



Workshop on Gas Turbines: Operation, Technology and Troubleshooting

January 15 – 19, 2024, 1st Run: Lagos & Port Harcourt

July 8 – 12, 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:

This course covers the construction, operation and controls of gas turbines giving participants the knowledge needed to operate, maintain and troubleshoot gas turbine systems. Participants will first learn about the gas turbine cycle and will then dive deeper into construction, operation and maintenance techniques.

Topics discussed will include the operation and maintenance of the air inlet and filtration system, the pulse cleaning system and the evaporative cooler. It will also include the various operations of the turbine control panel; the operator mode commands and the operation of the protection systems.

Participants will gain an understanding of all the different components of a turbine necessary for the operation, maintenance and troubleshooting of gas turbines.

For Whom:

This course covers the fundamental skills for gas turbine operation personnel and maintenance personnel, including gas turbine operators, gas turbine maintenance technicians, and controls technicians. It will also be beneficial for professionals managing and supervising personnel involved in the operation and maintenance of gas turbines.

Learning Objectives:

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

- describe the different stages involved in the operation of a gas turbine cycle;
- operate and maintain the air inlet, the filtration system, the pulse cleaning system and the evaporative cooler;
- demonstrate an understanding of the compressor section to include the rotor, variable guide vanes and compressor blading;
- use the relevant turbine control terms to operate and control protection systems;
- explain the construction and operation of the turbine section, including rotor, buckets, nozzles and bearings;
- outline the construction and operation of the liquid and gas fuel control systems, gas control valves and the lube oil system, essential to the operation, maintenance and troubleshooting of a gas turbine; and
- describe the construction and the theory behind operation of a generator, including the starting system, the turning gear, the commutated inverter and the cooling methods.

Course Outline:

Day 1: Gas turbine theory

- Gas turbine operation cycle
- Air inlet system
- Compressor system
- Combustion system
- Gas path
- Exhaust system
- Support systems
- Air inlet and filtration system:
- Air inlet and filtration system purpose

- Air inlet and filtration system operation
- Pulse cleaning operation
- Pulse cleaning set points
- Evaporative cooler

Day 2: Compressor section & Combustion System

- The compressor
- The rotor
- Variable input guide valves
- The blading
- Combustion system:
- Combustion system purpose
- Combustion system operation
- Crossfire tubes
- Spark plugs
- Flame detectors

Day 3: Turbine section & Support Systems

- Turbine construction
- Turbine operation
- Rotor cooling
- Turbine buckets
- Nozzles and bearings
- Support systems:
- Fuel control
- Liquid fuel control
- Gas fuel control
- Control valves
- Speed ratio and stop valve
- Lubrication operations

Day 4: Generator

- Theory of generator
- Generator construction
- Starting a generator
- Turning gear
- Commutated inverter
- Cooling a generator

Day 5: Plant operations, Controls and Troubleshooting

- Control panel
- Important terms
- Operator commands
- Controls to conduct
- Trip oil
- Over speed
- Over temperature
- Flame detection
- Vibration detection
- Combustion monitoring
- Gas Turbine Troubleshooting
 - Simplified troubleshooting flow chart
 - Main troubles possible causes

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,
Port Harcourt, Rivers, Rivers

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

**Enquiry/Booking, Contact: 234-8051365946, 234-7087578814
24/7 Lines: 2348029170491, 234-8068933608, 234-8145745664,
234-9112830607**

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