



HARNESS THE POWER
OF KNOWLEDGE

Horizontal Directional Drilling (HDD)

TRAIN



Course Overview:

Horizontal Directional Drilling (HDD) is a sophisticated drilling technique that allows for the construction of pipelines and other subsurface infrastructure in unconventional geometries, avoiding obstacles and traversing challenging terrain

This comprehensive 5-day professional training course will provide a thorough understanding of HDD principles, equipment, techniques, and best practices to successfully plan, execute, and monitor HDD projects

Course Objectives:

By the end of this course, participants will be able to:

1

Grasp the fundamental principles of HDD and its applications in oil and gas, utility, and infrastructure projects

2

Identify the key components of HDD equipment and their functions, including drilling rigs, directional drilling tools, and navigation systems

3

Understand the principles of subsurface navigation and borehole steering in HDD operations

4

Discuss the procedures for planning HDD projects, including route selection, wellbore geometry design, and risk assessment

5

Apply HDD techniques to effectively drill horizontal wells, construct pipelines, and install subsurface infrastructure

Course Agenda:

Day 1: Introduction to Horizontal Directional Drilling

- Delve into the significance of HDD in subsurface construction and its impact on project feasibility, environmental considerations, and cost-effectiveness
- Explore the history of HDD technology and the evolution of HDD equipment and techniques
- Discuss the regulatory framework and safety standards governing HDD operations and environmental protection
- Analyze the applications of HDD in various sectors, including oil and gas, utilities, and infrastructure projects

Day 2: HDD Equipment and Navigation Systems

- Understand the fundamental principles of HDD equipment and its components
- Identify the major components of a HDD drilling rig, including rotary drilling systems, mud circulation systems, and power units
- Discuss the functions and operation of directional drilling tools, such as bent subs, steerable tools, and mud motors
- Explore the principles and operation of different HDD navigation systems, including gyroscopic systems, magnetic guidance systems, and wireline systems

Day 3: Subsurface Navigation and Borehole Steering

- Delve into the principles of subsurface navigation in HDD operations, including subsurface mapping, borehole trajectory planning, and real-time monitoring
- Discuss the techniques for borehole steering, including tool articulation, inclination control, and azimuth correction
- Analyze the factors influencing borehole steering accuracy, such as formation characteristics, tool performance, and drilling parameters
- Explore the use of advanced navigation technologies, such as 3D modeling and geosteering software

Day 4: HDD Project Planning and Execution

- Understand the principles and procedures for planning HDD projects, including route selection, wellbore geometry design, and risk assessment
- Discuss the factors influencing HDD project planning, such as subsurface conditions, environmental considerations, and regulatory requirements
- Analyze the techniques for HDD execution, including drilling operations, mud circulation management, and borehole stabilization
- Explore the use of HDD project management software and risk mitigation strategies

Day 5: HDD Monitoring, Challenges, and Best Practices

- Discuss the methods and technologies for monitoring HDD operations, including real-time data acquisition, borehole surveys, and wellbore integrity assessment
- Analyze the challenges associated with HDD operations, such as formation instability, tool malfunctions, and environmental constraints
- Explore best practices for HDD operations, including safety procedures, environmental management, and quality assurance
- Discuss case studies of successful HDD projects and identify key lessons learned for future planning and execution

Who Should Attend:

- Petroleum engineers, drilling engineers, and completions engineers involved in HDD project planning, design, and execution
- Pipeline engineers and utility engineers responsible for subsurface infrastructure construction and maintenance
- HDD project managers and supervisors overseeing HDD operations, safety, and environmental compliance
- HDD contractors, service company personnel, and technicians engaged in HDD equipment operation and maintenance
- Students and individuals interested in pursuing a career in HDD, pipeline engineering, or subsurface construction

Course Benefits:

- Develop a comprehensive understanding of HDD principles, equipment, techniques, and best practices
- Gain hands-on experience in HDD project planning, subsurface navigation, and borehole steering concepts
- Enhance your ability to design and execute HDD projects, address operational challenges, and ensure project success
- Stay updated on the latest advancements in HDD technologies, navigation systems, and industry standards
- Network with other professionals from diverse backgrounds within the oil and gas, utility, and infrastructure industries