ECC

EDUARDO CALIXTO
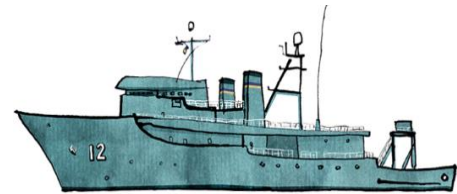## — CONSULTING —

About Us

who we are?

ECC is an Engineering Consultant company
established in Europe since 2015

which provide Reliability, Maintenance and Safety engineering consultant service as well as Asset management solution for Oil and Gas, Railway, Military, Aerospace and Defense industries around the globe based on following programs:

Asset Integrity
Reliability & Maintenance
Integrated Logistic Support

what we do?

Asset Management performance optimization based on:
- LDA (Lifetime Data Analysis);
- RAM (Reliability, Availability and Maintainability Analysis);
- FRACAS (Failure Report and Correction Action System);
- WA (Warranty Analysis);
- FMEA (Failure Mode and Effect Analysis);
- RCM (Reliability Centred Maintenance);
- RBI (Risk Based Inspection);
- APO (Asset Performance Optimization);
- ORT (Optimum Replace Time);
- Asset management based on SaaS solution (Integrity PRO).

Asset Integrity Management based on:
- Risk Management;
- Risk analysis (HAZOP, PHA, HAZID, SIL, LOPA, FTA, ETA, BOW TIE, Consequence and Effect Analysis);
- Human Reliability analysis (THERP, OAT, HEART, SHERPA, STAH-R, SPAR-H, Slim-Maud, BBN);
- Reliability engineering (FMEA, RBI, RAM);
- Asset Integrity management based on SaaS solution (Integrity PRO).

Integrated Logistic Support based on:
- Spare optimization based on modelling;
- Inspection and preventive maintenance optimization based on modeling;
- Life Cycle cost optimization;
- Asse performance optimization.

Safety Engineering based on:
- Functional Safety Analysis;
- Hazard Log Analysis;
- SIL analysis (assignment, verification and validation);
- Occupational risk assessment;
- Risk Management (hazard identification, risk analysis, risk evaluation, risk mitigation, risk communication, risk monitoring);
- Safety and Occupational Health Management;
- Safety System Audit based on ISO 18001 standard series;

Training Programs: Presential – Online – In company

- **Artificial Intelligence for Maintenance 4.0 (Matlab Software)**
- **Asset Management (Integrity PRO Software)**
- **Asset Integrity Management (Integrity PRO Software)**
- **Reliability and Maintenance Program implementation (Reliasoft Software)**
- **RAM Analysis (Blocksim Software)**
- **Lifetime data analysis (Weibul++ Software)**
- **Maintenance Management: FMEA, RCM & CMMS (XFMEA, RCM++, Aladdin)**
- **Risk Management and Risk Analysis Methods (ALOHA, BT, Blocksim FTA)**
- **Human Reliability Analysis**
- **Integrated Logistic Support (Blocksim, Weibull++, XFMEA, RCM++ Sortware)**

"Customized Training for Process and Oil & Gas and Railway industries"

Success cases

RAMS process implementation for railways: Locomotive Auxiliary Power Unit case

Description: The RAMS program for the Auxiliary Power Unit (APU) system for India Railway locomotives was provided based on different reliability, maintenance and safety engineering methods together with Molinari Austria Design Engineers.

Scope: The APU system equipment under the analysis scope were diesel engine, engine cooling, gearbox, compressor, compressor cooling, magnetic clutch, coupling, electrical cabinet, tank fuel, transfer pump, generator, power supply. The RAMS program encompassed Design FMEA, Process FMEA, FMEA, RCM, RAM analysis, Human Reliability Analysis and Preliminary Hazard Analysis.

