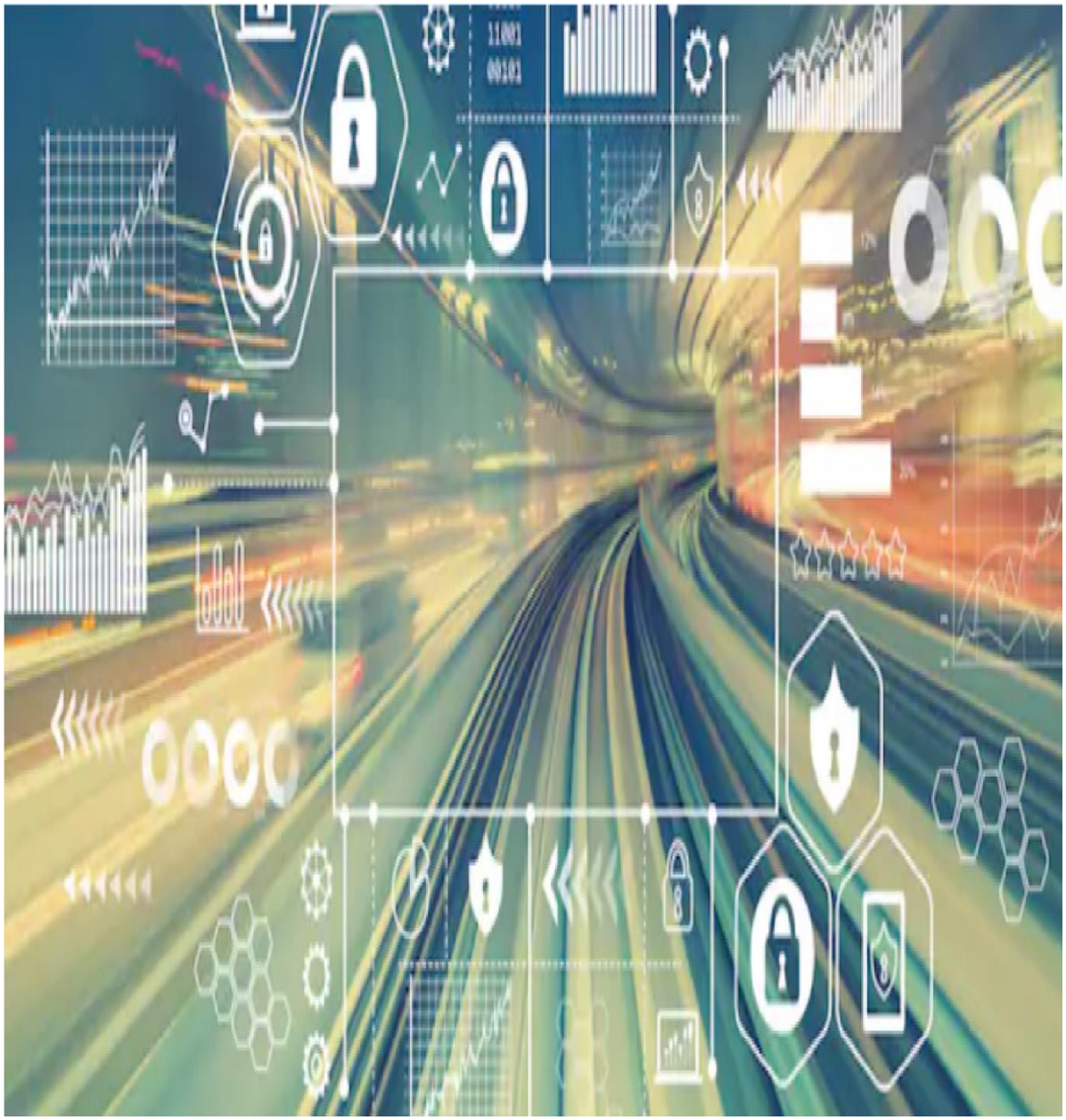
EDUARDO CALIXTO
CONSULTING

ECC RAMS Training Program Calendar 2021 for Railway Industry:



February

- RAM and LCC Program for Railway Industry (Based on EN 5016): 27th and 28th February 2021 - Sidney, Australia

