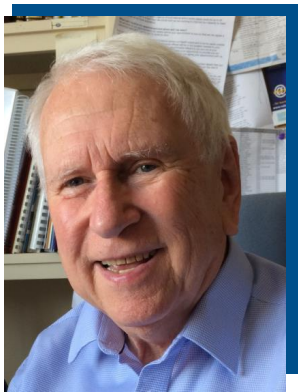
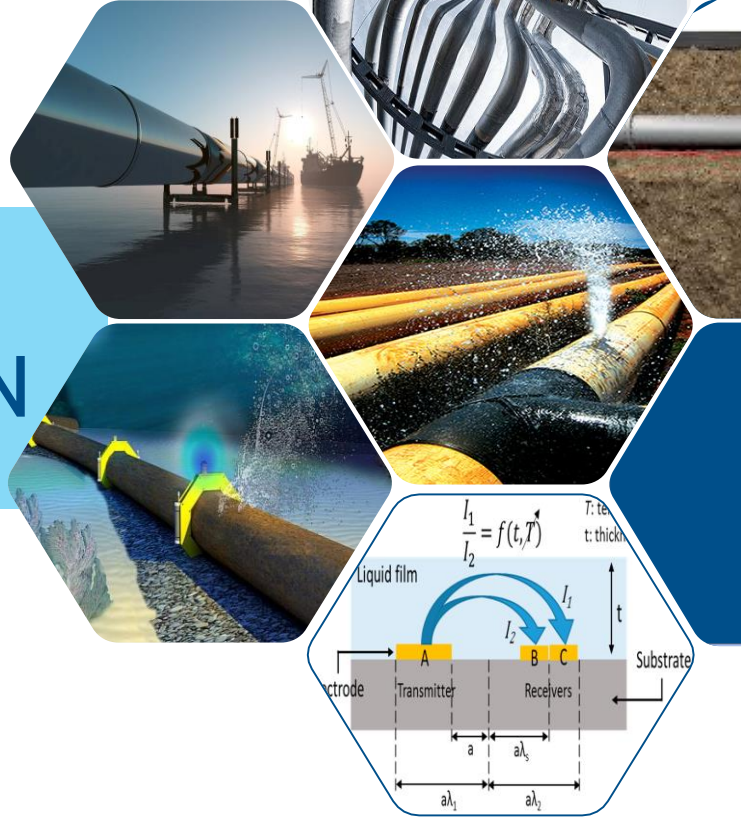


MODERN PIPELINE LEAKAGE DETECTION

A Virtual Instructor Led Training Programme



Principal Course Leader Mr. Mick Crabtree, MSc

- More than 50 years' experience in the field of instrumentation and control systems
- Author of eight internationally published books covering the whole spectrum of instrumentation
- His books have been referenced by nearly 2½ thousand researchers internationally
- International trainer— attended by over 5000 engineers and technologists



Virtual, live



30th October-8th November, 2021



Early Bird Registration: 15th October, 2021

International Organizer



MODERN PIPELINE LEAKAGE DETECTION

“Modern Pipeline Leakage Detection Course” has been designed to improve the scientific and professional level of engineers knowledge. This course will be held for two hours per day over 8 successive days starting on Saturday 30th October 2021 from 11:00 AM to 1:00 PM – Tehran time.

Course Objectives

Although pipelines used for the transportation of hydrocarbon fluids are designed to ensure safe and reliable distribution, leaks in pipeline networks are a major source of innumerable losses and environmental disasters. Incidents of pipeline failure can result in serious ecological disasters, human casualties and financial loss. In order to avoid such menace and maintain safe and reliable pipeline infrastructure, substantial research efforts have been devoted to implementing pipeline leak detection and localisation using different approaches. This course discusses pipeline leakage detection technologies and summarises the state-of-the-art achievements. Different leakage detection and localisation in pipeline systems are reviewed and their strengths and weaknesses are highlighted. Comparative performance analysis is performed to provide a guide in determining which leak detection method is appropriate for particular operating settings.

