



Future-Oriented Training and Consulting

EXECUTIVE DEVELOPMENT PROGRAM

Pipeline Design Using BIM

with Safety & Integrity Management

Building practical BIM competency for pipeline design with embedded safety and integrity management.

Proven Pipeline Design Frameworks Structured frameworks for pipeline design and integrity management.	Executive Case Studies Real-world examples of pipeline design and integrity management.
Hands-On Software Exposure Direct exposure to pipeline design and integrity-monitoring software.	Long-Term Structural Integrity Builds the skills to design pipelines that meet safety and integrity requirements.

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Program Overview

This program builds practical BIM competency for pipeline design while integrating safety and integrity management principles.

Through case studies, executive discussions, simulations, and hands-on exposure to pipeline design and integrity-monitoring software, participants will develop the skills to design pipelines that meet safety and long-term structural integrity requirements.

Program Objectives

- **Understand Pipeline Design Fundamentals:** Grasp core principles of pipeline routing and design.
- **Model Pipelines in BIM:** Build accurate BIM models of pipeline systems.
- **Apply Pipeline Design Software:** Use software to model and verify pipeline designs.
- **Embed Safety and Integrity Principles:** Apply safety and integrity management within the design process.
- **Coordinate Pipeline Models Across Disciplines:** Federate models with civil, process, and structural disciplines.
- **Deliver Safety-Compliant Pipeline Designs:** Build the coordination skills to deliver compliant designs on real projects.

Target Audience

This program is designed for professionals designing and managing pipeline systems, including:

- **Pipeline Engineers** designing pipeline routing and systems.
- **BIM Coordinators & Modelers** managing pipeline models and coordination.
- **Process & Facility Engineers** coordinating pipeline models with facility design.
- **Integrity & Reliability Engineers** managing long-term pipeline integrity.
- **HSE & Safety Engineers** validating safety within pipeline designs.
- **Consultants & BIM Advisors** guiding clients on pipeline BIM adoption.
- **Entry-Level Engineers & Technicians** building foundational pipeline design skills.

Program Impact

Participants will complete this program with practical pipeline design and integrity management skills. Graduates will return to their organizations ready to design pipelines that meet safety and long-term structural integrity requirements.

Program Outline

MODULE 1: Foundations of Pipeline Design

- Pipeline types, routing, and design principles
- Loads and environmental conditions affecting pipelines
- Overview of applicable pipeline design and safety codes
- Key terminology and modeling conventions
- Assessing project requirements and constraints

MODULE 2: BIM Modeling of Pipeline Systems

- Modeling pipeline routing, supports, and connections
- Managing complex geometry and clearances
- Attaching data and parameters to model objects
- Hands-on exposure to pipeline design software
- Maintaining model accuracy and consistency

MODULE 3: Pipeline Stress and Route Analysis

- Analyzing stress and flexibility in pipeline routing
- Evaluating support spacing and thermal effects
- Hands-on exposure to stress analysis software
- Interpreting analysis results for design decisions

MODULE 4: Embedding Safety and Integrity Management

- Applying safety and integrity management principles
- Assessing corrosion, fatigue, and failure risks
- Documenting integrity evidence within the model
- Identifying and resolving integrity-related design gaps
- Hands-on exposure to integrity-monitoring software

MODULE 5: Multi-Disciplinary Coordination

- Federating pipeline models with other disciplines
- Running clash detection and resolving conflicts
- Coordinating design changes across teams
- Using coordination and review tools

MODULE 6: Integrity Monitoring in Practice

- Modeling monitoring points and inspection data
- Running and interpreting monitoring data
- Generating design documentation from software
- Verifying software output against hand calculations
- Avoiding common software modeling errors

MODULE 7: Quality Assurance and Compliance Validation

- Reviewing designs for code and safety compliance
- Coordinating design checks and peer review
- Managing revisions and design changes
- Reporting validation results to stakeholders

MODULE 8: Construction and Commissioning Coordination

- Coordinating design intent with construction teams
- Managing risk from field deviations and errors
- Inspecting installation and commissioning against models

MODULE 9: Delivering Safety-Compliant Pipeline Designs

- Leading design teams through compliant design delivery
- Managing constructability and integrity trade-offs
- Communicating validation results effectively
- Building a culture of quality and precision

MODULE 10: Sustaining Integrity Management and Future Readiness

- Embedding integrity management into long-term operations
- Anticipating emerging materials and monitoring methods
- Sustaining momentum beyond the program