Training Program	:	**RAM AND LCC PROGRAM IMPLEMENTATION FOR RAILWAYS**
Discipline	:	**RELIABILITY & MAINTENANCE ENGINEERING**
System	:	**RAILWAYS ASSETS (ROLLING STOCK, SIGNALLING, INFRASTRUCTURE, LOCOMOTIVE)**
Subsystem	:	**Railways assets (Pantograph, Bogie, Breaks, Train Control Management System (TCMS), Balise, Computer Based Interlock (CBI), Lineside Electronic Unit (LEU), Radio Block Centre(RBC), Locomotive Diesel Engine, others.)**
Training Focus	:	**RAM program elements and concepts based on EN50126, EN50128, EN 50129, RAM program implementation barriers, FMEA, RCM, Lifetime data analysis and RAM analysis concepts and methodology.**
Lesson Code	:	**202**
Lesson Title	:	**Reliability, Availability and Maintainability Analysis**

Training Elements :

EN 50126, EN 50128, EN 50129 concepts;
RAM program implementation throughout life cycle;
RAM program elements;
RAM program implementation barriers;
Reliability, Availability and Maintainability concepts;
FMEA concepts and methodology;
SFMEA, DFMEA, PFMEA and FMEA application;
RCM concepts and methodology application;
LDA concepts and methodology;
RAM and LCC concepts and methodology;
RBD and FTA concepts and methodology application;
LCC methodology and modeling concepts and application
Asset Management and FRACAS application.

Training Objectives:

- To understand and apply the concept of EN50126.
- To understand and apply the FMEA concepts.
- To understand and apply the SFMEA; DFMEA, PFMEA and FMEA concepts.
- To understand and apply the RCM concepts.
- To understand and apply the Reliability, Availability, Maintainability concept as basic of equipment specification and asset performance Index.
- To understand and implement the RAM methodology applied to different asset life cycle phases.
- To understand how the LDA methodology concepts to reliability prediction.
- To understand the RBD and FTA methodology
- To understand the LCC methodology and modeling concepts
- To understand the asset management and FRACAS applied to railway industry

.

Day 1:

Subject	Activity	Time	Resources
Module 1 - Welcome and Introduction of participants and trainer, scope of training.	Theoretical	30 min	PPT
Module 2 - Module 2 - RAMS Standard EN 50126, EN 50128, EN 50129	Theoretical	90 min	PPT
Module 3 - Module 3 - RAM and LCC Program	Practical	60 min	PPT Templates examples
Module 4 - RAM and LCC program barriers for implementation	Theoretical	90 min	PPT
Lunch Break: 12:30 – 14:00 hrs.			
Module 5 - FMEA Concepts	Theoretical	60 min	
Module 6 - Risk Concept	Theoretical	60 min	PPT
Module 7 - SFMEA - DPFMEA - PFMEA - FMEA	Practical	60 min	PPT Templates examples
Module 8 - FMEA Management	Theoretical	60 min	PPT
Module 9 - Maintenance Concept Applied to Railway	Theoretical	60 min	PPT

Day 2:

Subject	Activity	Time	Resources
Module 10 - RCM Concept	Theoretical	60 min	PPT
Module 11 - RCM Management	Theoretical	60 min	PPT
Module 12 - RCM input to Asset management	Practical	60 min	PPT Templates examples
Module 13 - Lifetime Data Analysis Concept	Theoretical	60 min	PPT Templates examples
Lunch Break: 12:30 – 14:00 hrs.			
Module 14 - RAM analysis Concepts	Theoretical	60 min	PPT
Module 15 - RAM analysis Methodology	Theoretical	60 min	PPT
Module 16 - RBD and FTA Model	Practical	60 min	PPT Templates examples
Module 17 - LCC modeling	Practical	60 min	PPT Templates examples
Module 18 - Asset management applied for Railway Industry	Practical	60 min	PPT Templates examples