What You Will Learn

This course highlights alternative solutions to many problems:

- Identify the fundamental problems related to the impact of oil spillage on society.
- Compare the essential differences between exterior, visual, and computational based methods.
- Evaluate the advantages and disadvantages of each of the different methods and compare their strengths and weaknesses.
- Explore the use of infrared thermography in detecting gas leakages.
- Describe the use of autonomous underwater vehicles in subsea monitoring.
- Explain the potential shortcomings of modern computational methods and how these are gradually being overcome.

Who Should Attend

This training course is suitable to a wide range of professionals but will greatly benefit:

- Chemical Engineers
- Consulting Engineers
- Design Engineers
- Electrical Engineers
- Electricians
- Installation and Maintenance Technicians
- Instrument and Process Control Engineers
- Instrument Fitters Maintenance Engineers
- Mechanical Engineers and Technicians
- Operations Engineers
- Process Engineers
- Process Operators
- Production Managers



COURSE OUTLINE

Introduction

- Need to monitor
- Overview of detection methods

Exterior-based leak detection

- Acoustic Emission Sensors
- Accelerometers
- Fibre Optics
- Vapour Sampling
- Infrared Thermography
- Ground penetration radar
- Fluorescence
- Capacitive sensing
- Impedance-based

Visual/ Biological leak detection

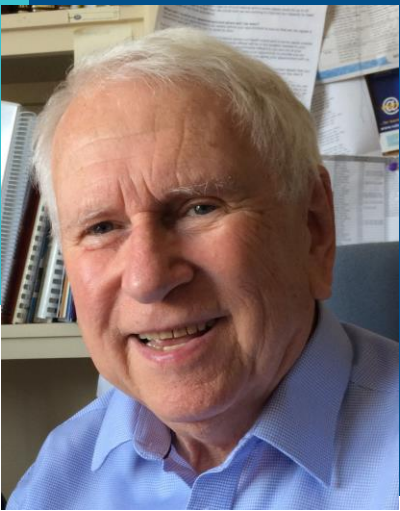
- Smart pigging
- ROVs and drones
- Trained dogs/human
- Visual-based monitoring

Interior/Computational Methods

- Mass-Volume Balance
- Negative Pressure Wave
- Pressure Point Analysis
- Digital Signal Processing
- Dynamic Modelling
- State Estimators/Observers Method

Technology performance and selection

MODERN PIPELINE LEAKAGE DETECTION



Principal Course Leader Mick Crabtree, MSc

Formerly trained in aircraft instrumentation and guided missiles in the Royal Air Force, Michael 'Mick' Crabtree completed his service career seconded to the Ministry of Defence. Moving to South Africa in 1966, he worked for many years for a local manufacturing and systems integration company, involved in industrial process control, SCADA and PLC-based systems. Later, as editor and managing editor of 'Pulse', a leading monthly engineering journal he developed his writing and authoring skills.

Mick Crabtree has spent the last 16 years running industrial workshops throughout the world and, as an instructor and consultant, he has trained over 5,000 engineers, technicians scientists in the fields of: Process Control and Instrumentation; PLC and SCADA systems; Data Communications; Fieldbus; Emergency Shut-down Systems; Project Management; On-Line Analysis; Valve Technology; and Technical Writing and Communications.

SKILL SETS

His skill sets include:

- Technical and non-technical authoring
- Course development
- Face-to-face training facilitation
- One-on-one mentoring
- Development of mentoring programs
- Distance and e-learning

PUBLISHED WORK

Apart from writing and publishing hundreds of articles, Mick has also authored the following technical resource books:

- 'Flow Measurement'
- 'Temperature Measurement'
- 'Analytical On-line Measurement'
- 'Pressure and Level Measurement'
- 'Valve technology'
- 'Industrial Communications'
- 'The Complete Profibus Handbook'
- 'Smart grid communication systems'

FORMAL EDUCATION

Completing his studies in Electrical, Electronic and Instrumentation engineering he holds an MSc in Industrial Flow Measurement from Huddersfield University.

TRAINING PROGRAMS

Mick Crabtree has developed a complete training program: the 'A to Z of Instrumentation and Control' – a macro-level competency development training program comprising a series of modular-based workshops that take an in-depth look at the multifaceted field of instrumentation and control. Using a building block approach, each program is a complete stand-alone module that may be attended individually. Alternatively, the modules may be attended back-to-back to provide an on-going and continuous training environment.