Risk Based Inspection (RBI)

5 days **PLINS-EN-P**

Overview

LEVEL

Skilled

PURPOSE

This course covers the necessary background for setting up RBI for static equipment.

LEARNING OBJECTIVES

Upon completion of the course, the participants will be able to:
identify the degradation mechanism for a corrosion loop,
describe the RBI methodology for a petrochemical or chemical plant,
determine the probability and consequence of a failure,
set up a suitable inspection plan.

WAYS AND MEANS

An interactive course based on actual case studies.

LEARNING ASSESSMENT

Final quiz.

PREREQUISITES

Provide evidence of a professional experience of at least 1 month, related to the concerned field.

Agenda

FUNDAMENTALS OF RISK BASED INSPECTION — 0.5 d

API 580 overview, concept, probability and consequence of failure, risk ranking.
API 580 methodology, benefits and limits, workforce and schedule necessary to perform RBI study.
API 581 scope, probability of failure based on management factor and statistical failure frequency.

QUANTITATIVE & SEMI-QUANTITATIVE RISK BASED INSPECTION APPROACH — 2 d

Corrosion loops based on process conditions.
Design data and inspection data identification.
Damage factors identification based on corrosion standards such as API 571.
Calculate probability of failure based on damage factor - Quantitative approach using API581 workflow.
Calculate consequence of failure - Quantitative and semi-quantitative approach using API581 workflow.
Evaluate the overall risk on API matrix.
Define inspection strategy: mitigations actions or inspection scheduling extension.
Overview of available commercial software “RBEYE”.
Example of industrial RBI strategy implemented.
RBI semi quantitative approach based on simplified Excel spreadsheet.

APPLICATION OF THE RBI METHOD WITH MINI-PROJECTS CASE STUDIES — 2.5 d

Application of API 581 RBI method using mini projects - Case studies as teamwork:

Select the appropriate corrosion loops and pressure vessels.
Identify the degradation.
Apply API 581 workflow to define POF , COF and overall risk.
Analyze the risk and propose: risk mitigation with more efficient NDT, adapt the inspection frequency.
Apply RBI semi quantitative approach based on simplified excel spreadsheet and compare the 2 methods.
Each group presents its RBI analysis and conclusion.