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MARE

UNIVERSITI TEKNOLOGI PETRONAS

COURSE PRESENTATION

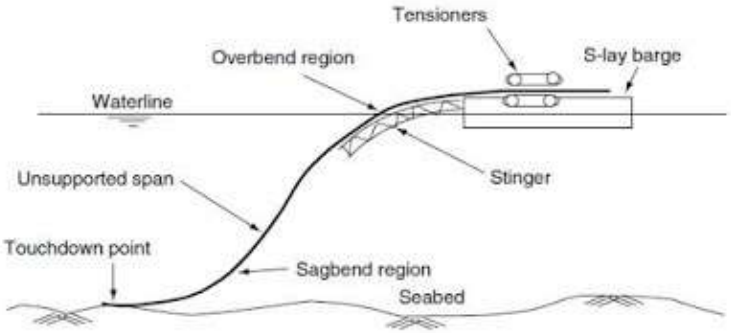
Pipeline and Risers

VEB4133

Pipeline and Risers

This course teaches students the fundamental concept of pipeline and riser designs. The scope of the course is further elaborated into the knowledge of pipeline route selection and installation methods. New pipeline innovation and technology is introduced to suit the needs for the Fourth Industrial Revolution. The course is aimed to expose students:

1. To design offshore pipelines and risers.
2. Evaluate proper route selection for the pipelines.
3. Evaluate suitable pipeline installation methods.



Pipeline and Risers – Topics Covered

Topic 1
Introduction to Subsea Field Components
- Risers
- Tie-in spools/Jumpers
- Flowlines/Pipelines
- Subsea structures (SSIVs, Manifolds etc.)
- Xmas Trees
- Umbilicals
- Deepwater Manifold and Templates
- PLETS

Topic 2
Carbon Manganese Steel Pipeline
- Production
- Construction: ERW welding, UOE/SAW welding, helical/spiral welding, seamless

Topic 3
Pipeline Route Selection
- Field layout and pipeline route selection
- Example on case studies
- Introduction to subsea tie-ins, pipeline and cable crossings
- Pipeline protection from fishing gear, shore approaches
- Pipeline trenching.

Topic 4
Pipeline Installation Method
- S-lay method
- J-lay method
- Tow-in methods:
  surface tow method, bottom tow method, off-bottom and mid depth tow method
- Reel lay method
- Example on case studies

Topic 5
Pipeline Design
- Diameter and wall thickness design
- Hydrodynamic stability
- Pipeline span
- Operating stresses
- External corrosion protection, cathodic protection (CP) design
- Local (upheaval and lateral) buckling
- Global buckling

Topic 6
Pipeline Innovation and Technology
- Composite pipelines design and testing
- Smart pipelines

Topic 7
Risers
- Pipeline riser design
- Introduction to flexible pipelines

Pipeline and Risers

By the end of the course, successful students will be able to:

1. Evaluate proper route selection and installation methods for offshore pipelines.
2. Calculate the conceptual design considerations of offshore pipelines.
3. Explain design concepts of riser and flexible pipelines.