March

- RAM and LCC Program for Railway Industry (Based on EN 5016): 04th and 05th March 2021 - Tokyo, Japan
- RAM and LCC Program for Railway Industry (Based on EN 5016): 18th and 19th March 2021 - Berlin, Germany
- RAM and LCC Program for Railway Industry (Based on EN 5016): 26th and 27th March 2021 - Washington D.C, USA

April

- Lifetime Data Analysis for Railway Industry: 20th - 21th April 2021 - Berlin, Germany
- Lifetime Data Analysis for Railway Industry: 27th - 28th April 2021 - Sidney, Australia

May

- Lifetime Data Analysis for Railway Industry: 20th - 21th May 2021 - Washington D.C, USA
- Lifetime Data Analysis for Railway Industry: 28th - 29th May 2021 - Tokyo, Japan

June

- RAM Analysis for Railway Industry: 17th - 18th June 2021 - Berlin, Germany
- RAM Analysis for Railway Industry: 24th - 25th June 2021 - Sidney, Australia

July

- RAM Analysis for Railway Industry: 22th - 23th July 2021- Orlando - Florida, USA
- RAM Analysis for Railway Industry: 29th - 30th July 2021 - Tokyo, Japan

August

- FMEA and RCM for Railway Industry: 19th and 20th August 2021, Berlin, Germany
- FMEA and RCM for Railway Industry: 24th and 25th August 2021, Sidney, Australia

September

- RAM Analysis for Railway Industry: 6th-7th September 2021, China, Shanghai
- FMEA and RCM for Railway Industry: 16th and 17th August 2021, Washington D.C, USA
- FMEA and RCM for Railway Industry: 24th and 25th August 2021, Tokyo, Japan

October

- Lifetime Data Analysis for Railway Industry: 4th - 5th October 2021, China, Shanghai
- Risk Management For Railway Industry: Functional Safety, SIL classification and Risk Analysis-7th and 8th October 2021, Berlin, Germany
- Risk Management For Railway Industry: Functional Safety, SIL classification and Risk Analysis -14th and 15th October 2021, Washington D.C, USA

November

- Risk Management For Railway Industry: Functional Safety, SIL classification and Risk Analysis-1st and 2nd November 2021, Tokyo, Japan
- Risk Management For Railway Industry: Functional Safety, SIL classification and Risk Analysis -4th and 5th November 2021, Sidney, Australia
- FMEA/RCM Analysis for Railway Industry: 15th - 16th August 2021, China, Shanghai
- Railway Systems Test, Verification & Validation and commissioning - 27th and 28th November 2021, Berlin, Germany.

December

- Rolling Stock System Operation and Maintenance Concepts and Strategy - 8th-9th December 2021, Berlin, Germany
- Risk Management: Functional Safety, SIL classification and Risk Analysis: 13th and 14th December 2021, Shanghai, China.

“Training Bibliography”

RAMS and LCC Engineering for Railway Industry: Analysis, Modelling and Optimization

Eduardo Calixto

Good news: “Free copy for the training participants”

Bibliography: https://www.amazon.de/RAMS-LCC-Engineering-Railway-Industry/dp/1986524701

Please contact us for more information: https://www.eduardocalixto.com/contact/

To get more details about the training: 2021 Training Calendar Railway Industry - eduardocalixto

“Training Modules Outlines”

EDUARDO CALIXTO CONSULTING

"RAM AND LCC Program Implementation for Railway Industry"

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Email: ec@eduardocalixto.com

Why Shoud attend this training ?

- To understand the RAM and LCC program element such as RAM requirement, RAM organizational Infrastructure, Methods and deliverables, RAM Plan;
- To understand the RAM and LCC implementation barriers such leadership, culture, resources and organizational structure;
- To understand the different types of FMEA such as DFMEA, SFMEA, PFMEA,;FMEA and their implementation indifferent phases of rolling stock life cycle;
- To understand the RCM concepts and the link with FMEA as well as the link with the CMMS and Asset management system;
- To understand the FRACAS concepts, the link with FMEA analyis and it implementation before operation phase;
- To understand the Lifetime Data Analysis Concepts and application to be an input for RAM analyis as well as support the warranty verification and validation;
- To understand the RAM analysis concepts and application in different rolling stock life cycle;
- To understand the LCC concepts and application;

Who Shoud attend this training ?

