MERCURY

FPSO Process Operation and Maintenance Management

26 – 30 July 2027
Madrid (Spain)

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Ref: 16341_1016604 **Date:** 26 – 30 July 2027 **Location:** Madrid (Spain) **Fees:** 6200 Euro

Introduction:

Floating Production Storage and Offloading FPSO units are essential in modern offshore oil and gas developments. They combine production, processing, storage, and export facilities in a single floating platform, offering flexibility for deepwater and remote operations. However, FPSOs face unique challenges: high-risk offshore environments, complex process systems, continuous production cycles, and strict international regulatory compliance.

This FPSO Process Operation and Maintenance Management program provides participants with a comprehensive theoretical framework for managing FPSO process operations and maintenance. It covers the full lifecycle of FPSO activities — from production systems and utilities to storage, offloading, maintenance, safety, and compliance.

Special emphasis is placed on maintenance and reliability management, risk and safety systems, and international standards such as those established by the IMO, ABS, DNV, and API. The course is suitable for experienced engineers, supervisors, and managers, particularly those holding professional credentials COREN, MNSE, IIMS, who are seeking to deepen their expertise and strengthen their leadership capacity in FPSO operations.

Targeted Groups:

This FPSO Process Operations and Maintenance training targets professionals seeking specialized knowledge and skills:

- FPSO operations engineers seeking advanced operational understanding.
- Offshore production supervisors aiming to improve process oversight.
- Maintenance engineers focus on reliability and lifecycle management.
- Process engineers are responsible for treatment and utility systems.
- HSE professionals managing offshore safety and environmental compliance.
- Risk management specialists working in FPSO operations.
- Asset integrity planners optimizing maintenance and inspections.
- Oil & gas professionals preparing for leadership roles in offshore and floating production.
- Managers and technical leads seeking knowledge of international standards and regulatory compliance.

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Course Objectives:

Participants will achieve the following objectives by completing the FPSO Process Operations and Maintenance course:

- Explain the strategic role of FPSOs in offshore oil and gas developments.
- Describe key production, processing, and offloading systems on FPSOs.
- Illustrate operational procedures for storing and handling cargo.
- Apply preventive, predictive, and condition-based maintenance strategies.
- Demonstrate reliability-centered maintenance and asset integrity frameworks.
- Identify risks, hazards, and safety measures specific to offshore FPSOs.
- Assess environmental challenges and develop mitigation strategies.
- Interpret international standards, including IMO, ABS, DNV, and API.
- Analyze real-life operational case studies to extract lessons learned.
- Evaluate emerging technologies, digitalization, and AI applications in FPSO performance.
- Develop actionable plans for continuous improvement in FPSO operations.
- Integrate maintenance, safety, and environmental practices to optimize offshore production.

Targeted Competencies:

Participants will gain the following competencies during the FPSO Process Operation and Maintenance Management program:

- Advanced understanding of offshore production processes and FPSO operations.
- Proficiency in maintenance strategies, including RCM and predictive methods.
- Competence in risk, safety, and emergency response management.
- Knowledge of environmental protection and HSE compliance measures.
- Ability to plan and manage asset integrity over the FPSO lifecycle.
- Skills to monitor and inspect rotating, static, and subsea equipment.
- Familiarity with international regulations and certification frameworks.
- Analytical skills for evaluating operational efficiency and performance.
- Capability to implement lessons learned from past FPSO operations.

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Studying Scenarios:

In this FPSO Process Operation and Maintenance Management training, participants will develop their skills through the analysis of the following scenarios:

- Managing FPSO production disruptions and operational downtime.
- Planning maintenance campaigns and allocating offshore resources.
- Responding to offshore emergencies, including fire, explosion, and oil spills.
- Evaluating inspection reports and assessing equipment integrity.
- Implementing safety case methodologies and risk assessment tools.
- Optimizing storage, offloading, and utility system operations.
- Applying international regulatory requirements to real operational challenges.
- Analyzing past FPSO incidents to improve operational decision-making.
- Assessing digital monitoring technologies and AI-based performance tools.

Course Content:

Unit 1: Introduction to FPSO Systems:

- Overview of FPSO design, evolution, and deployment in offshore oil and gas production.
- Types of FPSO units and their operating environments.
- Comparison of FPSOs with other offshore production facilities.
- FPSO layout: topsides, hull, mooring systems, and subsea connections.
- The Strategic Role of FPSOs in Global Deepwater Operations.

Unit 2: FPSO Process Systems and Operations:

- Oil, gas, and produced water treatment systems.
- Storage and cargo handling procedures.
- Offloading operations: tandem and side-by-side methods.
- Utility systems: power generation, water injection, flare, and vent systems.
- Control room operations and monitoring technologies.
- Operational challenges: uptime, production efficiency, and reliability.

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Unit 3: FPSO Maintenance and Reliability Management:

- Preventive, predictive, and condition-based maintenance strategies.
- Reliability-Centered Maintenance RCM principles for FPSOs.
- Asset Integrity Management AIM frameworks for floating facilities.
- Inspection and monitoring of rotating equipment, static equipment, and subsea systems.
- Planning and scheduling of maintenance campaigns.
- Spare parts management and supply chain challenges in offshore environments.

Unit 4: FPSO Safety, Risk, and Environmental Management:

- Offshore hazards and FPSO-specific risks.
- Safety Case methodology for FPSOs.
- Risk analysis methods: HAZID, HAZOP, Bow-Tie.
- Fire and explosion prevention, detection, and protection systems.
- Emergency response planning for FPSOs.
- Environmental considerations: emissions, ballast water, produced water discharge, and oil spill response.

Unit 5: FPSO Regulatory, Compliance, and Future Trends:

- International Maritime Organization IMO requirements for floating units.
- ABS, DNV, and API standards for design, operation, and maintenance.
- Certification processes and compliance audits.
- Lessons learned from major FPSO incidents and operational challenges.
- Future of FPSOs: digital twins, automation, remote monitoring, and sustainability.
- The role of AI, IoT, and advanced analytics in FPSO operations.

Final Insights & Key Takeaways:

FPSO operations require integrated knowledge of production, maintenance, safety, and regulatory compliance. Effective risk management and reliability strategies are essential for continuous offshore operations. Leveraging emerging technologies and digital tools enhances performance, monitoring, and decision-making. Participants will leave equipped to optimize FPSO operations while maintaining safety, environmental stewardship, and international standards.