Best Technology Solutions (BTS)

Industrial Painting and Coating (Internal & External for Pipe Structure, Tanks & Vessels)Training program

Introduction:

The pipeline, tanks or vessel coating is the first line of defense against corrosion and cathodic protection is used to control corrosion risks at sites of coating damage. However, some coating systems show failure modes that interfere with the effectiveness of the cathodic protection and create a new corrosion risk. These risks include CP shielding, microbial corrosion and external stress corrosion cracking. Internal coatings on the other hand have been specially developed to protect pipes, vessels and tanks from corrosion and chemical attack. These coatings require specialist application and detailed records that must be maintained for quality assurance purposes while heavy Duty coatings are applied to external structures providing long term anti-corrosion protection. Many of these coatings require specialist application equipment in the case high solids and solvent free materials.

This course will identify the benefits of using coating systems for internal and external of pipes, vessels and tanks in a wide range of industries. It discusses performance benefits, application techniques. Comparisons are made with different types of coating materials. The characteristics of specialized internal and external coatings in oil and gas industries are also described, presenting data, supported by case histories, to illustrate the advantages for various service requirements: such as effective protection, decrease in friction and improved throughput.

The candidates will have a good understanding of the listed benefits in light of the current requirements and practice for the internal and external coating of pipes for the gas and oil industries. Although pipe coaters prefer to choose the most cost effective protection, the list of traditionally used insulation materials is steadily dwindling, as their use has been found to raise health concerns, or it is now realized that the performance offered will not satisfy the rigorous demands of the customer. Of the remaining alternatives that are available, many are not practical to apply or again do not offer the degree of performance required. This course highlights the industry trends in selecting an insulation material and why more pipeline protection programs are turning to the use of pure solvent free polyurethane materials.

The course also deals with developments of tar free polyurethane to eliminate health and safety risks and accommodate increasing line temperatures and possibly future encapsulation of aged existing coatings. Spray equipment and applicator capability is also featured with the conclusion that solvent free polyurethane's versatility and developments offers resolutions to pipe line rehabilitation demands. Fire protection is also a major concern throughout the industry and this is provided by intumescent coatings which provide a thermal barrier to structural steel and other risk areas. These coatings are known as Passive Fire Protection (PFP) as they slow the damaging and dangerous effects of the fire but do not prevent or suppress fire.

Who Should Attend?

Mechanical Maintenance Engineers, Technicians, Supervisors, Foremen, Contractors, engineers, Inspectors, Consultants, Facility Owners, Technical Services and Sales Representatives

Course Objectives:

By the end of this course delegates will learn about:

- Identify types of corrosion and select coatings that meet project demands.
- Recognize the different types of coatings available and the various mechanisms at work in the process of protection
- Discuss how proper surface preparation is critical to achieving the maximum level of protection available through protective coating systems
- Describe the inspection equipment and methods used to ensure that all specification requirements are met.
- Classify coating selection and application by facility and service environment
- List the factors that accelerate coating deterioration and the techniques used to avoid common defects
- Distinguish the unique selection and application problems with coating concrete surfaces
- Recognize the safety hazards involved in coating operations and the responsibilities of management and workers in safety training and practices

Course Outline:

- Industrial Painting and Coating
- Corrosion and Corrosion Control
- Coating Types and Their Mechanisms and Protection
- Surface Preparation for Painting
- Application of Coatings

- Inspection and Quality Control
- Coatings for Steel Structures
- Coating Degradation, Defects, and Failures
- Coating of Concrete Surfaces
- Safety in Painting Operations
- Types of Tanks and Vessels
    - Concrete
    - Fibreglass
    - Stainless Steel
    - Steel, Mild or Carbon
- Corrosion Prevention
- Erosion Prevention
- Lining Materials Frequently Used
    - Epoxy Resins
    - Fiber glass Systems & Resins
    - Glass Flake Reinforced Resins
    - MIO Materials
    - Polyurethane Resins
    - Polyurea Resins
    - Solvent Free & Solvated Resins
    - Vinyl Ester Resins
    - Water Based Resins
- Fusion bonded epoxy coatings
    - High productivity rate enabling quicker availability of coated pipe on site
    - Protection over a wide temperature range
    - Ability to be stored in all climatic conditions
    - Long term adhesion to steel
    - Resistance to soil stress and backfill compaction
    - High resistance to cathodic disbondment
    - Flexible enough to accommodate field pipe bending

- Internal and External Coating of Pipelines
- Internal Coatings
- Epoxy Coating 162 PWX
- Epoxy Coating EA4 2217
- Epoxy Coating EP2306 HF (75)
- Epoxy Coating EP2306 SF
- Epoxy Coating KSIR88
- Fusion-Bonded Epoxy Coating 134 (FBEC)
- Corrosion protection of metal
- Fusion-Bonded Epoxy Coating 206N
- Fusion-Bonded Epoxy Coating XC-6171
- Fusion-Bonded Epoxy Coating XC-6259
- Liquid Epoxy Coating 323 Spray Grade
- Liquid Phenolic Primer 345 ne-part phenolic base primer
- Water-based Primer 500N
- External Coatings
- Fusion Bonded Epoxy Coating 135
- Fusion Bonded Epoxy Coating 226N
- Fusion Bond Epoxy Coating 226N plus
- High Operating Temperature Fusion-bonded epoxy 626 110
- High Operating Temperature Fusion-bonded epoxy 626 120
- High Operating Temperature Fusion-bonded epoxy 626 140
- Fusion Bonded Epoxy Coating 726
- Fusion-Bonded Epoxy Coating 6233 and 6352
- Fusion Bonded Epoxy Rough Over coating 207R

- Liquid Epoxy Coating 323
- Liquid Epoxy Coating 324
- Liquid Epoxy Coating 327
- Liquid Polyurethane Coating 352
- Urethane Coating
- Urethane Pipe Repair
- Urethane Repair Paste
- Three Layer Polyolefin Coatings
    - Powder epoxy primer layer
    - Polymer adhesive layer
    - Outer layer of polyethylene or polypropylene
- Four-Layer Polypropylene Insulation
    - Powder epoxy layer
    - Polymer adhesive layer
    - Layer of foamed polypropylene foam
    - Outer layer of solid polypropylene
- Liquid Internal and External Pipe Coatings for the Oil and Gas Industry
- Liquid Two-Component Internal and External Pipe Coatings
- Pipe Line Rehabilitation and Maintenance
- Pipeline Protection with Solvent Free Polyurethane