TECHNICAL EDUCATION ACADEMY

School of Engineering

COURSE PROGRAMME

000475

MECH066 - Pipeline Defect Assessment and Repair

In today's rapidly evolving energy landscape, maintaining the integrity and performance of aging oil and gas pipeline infrastructure is of paramount importance.



Learn from the Best in the Business!

Course overview

Intermediate level

Why take this course

In today's rapidly evolving energy landscape, maintaining the integrity and performance of aging oil and gas pipeline infrastructure is of paramount importance. As pipelines approach or exceed their design life, operators must proactively assess and address defects to ensure the safe and reliable transportation of energy resources. The Pipeline Defect Assessment and Repair Training Programme aims to equip industry professionals with the knowledge and skills necessary to tackle these challenges effectively.

The training programme spans five days, comprising a series of modules that provide comprehensive coverage of the various aspects of pipeline defect assessment and repair. Starting with a solid foundation in pipeline infrastructure fundamentals and common types of defects, participants will gain an understanding of the causes of pipeline failure and the need for effective defect assessment and repair techniques.

The course progresses to explore advanced assessment methods for different types of defects, including corrosion, gouges, dents, cracks, and weld defects. Participants will learn how to use cutting-edge tools and techniques, such as ultrasonic testing, radiographic testing, magnetic flux leakage, eddy current inspection, acoustic emission testing, and phased array ultrasonic testing, to accurately assess the severity and impact of defects on pipeline integrity.

In addition to defect assessment, the training programme delves into various pipeline repair methods, including composite wrap repairs, welded sleeve repairs, and mechanical clamp repairs. Participants will learn how to select and implement the most appropriate repair strategy based on the specific characteristics of a defect and the overall pipeline system.

The course also emphasizes the importance of fitness-for-purpose analysis and risk-based inspection methodologies in maintaining pipeline integrity. Through real-world case studies and interactive workshops, participants will gain hands-on experience in evaluating the significance of defects, developing life extension strategies, and optimizing maintenance and repair activities to ensure the continued safe operation of aging pipeline infrastructure.

Finally, the training programme wraps up with a focus on effective communication and decision-making skills. Participants will learn how to convey their findings and recommendations to colleagues, stakeholders, and regulators, ensuring a well-informed and collaborative approach to pipeline integrity management.

In summary, the Pipeline Defect Assessment and Repair Training Programme offers a comprehensive and practical learning experience for industry professionals. By mastering the latest techniques in defect assessment and repair, participants will be well-equipped to address the challenges of aging pipeline infrastructure and ensure the safe, reliable, and cost-effective operation of their assets.

Course overview — continued

Who it is for and how it helps

The following professionals should consider attending this Pipeline Defect Assessment and Repair Training Programme:

• Pipeline Engineers: Professionals responsible for the design, construction, and maintenance of pipeline systems, who want to improve their knowledge of defect assessment and repair methods.

• Pipeline Integrity Engineers and Managers: Professionals responsible for ensuring the safe and reliable operation of pipelines, who need to understand the latest techniques in detecting and managing defects.

• Inspection and Maintenance Technicians: Field personnel involved in the inspection and maintenance of pipelines, who need to be familiar with modern assessment and repair techniques to make informed decisions.

• Asset Managers: Professionals responsible for managing pipeline assets and making strategic decisions about their maintenance and repair, who need to understand the implications of defects on pipeline integrity.

• Regulatory and Compliance Officers: Professionals who oversee pipeline safety and ensure compliance with industry standards and regulations, who need to stay updated on the latest defect assessment and repair methods.

• Project Managers: Professionals overseeing pipeline projects, who need to understand the challenges posed by aging infrastructure and how to effectively address them.

• Quality Assurance and Quality Control Professionals: Individuals responsible for ensuring the quality of pipeline construction, maintenance, and repair work, who need to understand the latest defect assessment and repair techniques.

• Environmental and Safety Professionals: Individuals responsible for ensuring the environmental and safety aspects of pipeline operations, who need to be aware of the risks posed by pipeline defects and the methods for mitigating them.

What you will learn

- Understand the fundamentals of pipeline infrastructure, common causes of pipeline failure, and various types of pipeline defects
- Apply the latest techniques and methods for assessing and analyzing pipeline defects, such as internal and external corrosion, gouges, dents, cracks, and weld defects
- Evaluate the significance of identified defects in the context of pipeline integrity and performance using fitness-for-purpose analysis and risk-based inspection methodologies
- Develop appropriate strategies for pipeline repair and maintenance, taking into account factors such as defect type, severity, and location
- Implement various pipeline repair techniques, including composite wrap repairs, welded sleeve repairs, and mechanical clamp repairs, based on the specific requirements of a given defect or

Course overview — continued

pipeline system
- Carry out fatigue assessment and life extension analyses to ensure the continued safe operation of aging pipeline infrastructure
- Apply the knowledge gained through real-world case studies and interactive workshops to assess and address pipeline defects effectively in their own work environments
- Make informed decisions about pipeline integrity management and maintenance, considering both technical and economic aspects, to optimize the performance and longevity of pipeline assets
- Stay updated on industry best practices, regulations, and emerging technologies in the field of pipeline defect assessment and repair
- Communicate effectively with colleagues, stakeholders, and regulators about pipeline defect assessment findings, repair strategies, and risk mitigation measures

Curriculum

Modules 01–07

01 Introduction to Pipeline Infrastructure and Defects

- Pipeline basics and overview
- Common causes of pipeline failure
- Types of pipeline defects
- Overview of defect assessment and repair methods

02 Corrosion Defect Assessment

- Introduction to corrosion defects
- Assessing internal and external corrosion
- Visual inspection, ultrasonic testing, and radiographic testing techniques

03 Mechanical Damage Assessment

- Assessing gouges and dents
- Magnetic flux leakage and eddy current inspection techniques

04 Cracks and Weld Defect Assessment

- Introduction to cracks and weld defects
- Acoustic emission testing and phased array ultrasonic testing techniques

05 Pipeline Repair Techniques

- Overview of pipeline repair methods
- Composite wrap repairs, welded sleeve repairs, and mechanical clamp repairs

06 Fitness for Purpose and Risk Analysis

- Fitness-for-purpose analysis
- Risk-based inspection and integrity management
- Fatigue assessment and life extension strategies

07 Real-World Case Studies and Applications

- Case studies: real-world defect assessment and repair scenarios

Curriculum

Modules 07–08 · Module 07 — continued

- Worked examples: calculating defect significance and setting inspection levels

08 Interactive Workshops and Assessment

- Hands-on workshops for defect assessment and repair techniques
- Application of knowledge to real-life situations
- Course assessment and certification

Joining the programme

Contact the Academy and quote course code 000475 to confirm dates, delivery format, prices and enrolment terms.

Training for your team

Tell us your business goals, the roles and number of participants, and your preferred dates and location. This will help us discuss the right training option.

Preparing for the programme

The published programme does not specify any prerequisites. Contact us before enrolling to confirm how to prepare.

Discuss your training needs

mail@tecedu.org
www.tecedu.academy

Learn from the Best in the Business!