Reliability Managers, Reliability Engineers, Asset Managers, Maintenance Managers, Maintenance Engineers. Mainteance

Training Outline:

Day 1:

- Module 1: Introduction
- Module 2: RAM and LCC concept
- Module 3: EN 50126 concepts
- Module 4: RAM program Implementation and barriers to implementation
- Module 5: FMEA concepts
- Module 6: FMEA application case studies
- Module 7: RCM concepts
- Module 8: RCM application case studies

Day 2:

- Module 1: FRACAS and Lifetime data analysis
- Module 2: LDA case studies
- Module 3: ALT/ Halt concepts
- Module 4: RGA concepts
- Module 5: RAM Analysis concepts
- Module 6: RAM Analysis case studies
- Module 7: LCC concepts Module
- Module 8: LCC case study

Trainer : Dr Eduardo Calixto, CRP, CFSE.,

He's Reliability and Safety Engineer Expert with over 18years experiences in Oil & Gas, Railway, Aerospace and Mining Industries. He has Doctoral Degree in Energy and Environmental, Master in safety System Management, Bachelor in Industrial Engineering. Author of the best seller Book Gas and Oil Reliability Engineering: Modeling and Analysis (material content of this training).

IRIS ACADEMY RAM/LCC Professional

CFSE 160721 001

AFSP by SGS-TÜV Saar

CRP

EDUARDO CALIXTO

RAM Analysis Course for Railway Industry

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Website: http:/www.eduardocalixto.com
Email: ec@eduardocalixto.com

Why Shoud attend this training ?

- To understand and apply the Reliability, operational availability and maintainability concept as basic of equipment specification and asset performance Index.
- To understand and apply the RAM methodology applied to different asset lifecycle phases.
- To understand and apply how to organize and assess the historical failure and repair database.
- To understand how to use specialist opinion to predict Reliability and maintainability.
- To understand and apply the methods to define type Probability Density function (PDF) in order to predict PDF parameters, reliability, failure rate, MTTF, MTBF, MTTR.
- To model the equipment in component level applying RBD and FTA.
- To understand and apply the effect of preventive maintenance and inspection in equipment reliability and operational availability.
- To understand and apply the concept of preventive maintenance optimization
- To understand how to integrate FMEA, RCM and RAM analysis to support asset management.

Who Shoud attend this training ?

Reliability Managers, Reliability Engineers, Asset Managers, Maintenance Managers, Maintenance Engineers.

Software: HBK/Reliasoft — Blocksim++

Training Outline:

Day 1:

- Module 1: Introduction
- Module 2: RAM concept
- Module 3: RAM methodology concept
- Module 4: Lifetime data analysis (LDA)
- Module 5: LDA case studies
- Module 6: RBD and FTA Models
- Module 7: RBD and FTA case studies

Day 2:

- Module 8: Preventive Maintenance Modeling
- Module 9: Inspection Modeling
- Module 10: Spare part Modeling
- Module 11: LCC Modeling
- Module 12: RAM Simulation
- Module 13: RAM critical equipment
- Module 14 RAM Sensitivity Analysis
- Module 15: RAM Modelling: Equipment Level
- Module 16: RAM Modelling: System Level

Trainer : Dr Eduardo Calixto, CRP, CFSE.,

He's Reliability and Safety Engineer Expert with over 18years experiences in Oil & Gas, Railway, Aerospace and Mining Industries. He has Doctoral Degree in Energy and Environmental, Master in safety System Management, Bachelor in Industrial Engineering. Author of the best seller Book Gas and Oil Reliability Engineering: Modeling and Analysis (material content of this training).

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Lifetime Data Analysis (LDA) for Railway Industry

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Why Shoud attend this training ?

