

# EXPERT

EXPERT & PROFESSIONAL EXCELLENCE FOR TRAINING & CONSULTATIONS

## *Flare System Specialist Flaring Operations Emission Control*

### **Course Contents:**

#### **Module One: Introduction to Flare Systems & Fundamentals**

- Overview of Flare Systems
- Definition, purpose, and applications in oil & gas, petrochemical, and refining industries.
- Types of flares (elevated, ground, enclosed, sonic).
- Components of a Flare System
- Flare stack, knock-out drum, ignition systems, pilots, gas recovery systems.
- Industry Standards & Regulations
- AP 521, EPA regulations, ISO standards, and environmental compliance.
- Safety & Hazard Awareness
- Flare system hazards (radiation, noise, toxicity).

#### **Module Two: Flare System Design & Engineering**

- Flare System Design Basics
- Sizing criteria, flow rates, pressure drops, and material selection.
- Combustion Efficiency & Smokeless Operation
- Steam-assisted vs. air-assisted flares, smokeless design.
- Flare Gas Recovery Systems (FGRS)
- Technologies and economic/environmental benefits.
- Case Studies & Simulations
- Design failures and lessons learned.

#### **Module Three: Flaring Operations & Best Practices**

- Startup, Shutdown & Normal Operations
- Procedures for safe flaring.
- Flare Monitoring & Control Systems

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- Flow meters, pressure/temperature sensors, automation.
- Emergency Flaring Scenarios
- Overpressure, plant upsets, and blowdowns.
- Workshop: Operational Simulations
- Responding to flare system alarms.

## **Module Four: Emission Control & Environmental Compliance**

- Flare Emissions & Environmental Impact
- CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>x</sub>, VOCs, and particulate matter.
- Emission Monitoring & Reporting
- Continuous monitoring systems (CEMS), EPA Method 22.
- Technologies for Emission Reduction
- Thermal oxidizers, carbon capture, low-NO<sub>x</sub> burners.
- Regulatory Compliance & Audits
- Permitting, record-keeping, and enforcement.

## **Module Five: Advanced Topics & Certification**

- Advanced Flare Technologies
- Enclosed flares, cryogenic flaring, and green flaring innovations.
- Flare System Maintenance & Inspection
- Corrosion control, pilot checks, and IR inspections.
- Group Discussion: Industry Trends
- Net-zero flaring, carbon pricing, and future regulations.
- Final Assessment & Certification
- Written test, case study evaluation, and Q&A.

Location	Cairo – Sofitel Cairo Downtown Nile
Start Date	29 June 2025
End Date	03 July 2025