



PETROVIETNAM  
**PVU**

TRAINING COURSE ON

# PIPELINE CORROSION PROTECTION

**PETROVIETNAM UNIVERSITY - PVU**

**ADVANCED TRAINING CENTER - ATC**

**Ba Ria Vung Tau Province**

762 Cach Mang Thang Tam Street,  
Long Toan Ward, Ba Ria City

**Ho Chi Minh City**

Lot E2b-5, Saigon Hi-Tech Park,  
Tan Phu Ward, Dist.9

**Ha Noi**

VPI Tower, 167 Trung Kinh,  
Yen Hoa, Cau Giay



## TRAINING COURSE PIPELINE CORROSION PROTECTION

### ABOUT THE COURSE

The course introduces the basic knowledge of materials corrosion and corrosion control solutions in oil and gas industry, focus on analyzing the root causes of material corrosion in difference environment, monitoring methods and prevention solutions of the internal and external corrosion.

The course includes practical examples occurring in Refinery plant, discussion and advice on the application of solutions to prevent corrosion by cathodic protection and coating, which are suitable with the actual operating situation of company provided by participants.

### CONTENT

#### Part 1: The basics of metal corrosion

- Fundamental of metal corrosion theory
- Causes of metal corrosion – Corrosion mechanism
- Factors affecting metal corrosion process
- Some experimental examples of metal corrosion

#### Part 2: Corrosion in Oil and Gas Pipeline

- Corrosion in Upstream Production Operations
  - + Cause of Corrosion in Upstream Environments ( $O_2$ ,  $CO_2$ ,  $H_2S$  and sulfur compounds, strong acid, concentrated brine...)
  - + Corrosion type in Petroleum Production Operations
- Corrosion in Midstream Sector:
  - + Internal corrosion in carbon steel pipeline system (oil/ gas/ water pipelines)
  - + External corrosion in marine atmosphere; marine environment and Corrosion in soil
- Corrosion in Downstream Sector
- Form of Corrosion (Uniform Corrosion, Galvanic Corrosion, Crevice Corrosion, Pitting Corrosion, Intergranular Corrosion, Erosion – Corrosion, Stress Corrosion Cracking, Under-Deposit Corrosion, Acid Corrosion, Microbiologically Influenced Corrosion...)
- Factor influence Oilfield Corrosion:
  - + Free water/ oil/ gas composition
  - + Operating Condition Effect (Temperature, Pressure, Velocity...)

#### Part 3: The method of protection against pipeline corrosion

- Materials selection (for oil, gaslift, water injection pipelines and pipe drilling NKT; applicable standards are applied in the oil and gas industry)
- Environment Control (Oxygen, free-water,  $CO_2$ ,  $H_2S$ ...)



- Proper design
- Chemical treatment (Corrosion Inhibitors)
- Protection of metal by coatings (organic, inorganic and metal coatings...)
- Cathodic Protection (Sacrificial Anode Cathodic Protection (SACP), Impressed Current Cathodic Protection (ICCP)); method of calculation and installation of cathodic protection system.
- Perform periodic surveys to confirm the effectiveness of a CP system

#### **Part 4: Corrosion monitoring and controlling for Oil and Gas Pipeline**

- Monitoring and evaluation of internal corrosion;
- Monitoring and inspection of external corrosion – Non-Destructive Technique (NDT) methods
- Cathodic protection survey

#### **Part 5: Questions and discussion**

### **INSTRUCTORS**

Prof. Dr. Nguyen Thi Le Hien – Expert on corrosion – Director – Center for Technology Application and Transfer (CTAT).

### **WHO SHOULD ATTEND?**

This training course is a materials selection and corrosion assessment basic awareness course and structured at engineering level for key personnel requiring a detailed understanding of the various aspects of corrosion that may impact their selection of materials for a particular duty/service. This training course is suitable to a wide range of professionals but will greatly benefit:

- Piping engineers
- Mechanical engineers
- Subsea pipeline engineers
- Failure Analysis / ECA engineers
- Inspection engineers
- Pipeline construction engineers
- Operation and Maintenance team.

### **TIME AND VENUE**

- Duration: 05 days;
- Tentative time: September/2021;
- Venue: Vung Tau city.

### **TUITION**

26.000.000 VNĐ/participant (included: teaching fee, material, lunch, certificate, teabreak).

### **CONTACT**

**TRUNG TÂM BỒI DƯỠNG NÂNG CAO (ATC) | ADVANCED TRAINING CENTER**

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