PB INSTITUTE OF RESEARCH AND TECHNOLOGY

P.O Box 21457-00100

Nairobi - Kenya

Mobile: +254 721 214 795

Email: info@pebblesinstitute.org

Advanced Offshore Pipeline Design Training Course

Duration: 10 days | **On-Site**

01 Who Should Attend

- This course is ideal for:
- Production Engineers
- Operations Managers
- Field Technicians
- Reservoir Engineers
- Completion Engineers
- Project Managers
- Technical Specialists

02 About the Course

Master the intricacies of subsea infrastructure with our comprehensive Advanced Offshore Pipeline Design Training Course. This program is meticulously designed to equip you with the specialized knowledge and practical skills necessary for designing and analyzing complex offshore pipeline systems, ensuring safety, reliability, and cost-effectiveness. In the demanding environment of offshore energy development, mastering advanced pipeline design is crucial for organizations seeking to optimize subsea infrastructure and mitigate operational risks. Our offshore pipeline design training course provides hands-on experience and expert guidance, empowering you to apply cutting-edge techniques for practical, real-world applications.

This advanced offshore pipeline design training delves into the core concepts of deepwater pipeline engineering, structural analysis, and hydrodynamic loading, covering topics such as pipe-soil interaction, riser design, and installation methodologies. You'll gain expertise in using industry-standard tools and techniques to advanced offshore pipeline design, meeting the demands of modern offshore operations. Whether you're a pipeline engineer, structural analyst, or project manager, this Advanced Offshore Pipeline Design course will empower you to drive strategic design decisions and optimize subsea infrastructure development.

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03 Workshop Objectives

- Understand the fundamentals of advanced offshore pipeline design.
- Master deepwater pipeline design and analysis techniques.
- Utilize pipe-soil interaction and stability analysis.
- Implement riser design and dynamic analysis.
- Design and build robust pipeline installation methodologies.
- Optimize pipeline routing and span analysis.

04 Module Topics

Module 1: Introduction to Advanced Offshore Pipeline Design

- Fundamentals of advanced offshore pipeline design.
- Overview of deepwater pipeline engineering principles.
- Setting up an advanced pipeline design framework.
- Introduction to advanced design tools and methodologies.
- Best practices for offshore pipeline design.

Module 2: Deepwater Pipeline Design and Analysis

- Mastering deepwater pipeline design and analysis techniques.
- Utilizing high-pressure high-temperature (HPHT) pipeline design
- Implementing buckling and collapse analysis.
- Designing and building deepwater pipeline systems.
- Best practices for deepwater design.

Module 3: Pipe-Soil Interaction and Stability

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- Utilizing pipe-soil interaction and stability analysis.
- Implementing seabed stability and geotechnical analysis.
- Utilizing pipeline walking and lateral buckling analysis.
- Designing and building pipe-soil interaction models.
- Best practices for pipe-soil analysis.

Module 4: Riser Design and Dynamic Analysis

- Implementing riser design and dynamic analysis.
- Utilizing steel catenary riser (SCR) and hybrid riser design.
- Implementing vortex-induced vibration (VIV) analysis.
- Designing and building riser systems.
- Best practices for riser design.

Module 5: Pipeline Installation Methodologies

- Designing and build robust pipeline installation methodologies.
- Utilizing S-lay, J-lay, and reel-lay installation techniques.
- Implementing heavy lift and subsea tie-in operations.
- Designing and building installation procedures.
- Best practices for installation.

Module 6: Pipeline Routing and Span Analysis

- Optimizing pipeline routing and span analysis.
- Utilizing route selection and optimization.
- Implementing free span analysis and mitigation.
- Designing and building pipeline routing plans.
- Best practices for routing.

Module 7: Troubleshooting Design Challenges

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- Troubleshooting and addressing complex design challenges.
- Analyzing structural integrity and operational issues.
- Utilizing problem-solving techniques for resolution.
- Resolving common design errors.
- Best practices for troubleshooting.

Module 8: Regulatory Compliance and Safety

- Implementing regulatory compliance and safety standards.
- Utilizing DNVGL and other industry codes.
- Implementing risk assessment and safety management systems.
- Designing and building compliance programs.
- Best practices for compliance.

Module 9: Integration with Subsea Systems

- Integrating pipeline design with subsea production systems.
- Utilizing subsea tie-ins and manifold design.
- Implementing flow assurance and thermal management.
- Designing and building integrated subsea systems.
- Best practices for integration.

Module 10: Large-Scale Pipeline Projects

- Understanding how to manage large-scale offshore pipeline projects.
- Utilizing project management tools and techniques.
- Implementing program evaluation and reporting.
- Designing scalable pipeline solutions.
- Best practices for project management.

Module 11: Emerging Pipeline Technologies

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- Exploring emerging technologies in pipeline design (deepwater robotics, advanced materials).
- Utilizing deepwater robotics for inspection and repair.
- Implementing advanced materials for corrosion resistance.
- Designing and building advanced pipeline systems.
- Optimizing advanced applications for specific use cases.
- Best practices for advanced applications.

Module 12: Real-World Pipeline Design Use Cases

- Applying real world use cases for advanced pipeline design in various offshore scenarios.
- Utilizing pipeline design in deepwater developments.
- Implementing pipeline design for subsea tie-backs.
- Utilizing pipeline design for LNG transportation.
- Implementing pipeline design for ultra-deepwater projects.
- Best practices for real-world applications.

Module 13: Pipeline Design Tools Implementation

- Leveraging advanced pipeline design tools and frameworks for efficient execution.
- Utilizing finite element analysis (FEA) software.
- Implementing computational fluid dynamics (CFD) software.
- Designing and building automated design workflows.
- Best practices for tool implementation.

Module 14: Monitoring and Metrics

- Implementing pipeline design project monitoring and metrics.
- Utilizing structural integrity and performance indicators.
- Designing and building monitoring systems for pipeline projects.
- Optimizing monitoring for real-time insights.
- Best practices for monitoring.

Module 15: Future Trends in Pipeline Design

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- Emerging trends in pipeline design technologies and applications.
- Utilizing digital twins for pipeline simulation.
- Implementing autonomous inspection and repair systems.
- Best practices for future pipeline development.