



Workshop on Machinery Failure, Vibration Analysis and Predictive Maintenance

Feb. 26 – March 1, 2024, 1st Run: Lagos & Port Harcourt

August 26 – 30, 2024, 2nd Run: Lagos & Abuja

For Tutor -Led Class: 9am – 4:30pm

Workshop fee: N300, 000 per Participant

For online: Delivery via Zoom

Online course fee: N250, 000 per Participant

Available for In-plant Training

**600 U\$D for foreign
Participants**

Program overview:

Machines deteriorate as they get older so we can expect a certain amount of performance falloff and general deterioration of the machine. If we understand the failure mechanisms that are in place, we can identify which parameters best indicate the deterioration of the machine.

Failure analysis and Predictive Maintenance techniques, including vibration analysis, are discussed in the course with a view to optimizing the maintenance engineering effort while maximizing production. Other techniques that will be addressed include infrared thermography, passive ultrasonic, tribology and performance monitoring.

For whom:

This course is particularly aimed at operating personnel performing in oil & gas production as well as process and maintenance engineers. The course shall also be beneficial to other technical personnel who want to broaden their knowledge on machine failure mechanism, vibration analysis and predictive maintenance.

Learning objectives:

At the end of this program, participants will be able to:

- explain machine failure analysis techniques;
- apply a range of Predictive Maintenance Technologies;
- know the potential contribution of each of these technologies to maintenance efficiency;
- learn how these technologies can interact with and support each other; and
- practically apply these technologies so as to achieve the best results.

Course outline:

Day 1 - Understanding Failures

- Machine Failure Analysis,
- Wear and tribology,
- Fatigue mechanisms
- Plain, tilt-pad and anti-friction bearing and seal failures

Day 2 - Avoiding Failures

- Trouble shooting techniques,
- Statistical analysis of machinery failures

Day 3 - Understanding Predictive Maintenance

- Predictive Maintenance Concepts, §Introduction,
- Maintenance Strategies
- Predictive Maintenance – background and history
- Predictive Maintenance Technologies – an overview

- Potential Failure Analysis – deciding which technologies to apply
- Vibration Analysis,
- Introduction to Vibration Analysis
- Frequency Analysis and the Fast Fourier Transform
- Vibration Transducers,
- Basic Failure Mechanisms with examples

Day 4 - Using Predictive Maintenance

- Vibration Standards and Alarm Levels,
- Vibration Diagnostics
- Amplitude Demodulation
– a.k.a Enveloping, SSE, HFD, Peak-Vue
- Vibration on Rolling Element Bearings,
- Resonance – identification & cure
- Other Predictive Maintenance Techniques,
- Infrared Thermography
- Thermographic applications,
- Passive Ultrasonic – contact and non-contact
- Ultrasonic Applications,
- Tribology – oil analysis

Day 5 - Control Mechanisms

- Managing Predictive Maintenance,
- Performance and Efficiency Monitoring
- Managing the Predictive Maintenance effort,
- Cost Analysis
- Reporting Techniques,
- Integrating Predictive Maintenance into the Maintenance Plan

LOCATIONS

1 - HCA Learning Centre. Acme House 2nd Floor, 23, Acme Road, Ogba, Industrial Scheme, Ikeja, Lagos, Nigeria

2 - Green-Minds Hotel, Plot 764, Cadastral Zone B05, E. Ekukinam Street, Utako District, Abuja

3 –Pakiri hotel Ltd., 4 Okwuruola Street, off Stadium Road, Rumuola, Port Harcourt, Rivers State.

Open Course Fee: N300, 000

In-plant Fee Negotiable

WORKSHOP FEE:

N300, 000 per participant, VAT –N22, 500

Note: this covers Workshop Fee, Tea/coffee break, Lunch, course materials and certificate of attendance.

Payment should be made into our Accounts:

Account Name: Human Capital Associates Global Consult Ltd.

Union Bank of Nig. PLC: Account No: 0097961537

First Bank of Nig. PLC: Account No: 2033683960

Keystone Bank Ltd.: Account No: 1007150325

**For Booking / Enquiry, Call: 234-8051365946, 234-7087578814
24/7 Lines: 234-8068933608, 234-8029170491, 234-8145745664,
& 234-9112830607**

Training Methodology

Lectures, discussions, exercises, case studies, audio-visual aids will be used to reinforce these teaching/learning methods.