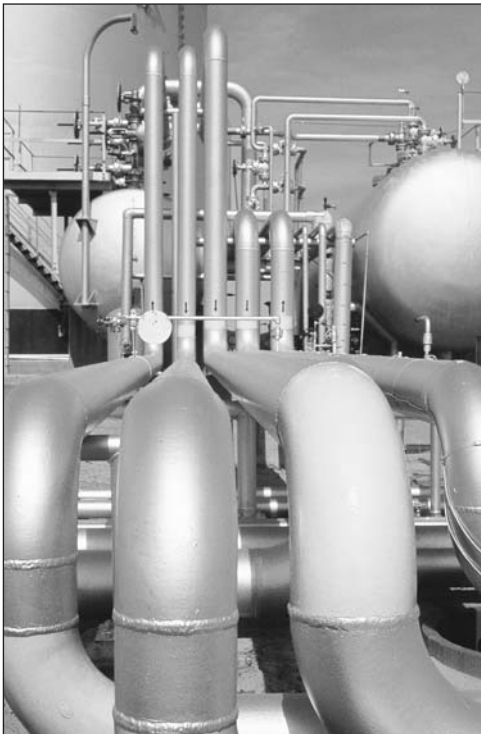


PIPELINE SYSTEMS - DESIGN, CONSTRUCTION, MAINTENANCE AND ASSET MANAGEMENT



YOU WILL LEARN HOW TO:

- The 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 in the course of their work, including:

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



THE WORKSHOP

You will learn about the practical aspects of pipeline design, integrity, maintenance and repair mainly in a land based environment. You will gain an in-depth understanding of the applicable codes and standards and the issues of mechanical and hydraulic design and construction practices. The optimum routing and layout techniques will also be assessed.

You will be able to recognise causes of degradation in-service, whether mechanically induced (pressure, fatigue, pressure transients, external damage or due to corrosion such as from wall thinning, pitting and cracking). The focus of this workshop will be on consideration of internal, external and pipeline corrosion.

The workshop will assess the various inspection and repair techniques from the most common to the most recent and the implementation of integrity management programs, periodic inspections and evaluation of results.

The workshop will conclude with an evaluation of maintenance issues and asset management. The use of Key performance indicators will be derived to measure the performance of your valuable asset - the pipeline.

Extensive use will be made of case studies and practical exercises to ensure the material is covered as thoroughly as possible.

PRACTICAL SESSIONS

Workshop includes practical exercises and case studies.

ON-SITE TRAINING

- ✓ **SAVE** over 50% by having an IDC workshop presented at your premises.
- ✓ Customise the training to **YOUR** workplace.
- ✓ Have the training delivered when and where you need it.

Contact us for a **FREE** proposal.

THE PROGRAM

DAY ONE

INTRODUCTION

- Overview of the course

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
- Discussion of design considerations with respect to the environment

SAFETY AND RISK

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

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

PIPELINE CORROSION

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

Practical Exercise

DAY TWO

CONSTRUCTION PROCESS

- Examination of sequential spread
- Advice on making construction more efficient
- Examination of the hot-tap process
- Discussion of hydrotesting

Practical Case Study

STRATEGY, RISK AND FINANCIAL CONSIDERATIONS

- Strategies for on-time delivery of cost-effective projects
- Examination of the strategic approach to pipeline construction and management
- Discussion of life cycle costing
- Examination of financial analysis techniques

Practical Exercises

FITNESS-FOR-PURPOSE ANALYSIS

- Examination of the principal kinds of damage that affects pipelines in service: corrosion, mechanical damage, weld defects and ground movement
- Examination of assessment techniques with respect to these kinds of damage

MAINTENANCE PLANNING PROCESS AND ANALYSIS ISSUES

- Strategies for pipeline management and maintenance
- Examination of the link between task importance and asset criticality
- Presentation of maintenance benchmarking techniques

ASSET MANAGEMENT

- Presentation of basic, intermediate and advanced asset management plans
- Staging the development of plan improvements
- Examination of the link between service delivery strategy and financial considerations

KEY PERFORMANCE INDICATORS: MONITORING AND EVALUATION

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

Practical Exercise - Translating KPI results into action