



### **Workshop on Operation, Maintenance and troubleshooting of Pumps, Compressors and Valves**

May 27 – 31, 2024, 1<sup>st</sup> Run: Lagos & Abuja  
November 25 – 29, 2024, 2<sup>nd</sup> Run: Lagos & Port Harcourt

**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:**

Pumps, Compressors and Valves are major equipment in all petrochemical, refinery and petroleum firms. Understanding the function, operation, and troubleshooting of this equipment is a must to maintain the production and maximizing the profitability of the plant. Right specification and appropriate selection of these equipment increases the plant reliability, reduces the downtime and operating and maintenance costs. This course will discuss this major equipment over five days and cover different aspects that the involved engineers and technician involved to master.

#### **FOR WHOM:**

Engineers, technicians and managers responsible for selection, installation, machinery failure analysis, troubleshooting and maintenance of Pumps, Compressors and Valves need to attend this course.

#### **LEARNING OBJECTIVES:**

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

- list and explain different types of pumps, valves, compressors and their associated terminology;
- differentiate between Centrifugal and positive displacement pumps, packing, mechanical seals and sealing systems, bearings and couplings;
- explain the different parameters affecting the operation of valves;
- select the right valve for the particular application and to perform the necessary calculation for valve sizing;
- perform troubleshooting of systems involving valves and compressors; and
- decide on the right maintenance plan concerning different types of valves and compressors.

#### **Course outline:**

##### **Day 1: Pumps**

- Pumping Methods
- Types and Range of operation
- PD Pumps, Reciprocating and Rotary Types
- Dynamic Pumps, Centrifugal and Axial-Flow Pumps
- Pumps Operation, Performance & Control
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##### **Day 2: Seals, Bearings, and Installation**

- Pumps Failures,
- Troubleshooting and Maintenance
- Cavitation in Pumps
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### Day 3: Compressors

- Compressible vs. Incompressible Fluids
- Gas State Equation, Ideal vs. Actual Gas
- Compression Methods
- Types and Range of Operation
- PD Compressors, Reciprocators and Rotary Compressors
- Centrifugal and Axial Flow Compressors
- Multistage Compressors
- Map of Compressors

### Day 4: Failure Modes and Maintenance

- Anti-Surge Systems
- Dry Seal and Journal Bearings
- Valves
- Valves Technology
- Leak Tight Characteristics
- Flow Characteristics
- Pressure Classification

### Day 5: Control Valves

- Check Valves
- Safety Relief Valves
- Valves Sizing and Selection
- Troubleshooting and Maintenance
- Case Studies Discussions,
- Last Day Review & Assessments

### Training Methodology

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

#### 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**