



Technical University
of Leoben

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DEPARTMENT
GEO ENERGY

Pipeline Engineering Programme

Module MC07: Energy Pipeline Systems



Key Facts

- ✓ **Duration:** 2 weeks
- ✓ **Format:** In-person & online (Leoben, Austria)
- ✓ **Language:** English
- ✓ **Certificate:** Micro-Credential (ECTS transferable)
- ✓ **Prerequisites:** Technical background in fluid mechanics, basics of pipeline engineering, or design fundamentals recommended; none required

Key Learning Outcomes

1. Describe core design, operation and safety aspects of oil and gas pipelines and storage.
2. Understand key challenges in hydrogen transport and storage.
3. Analyse offshore pipeline routing, installation and integrity.
4. Compare major energy pipeline systems and regulations.
5. Assess impacts of new technologies and the energy transition.
6. Integrate concepts across oil, gas, hydrogen and offshore systems.
7. Interpret case studies for practical insights.

Module Overview

This module provides an overview of energy pipeline systems for transporting and storing crude oil, natural gas and hydrogen. It covers the design, operation and safety aspects of oil and gas pipelines and storage facilities, and introduces the specific challenges of hydrogen transport, including materials and safety requirements. Offshore pipeline systems are also addressed, with emphasis on subsea routing, installation and environmental conditions. The module offers a broad understanding of the energy transport systems that underpin global infrastructure.

Course Outline

1. **Crude Oil and Gas Pipelines:** Key transport systems, design basics, pumping and compression, pigging, leak detection, storage facilities and essential HSE practices.
2. **Hydrogen Pipelines and Storage:** Hydrogen properties, material challenges, storage options, regulatory requirements and gas pipeline repurposing.
3. **System Definition and Design Criteria:** subsea design, routing and surveys, installation methods, structural integrity, inspection and regulatory considerations.
4. **System Comparison and Integration:** Economic roles, strategic value and case study insights.

Instructors



Tim Callan
Managing Director
PipeSystemConsult GmbH

With 40 years of global engineering and project experience, Tim Callan has supported major industrial, energy and pipeline projects worldwide. Since 2008, he has delivered specialised HAZID, HAZOP, SIL, LOPA and QRA services for more than 200 projects and 70 clients.



Dario Ercolani
Project Director in Industrial
Plant Department, ILF Group

Dario Ercolani is a mechanical engineer with over 40 years of pipeline experience. He has worked on major onshore and offshore projects in Europe, Asia, the Middle East and Africa. As a certified Project Management Professional (PMP), he combines technical pipeline expertise with strong project management skills.