- To define the probability density functions such as exponential, lognormal, logistic, loglogistic, Weibull, Normal, Gumbel, Gama, others based on LDA;
- To apply the goodness of fit test such as Plot method, Regression, likelihood, Chi-square, Komogorov Smirnov and Cramer von mises during LDA;
- To implement a FRACAS that enable the LDA;
- To understand the QALT methods fconcepts or equipment under different stress level;
- To understand the RGA Concepts to measure the effect of maintenance and operation on equipment performance;
- To apply PDA methods to predict reliability based on equipment degradation such as corrosion and, crack;
- To apply Warranty Analysis to assess vendors products;
- To learn how to create a reliability database.

Who Shoud attend this training ?

Reliability Managers, Reliability Engineers, Asset Managers, Maintenance Managers, Maintenance Engineers.

Software:

HBK/Reliasoft: Weibull++

Training Outline:

Day 1:

- Module 1: Introduction
- Module 2: Statistic concept
- Module 3: Reliability Concepts
- Module 4: LDA Methodology
- Module 5: Goodness of Fit tes
- Module 6: Probability Density Functions
- Module 7: Probabilistic Degradation Analysis
- Module 8: Preventive Maintenance effect on Reliability
- Module 9: - Reliability Generic Database

Day 2:

- Module 1: Accelerated test data analysis Model
- Module 2: Reliability Growth Analysis
- Module 3: Warranty Analysis
- Module 4: FRACAS concept and application
- Module 5: *LDA Case Studies*
- Module 6: RGA Case Studies
- Module 7: PDA and WA Case Studies

Trainer : Dr Eduardo Calixto, CRP, CFSE.,

He's Reliability and Safety Engineer Expert with over 18years experiences in Oil & Gas, Railway, Aerospace and Mining Industries. He has Doctoral Degree in Energy and Environmental, Master in safety System Management, Bachelor in Industrial Engineering. Author of the best seller Book Gas and Oil Reliability Engineering: Modeling and Analysis (material content of this training).

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FMEA and RCM Analysis for Railway Industry

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Email: ec@eduardocalixto.com

Why Shoud attend this training ?

- To understand the failures, risk and criticality concepts.
- To understand and implement the different application of FMEA and FMECA concepts
- To understand and implement the Design Failure Mode and Effect analysis (DFEMA).
- To understand and implement the Process Failure Mode and Effect analysis (PFMEA).
- To understand and implement the System Failure Mode and Effect analysis (FMEA).
- To understand the FMEA application to FRACAS.
- To understand the Maintenance concepts.
- To understand and apply the Reliability Centered Maintenance (RCM) concepts.
- To understand the RCM input to RAM analysis, LCC and spare part definition.
- To understand and implement the RCM output to LCC analysis.
- To understand and implement the RCM out put to spare parts modeling and output to RAM analysis.

Who Shoud attend this training ?

Reliability Managers, Reliability Engineers, Safety Engineer, Asset Managers, Maintenance Managers, Maintenance Engineers.

Software: HBK/Reliasoft — FMEA/Blocksim++

Training Outline:

Day 1:

- Module 1: Introduction
- Module 2: FMEA concept and Standards
- Module 3: Risk, RPN and Criticality
- Module 4: SFMEA/DFMEA/ PFMEA/ FMEA concept
- Module 5: FMEA Management
- Module 6: FMEA applied to FRACAS
- Module 7: FMEA Case Studies

Day 2:

- Module 1: Maintenance Concepts
- Module 2: RCM concepts and standards
- Module 3: RCM input to RAM analysis
- Module 4: RCM input to LCC
- Module 5: RCM input to Spare parts
- Module 6: RCM Management
- Module 7: RCM input to Asset Management
- Module 8: RCM application cases
- Module 9: FMEA and RCM application software case studies

Trainer : Dr Eduardo Calixto, CRP, CFSE.,

He's Reliability and Safety Engineer Expert with over 18years experiences in Oil & Gas, Railway, Aerospace and Mining Industries. He has Doctoral Degree in Energy and Environmental, Master in safety System Management, Bachelor in Industrial Engineering. Author of the best seller Book Gas and Oil Reliability Engineering: Modeling and Analysis (material content of this training).

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Functional Safety and Risk Analysis for Railway Industry

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Email: ec@eduardocalixto.com

Why Shoud attend this training ?

