



Ithuta JV

Holhutha Ka Tsebo
Learning from Experience

Course Content: Corrosion Risk Management

1. Introduction and Overview

- 1.1. Corrosion and Corrosion Protection as Systems
 - 1.1.1. Systems Features of Operational Facilities
 - 1.1.2. Overview of Corrosion Protection Systems
 - 1.1.3. Corrosion Protection and Operational Efficiency

2. Fundamental Principles

- 2.1. Corrosion
 - 2.1.1. Definition of Corrosion
 - 2.1.2. Electrochemical Corrosion
 - 2.1.3. Metallic Corrosion
 - 2.1.4. Corrosion of Non-metals
 - 2.1.5. Corrosive Environments
 - 2.1.6. Methods of Corrosion Protection
 - 2.1.7. Economic Considerations of Corrosion Protection
- 2.2. Risk Assessment and Management
 - 2.2.1. Purpose of Risk Assessment
 - 2.2.2. Risk Assessment Processes
 - 2.2.3. Risk Mitigation
 - 2.2.4. Risk Management
 - 2.2.5. Implementation of Risk Management
 - 2.2.6. Risk Management Plans
 - 2.2.7. Economic Appraisal of Risk Management

3. Corrosion Risk Management

- 3.1. Systems Analysis of Corrosion Systems
 - 3.1.1. Systems Under Protection
 - 3.1.2. Corrosion Protection Systems
- 3.2. Corrosion Risk Identification and Evaluation
 - 3.2.1. Inherent Risks in Corrosion Protection Systems
 - 3.2.1.1. Materials and Design
 - 3.2.1.2. Protective Coatings
 - 3.2.1.3. Corrosion Inhibitors and Electrochemical Methods
 - 3.2.1.4. Supply Chains
 - 3.2.2. Failures of Corrosion Protection Systems
 - 3.2.2.1. Risks of Failures of Corrosion Protection Systems
 - 3.2.2.2. Determining the Probability of Corrosion Protection System Failures
 - 3.2.2.3. Estimating the Impact of Failure
 - 3.2.2.4. Corrosion Risk Prioritisation
 - 3.2.3. Management and Control of Corrosion Risks
 - 3.2.3.1. Corrosion Risk Management and Control Plan



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3.2.3.2. Corrosion-based Design Approach

3.2.3.3. Quality Assurance

3.3. The Role of Value Management

3.3.1. Definitions of Value Management

3.3.2. Value and Cost

3.3.3. Defining Function and Performance

3.3.4. The Value of a Corrosion Protection System

3.3.5. Combining VM and Corrosion Risk Management

4. Case Studies

4.1. Minimising Corrosion Risks of Deep Level Mine Shafts

4.2. Minimising Corrosion Risks of Hot Sulphurous Gas Systems

5. Workshop