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## **API 571 Damage Mechanisms Affecting Fixed Refining Equipment in the Refining Industry Training program**

### **Description**

API RP 571-2011 is the latest edition that describes damage mechanisms affecting equipment in the refining and petrochemical industries. A key first step in managing equipment safety and reliability is the identification and understanding of the various damage mechanisms. Proper identification of damage mechanisms is also required when implementing the API Inspection Codes (API 510, API 570, API 653) and in carrying out risk based inspection (RBI) per API 580 and API 581. When performing a fitness-for-service (FFS) assessment using API 579, the damage mechanisms need to be understood and need to be considered when evaluating the remaining life.

This 5-day corrosion short course aims to provide the participants with a thorough understanding of the various damage mechanisms contained in the latest edition of API RP 571-2011 that can affect process equipment, the type and extent of damage that can be expected, and how this knowledge can be applied to the selection of effective inspection methods to detect size and characterize damage. The 66 damage mechanisms to be discussed in this corrosion short course are common to a variety of industries including refining and petrochemical, pulp and paper, and fossil utility.



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## Who Should Attend?

The Following Personnel in Refining and Petrochemical Industries can attend and get benefit from this course:

- Designers
- Maintenance Engineers
- Plant Engineers
- Process Engineers
- Inspection Supervisor
- Corrosion Specialists
- Risk Based Inspection Engineers

## Course Objectives:

This course has been designed to train individuals must have knowledge of damage mechanisms and associated failures, the critical parameter that aggravate damage mechanism inspection and Prevention & Mitigating methods of Probabilities and associated Consequence

## Course Outline

### Day 1

- Introduction to Mechanical and Metallurgical Failure Mechanisms
- Types of Damage Mechanisms
- Examples
- Case Studies
- Practical



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### Day 2

- Selection of materials wrt carbon content , Chromium, Manganese , Vanadium and carbon steel, Stainless steel, Cast-iron, Monel
- Various Heat Treatment process: Annealing, spherodizing , Normalizing , Stress relieving
- Tempering & Quenching
- Corrosion Engineering
- Examples
- Case Studies

### Day 3

- Corrosion economics
- Corrosion tips
- Course Content
- Dehydrogenation
- Example
- Case Studies
- Practical

### Day 4

- General Damage Mechanisms of Processing Industry
- Damage Mechanisms specific to refinery
- Example
- Case studies
- Simulation



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### Day 5

- Specific unique damage Mechanism
- Case studies
- Hazard Identification
- Root Cause Analysis
- Sample Demo Quiz & Exam