- To understand and implement the concept of EN50128 and EN 50129.
- To understand and implement the Preliminary Hazard analysis application.
- To understand and implement the HazLog concepts.
- To understand and implement the Functional Hazard analysis .
- To understand and implement the Hardware Hazard Analysis.
- To understand and implement the Software Hazard Analysis.
- To understand and implement the SIL concepts.
- To understand and implement the hardware hazard analysis.
- To understand and implement the software hazard analysis.
- To understand and implement the FMECA concepts.
- To understand and implement the FTA, ETA, BTA concepts and model.

Who Shoud attend this training ?

Reliability Managers, Reliability Engineers, Safety Engineer, Asset Managers, Maintenance Managers,

Training Outline:

Day 1:

- Module 1: Introduction.
- Module 2: EN 50128 and EN 50129 concepts .
- Module 3: Safety program Implementation.
- Module 4: Preliminary Hazard Analysis (PHA).
- Module 5: Preliminary Hazard Analysis (PHA) cases.
- Module 6: System Hazard Analysis and HAzlog concepts
- Module 7: System Hazard Analysis and HAzlog case.
- Module 8: Functional Hazard Analysis and SIL.
- Module 9: Functional Hazard Analysis and SIL case..

Day 2:

- Module 10: HAZOP Analysis.
- Module 11: FMECA analysis concept .
- Module 12: FMECA analysis hardware and software
- Module 13: Faut Tree Analysis (FTA) concepts
- Module 14: .FTA cases
- Module 15: .Bow tie Analysis (BTA)
- Module 15: .Human Reliability Analysis (HRA)
- Module 16: Safety Case concept .

Trainer : Dr Eduardo Calixto, CRP, CFSE.,

He's Reliability and Safety Engineer Expert with over 18years experiences in Oil & Gas, Railway, Aerospace and Mining Industries. He has Doctoral Degree in Energy and Environmental, Master in safety System Management, Bachelor in Industrial Engineering. Author of the best seller Book Gas and Oil Reliability Engineering: Modeling and Analysis (material content of this training).

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RAM/LCC Professional

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CRP

EDUARDO CALIXTO
CONSULTING

Railway Systems Test, Verification & Validation and commissioning

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Email: ec@eduardocalixto.com

Why Shoud attend this training ?

•To gain an appreciation of achieving an acceptable level of risk through the systematic approach to hazard management from V&V process;

•To gain an appreciation of how developing test plans for components, subsystems and product level for railway systems;

•To gain an appreciation of the critical skills to ensure that the system initiated to revenue service is safe and secure for passengers, emergency response and general public through a formal rigid safety, public health and certification;

•To gain an appreciation of developing design criteria for conformance checklists through a tracking system;

•To gain an appreciation of vehicle certification requirements, process and procedures;

•To optimize overall whole-life cost by eliminating any delays, maintenance and operational risk prior to revenue service;

•To learn and appreciate the concept of test plans for component testing, inspection and ensuring that the subsystem requirements

•To gain practical appreciation and implementation of verification, validation and commissioning via case studies.

Who Shoud attend this training ?

O&M Managers, Quality Managers, Maintenance Managers, Quality Engineers, Maintenance Engineers. Mainteance technicians

Training Outline:

Day 1:

- Module 1: Introduction
- Module 2: Quality Management and Assurance
- Module 3: Concept of Test V & V Plan,
- Module 4: V& V based on EN-50128 and EN-5029
- Module 5: Start-up testing, dynamic testing and acceptance criteria
- Module 6: Commissioning test, verification and validation
- Module 7: Assurance report and Safety Case process
- Module 8: System Pre-certification and certification

Day 2:

- Module 9: V & V for Brake System
- Module 10: V & V for Door System
- Module 11: V & V for Bogie System
- Module 12: V & V for Pantograph System
- Module 13: V & V for Populsion System
- Module 14: V & V for ETCS System
- Module 15: V & V for TCMS System

Mr. Frederick Appoh, Msc, CMRP,

He is an experienced Senior RAMS and Asset Management Engineer and has worked for several rolling stock manufacturing organisations including; Bombardier Transportation, Alstom Transport and Hitachi Rail Europe. He served in various engineering and leadership positions: System, Project, Reliability, Performance, Maintenance development, and RAMS LCC, V&V and maintenance across Western Europe, the Middle East and Africa. .

