



RAM & LCC

for Rail Industry Course

TRAINING OBJECTIVES

Why should attend this training?

- To understand and apply the standard EN 50126
- To understand and apply the Reliability concept as basic of Rail equipment specification and asset performance Index
- To understand and apply the Availability concept as basic of Rail equipment specification and asset performance Index
- To understand and apply the Maintainability concept as basic of Rail equipment specification and asset performance Index
- To understand and implement the Reliability Availability, Maintainability and Life Cycle Cost (RAM & LCC) methodology a long different railway asset life cycle phases
- To understand and apply Failure Mode and Effect Analysis (FMEA) analysis
- To understand and apply Reliability Centred Maintenance (RCM) analysis
- To understand and apply the Failure reporting Analysis and Corrective Actions System (FRACAS) methodology
- To understand and apply the Lifetime Data Analysis (LDA)
- To understand and apply the Accelerated Life Test (ALT), High Accelerated Life test (HALT) and Reliability Growth Analysis (RGA) methodology
- To model the Rail equipment in component level applying Reliability Diagram Block (RBD) and Fault Tree Analysis (FTA)
- To understand and apply the RAM & LCC analysis
- To understand and apply RAM & LCC spare part, preventive maintenance and Inspection optimization

Who should attend this training?

The following selected participants should attend this course:

- Asset Managers, Maintenance Managers, RAM Managers
- RAM Engineer / Maintenance Engineer / Supervisor
- Design Engineer / Production Engineer
- Everybody who wants to broaden knowledge and interest in this topics



TRAINER
Dr Eduardo Calixto

Doctorate in Energy and Environment focus on risk management, Master Degree in Safety Management, Bachelor in Industrial Engineer and a wide range of reliability, risk analysis and safety techniques across a range of industries like Oil and Gas (including onshore, offshore, subsea, utilities and drill facilities), Metallurgic, Aerospace & Defense and Railway Industry. Dr. Eduardo Calixto is Certified Reliability Professional (CRP) by Reliasoft Corporation US and Certified Functional Safety Expert (CFSE) by Exida US.

Key experiences include 17 years dedicating to reliability engineer studies and Risk management assessment. A total of 12 years dedicating to Oil and gas working 8 years by Petrobras S.A in Brazil , 2 year by Reliasoft Corporation as Reliability Consultant mostly dedicated to Kuwait Oil Company projects and 2 years by Genesis Oil and Gas consultant Company in London, as Principal Reliability Engineer, which support different major Oil and Gas company projects all over the world. In addition, Dr. Eduardo had 2 years dedicated to Metallurgic Industry by Vale in Brazil, 1 year dedicated to Aerospace project in Germany and 2 year dedicated to the transportation industry in projects in Germany, Austria and UK by Bombardier Transportation and Molinari Railway as RAMS expert.

Training Material Outline

DAY 1

1 Introduction (4 h)

- Reliability Concept
- Availability Concepts
- Maintainability Concepts
- Life cycle cost Concepts
- Asset management Concepts
- EN 50126 concepts

2 FMEA & RCM (4h)

- FMEA Concepts
- FMEA application and case studies
- RCM concept
- RCM application and case studies

DAY 2

3 Data Analysis (4 h)

- FRACAS concepts and application and case studies
- Lifetime Data Analysis Concept and application and case studies
- ALT, HALT and RGA concept and application
- Warranty Analysis concept and application

4 RAM & LCC Analysis (4 h)

- Reliability Diagram block concepts and application and case studies
- Fault Tree Analysis concept and application and case studies
- RAM analysis & LCC concept and application and case studies
- RAM & LCC spare parts, maintenance and inspection optimization Concept and application and case studies

