
PIPELINE SYSTEMS - DESIGN, CONSTRUCTION, MAINTENANCE AND ASSET MANAGEMENT



WHAT YOU WILL LEARN:

- Pipeline design standards
- Design and construction considerations
- Prediction, detection and treatment of corrosion
- Environmental and legal requirements
- How to meet and exceed key safety issues
- Optimum risk and financial considerations

WHO SHOULD ATTEND:

Anyone who deals with design, construction and maintenance of pipelines including:

- Mechanical and Maintenance Engineers
- Electrical Engineers
- Pipeline Engineers and Contractors
- Utility Advisors and Planners
- Council and Regional Planners
- Operations and Maintenance Managers
- Technical and Project Managers
- Contract and Asset Managers

The Workshop

This two-day workshop covers the practical aspects of pipeline design, integrity, maintenance and repair. Applicable codes and standards will be examined, as will the issues of mechanical and hydraulic design and construction practices. The optimum routing and layout techniques will also be assessed. You will learn to recognise causes of degradation in-service, whether mechanically induced (pressure, fatigue, pressure transients and external damage) or due to corrosion for example, wall thinning, pitting and cracking.

The focus of this workshop is mainly in a land based environment and will teach you to use key performance indicators to measure the performance of your pipeline system. It concentrates on the consideration of internal, external and pipeline corrosion and assess the various inspection and repair techniques.

You will gain valuable knowledge in the implementation of integrity management programs, periodic inspections and evaluation of results, as well as evaluation of maintenance issues and asset management. Extensive use will be made of case studies and practical exercises to ensure the material is covered as thoroughly as possible.

Practical Sessions

This is a practical, hands on workshop enabling you to work through practical exercises which reinforce the concepts discussed.

To gain full value from this workshop, please bring your laptop/notebook computer.

The Program

PIPELINE DESIGN STANDARDS

- Standards development
- International and local codes applicable to pipelines
- Changes to the regulations
- Steps in pipeline design
- Different materials transmitted: gas, steam and water

ROUTING TECHNIQUES AND ENVIRONMENTAL CONSIDERATIONS

- Investigation of pipeline routing techniques
- Environmental issues to consider during planning

SAFETY AND RISK

- Hazard identification processes
- Consequence and probability analysis
- Risk management techniques

Practical Exercise

PIPELINE DESIGN CONSIDERATIONS

- Compressible and non-compressible flow
- Discussion of steady state and transient analysis
- Examination of pumps and compressors
- Discussion of optimal pipe size vs. location of pump/compressor stations
- Discussion of optimal pipeline construction material

Practical Exercise

CORROSION, ASSESSMENT AND REPAIRS

- Introduction to practical corrosion
- Classification of corrosion mechanisms
- Internal corrosion
- Predictions of corrosion rates
- Chemical treatments, inhibitors and biocides
- External corrosion
- Coating applications
- Cathodic protection, design, operation and maintenance
- CP evaluation

Practical Exercise

PIPELINE CORROSION

- CO₂/sweet
- Local and generalised corrosion
- Soils and microbiologically induced corrosion

Practical Exercise

CONSTRUCTION PROCESS

- Sequential spread
- Efficient construction
- Hot-tap process
- Hydrotesting

Practical Case Study

STRATEGY, RISK AND FINANCIAL CONSIDERATIONS

- Strategies for on-time delivery of cost-effective projects
- Strategic approach to pipeline construction and management
- Life cycle costing
- Financial analysis techniques

Practical Exercises

FITNESS-FOR-PURPOSE ANALYSIS

- Pipelines Damage: corrosion, mechanical, weld defects and ground movement
- Assessment techniques

Practical Exercise

MAINTENANCE PLANNING PROCESS AND ANALYSIS ISSUES

- Pipeline management and maintenance strategies
- Link between task importance and asset criticality
- Maintenance benchmarking techniques

Practical Exercise

ASSET MANAGEMENT

- Basic, intermediate and advanced asset management plans
- Staging the development of plan improvements
- Link between service delivery strategy and financial considerations

Practical Exercise

KEY PERFORMANCE INDICATORS: MONITORING AND EVALUATION

- Selection of KPIs to measure asset performance
- Selection of KPIs for your infrastructure business
- KPIs – how to use them to identify weaknesses

Practical Exercise – Translating KPI results into action

SUMMARY, OPEN FORUM AND CLOSING