Certified Reliability Engineer
ASQ The Global Voice of Quality™

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CMRP CERTIFIED

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Rolling Stocks Operation and Maintenance concepts and strategy

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Email: ec@eduardocalixto.com

Why Shoud attend this training ?

- To provide concepts regarding the compilation of maintenance manuals and operating documentation;
- To capture all statutory requirements and mandated standard operating procedures for specialised systems;
- To understand and appreciate how to capture vital spare parts information and policy-based from suppliers to ensure quick turnaround of critical maintenance schedules;
- To learn bout how to deal with independent assessment body such as NoBo, DeBo and AsBo for approval for vehicle maintenance procedures, vehicle maintenance instructions and overhaul plans;
- To gain a practical understanding of optimising preventive maintenance plans and developing maintenance regimes for a given railway system;
- To undertake practical assessments of various case studies to gain an appreciation of maintenance and opertions;
- To provide concepts and understanding of the relationship between operators and maintainers;
- To provide concepts and understanding of operational and maintneannce strategies integration organisation.

Who Shoud attend this training ?

O&M Managers, Quality Managers, Maintenance Managers, Quality Engineers, Maintenance Engineers. Mainteance technicians

Training Outline:

Day 1:

- Module 1: Introduction
- Module 2: Rolling Stocks Systems Concepts
- Module 3: Maintenance Concpets,
- Module 4: RCM for Rolling Stocks
- Module 5: Maintenance Management Program
- Module 6: Maintenancne Standards and procedures
- Module 7: Independent Assessemnt Body for rolling stocks maintenance approval
- Module 8: Miantnenance Optimization

Day 2:

- Module 9: Operation and Maintenance for Brake System
- Module 10: Operation and Maintenance for Door System
- Module 11: Operation and Maintenance for Bogie System
- Module 12: Operation and Maintenance for Pantograph System
- Module 13: Operation and Maintenance for EE: Propulsion System , ETCS, TCMS, others.

Mr. Frederick Appoh, Msc, CMRP,

He is an experienced Senior RAMS and Asset Management Engineer and has worked for several rolling stock manufacturing organisations including; Bombardier Transportation, Alstom Transport and Hitachi Rail Europe. He served in various engineering and leadership positions: System, Project, Reliability, Performance, Maintenance development, and RAMS LCC, V&V and maintenance across Western Europe, the Middle East and Africa. .

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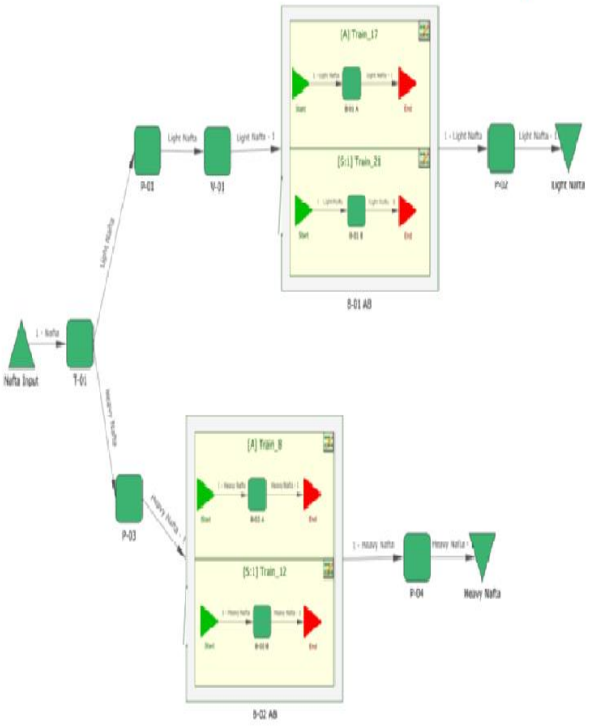
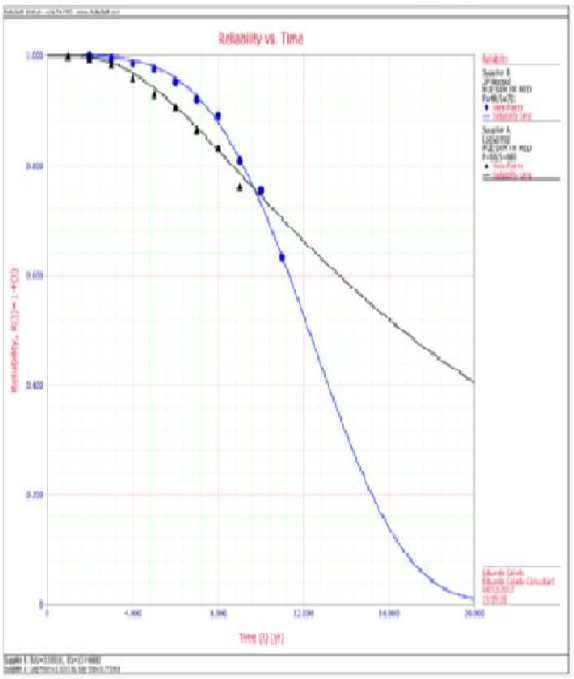
“Software Used during the training: HBM-Reliasoft”

