaft center line plot uses o Bearing clearance circle and its calculations o Bearing type and shaft centerline position

Full Spectrum Analysis

o What is the full spectrum plot? o Full spectrum plot analysis o Forward and reverse precession

Trend Plot

o Trend plot o Direct and Indirect measurements trends

Transient State Plots

o Polar Plot & Bode Plot o Full Spectrum Cascade plot o Heavy spot, High spots & critical speeds o Slow Roll vector & Run out compensation o Amplification factor and system stability o An Isotropic stiffness & structure resonance

Rotor Dynamics

o Rotor behavior below, at and above critical speeds o Stiffness, Damping and fluid instability o Eccentricity ratio & Dynamics Eccentricity ratio o Rotor Mode shapes o Undamped critical speed map

Turbo Machinery Malfunctions – Part 1

o Unbalance o Bent shaft and eccentricity o Preloads and misalignment o Excessive clearance o Rubbing (Partial, Annular, heavy, light, Newkirk & Morton effect)

Turbo Machinery Malfunctions – Part 2

o Fluid instability (whirl & Whip) o Surge and Stall o Electrostatic discharge o Shaft Crack o Instrumentation problems o Machinery diagnostic process chart o Case Studies

The HIPPOCAMPUS Industrial Training & Consulting

Contact Us
Phone: +92 310 265 8003
Email: training@hippocampusgroup.com
Web: www.hippocampusgroup.com