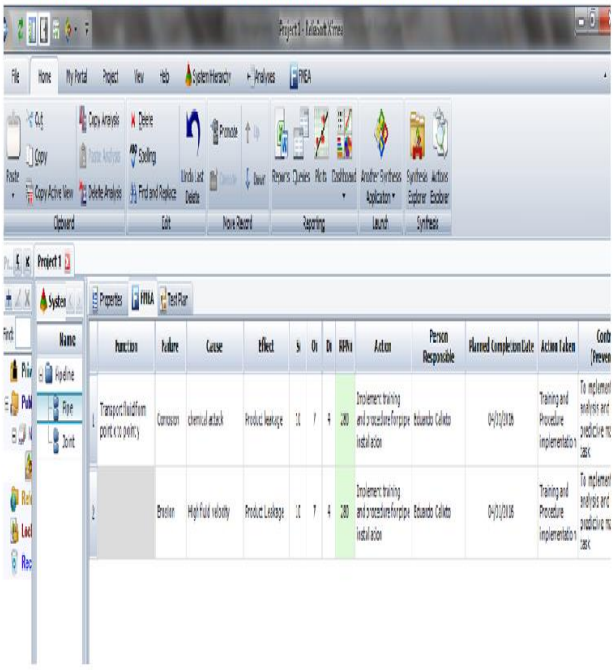
HBM Software Blocksim++: RAM and Production Analysis



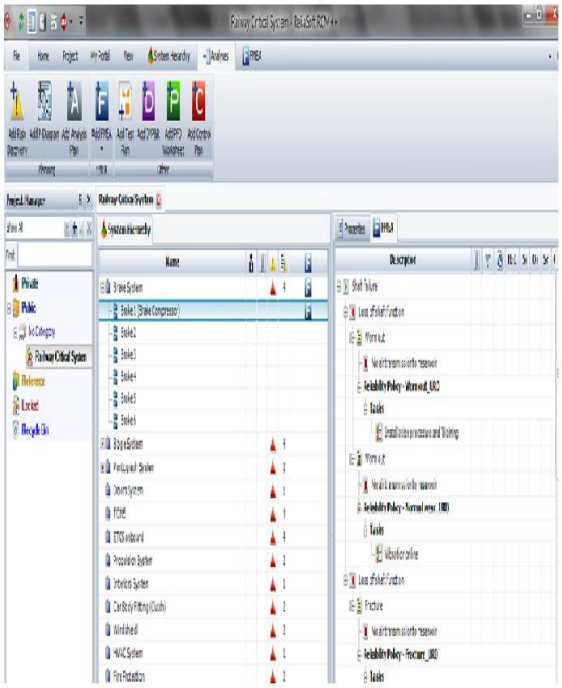
HBM Software Weibul++: Lifetime Data Analysis (Weibul Analysis)



HBM Software FMEA++: SFMEA, DFMEA, PFMEA and FMEA



HBM Software RCM++: RCM analysis



“Free demo license during and 20 days after “