Results: The RAMS assessment provides the qualitative and quantitative recommendations to enable the APU system achieves the desired performance. Therefore, the quantitative RAM performance indexes prediction such as Operational availability, Reliability and Expected Number of Failure was carried out and recommendation from the RAM analysis were implemented. In addition, the qualitative recommendation defined in the DFMEA, PFMEA, HRA and PHA were also implemented in order to avoid early life failures and incidents.

RAM analysis for railways: Telecommunication Rolling Stock and Service depot system

Description: The RAM analysis was carried for Telecom System of Rolling Stock and service depot in the UK (London) to define the telecommunication performance index and identify the critical equipment that would affect the depot maintenance and operation activities.

Scope: The Telecom system equipment under analysis scope were Depot Radio (Radios handset, Antennas, Radio, Base Radio, GSM-R (GSM-R radio and Dispatcher), Clock system, CCTV, Fiber patch panel (Panel, VLAN, LAN, PC, control).

Results: The preliminary reliability index for the telecommunication system was defined for the concept phase based on the telecommunication system performance derating as well as the critical equipment based on RAM analysis result.

RAMS program Implementation for Chinese Railway Industry company

Description: RAMS Program Improvement

Scope: Wheelset (Axle, Bearing Box and Wheels)

Results: Together with our Partner Qinda technology in China, we started our first project in China in 2019. The Project objective is to support the RAMS program implementation. The first step was to deliver 40-hour training, including: RAMS program, FMEA, Life Time Data Analysis and RAM analysis. The next step is to review the current RAMS procedures and deliver new procedures.

ILS Program implementation for Railway Industry in Switzerland 2018/2019

Description: ILS Program Implementation for a train

Scope: Train system such as Bogie, Brake, Door, ERTS, Fire System, Information System.

Results: This is a Hünnemeyer Consulting project that started in July 2018 and will finish the first phase in March 2019, that Dr. Eduardo Calixto worked as consultant. The main objective was to support the best class Engineering Consultant (Hünnemeyer Consulting) based in Germany to implement specific reliability engineering methods to support the ILS program implementation for a world class Railway Company based in Switzerland. During the project the following methods were implemented: FMEA; Reliability and Maintainability data prediction; RAM analysis; Maintainability Analysis.

Safety Analysis for Tamping Machine Industry in Austria 2023

Description: Preliminary Hazard Analysis for Tamping Machine

Scope: Identification of main hazards of tamping machine risk assessment and mitigation.

Results: This is a Prose Austria Project that ECC worked ad RAMS consultant. ECC enable the compete Preliminary Hazard Analysis for the client to enable the proposed mitigation actions and safety requirement to be establish for suppliers.

Company Highlight

Success cases

Aerospace and Defense industry

RAMS Assessment for RADAR System in Germany 2016

Description: Reliability and Functional Safety Analysis Implementation

Scope: RADAR system, Transmitter System and Waveguide System

Results: Working with Philotech client, the objective of the project was implemented RAMS analysis for a RADAR system such the Functional Hazard Analysis, RAM analysis, FMEA and FMDA were based on the aerospace regulation and standards.

RAMS Program Evaluation for Flight Simulator in Austria 2019

Description: Reliability and Safety Engineer Evaluation (ISO 12100, EN 1384 and IEC 62061)

Scope: Flight Simulator System

Results: The objective of the project was to evaluate the level of RAMS program implementation maturity by accessing the application of different RAMS methods such as RBD, FMEA, FTA, MTA, Functional Hazard Analysis (EN 1384 and IEC 62061) and Preliminary Hazard Analysis (ISO 12100,) implemented for a Flight Simulator System. The next phase will encompass the RAMS program implementation.

RAM Assessment for Ground Radar System in German 2022/2023

Description: RAM Analysis and System FMEA for Ground Radar System

Scope: RAM Analysis for reliability requirement verification and System FMEA for requirement definition and System impact and interfaces assessment

Results: This is a Hensold Germany Project that Dr. Eduardo Calixto worked as Ferchau contractor. The RAM Analysis enable to verify the reliability target achievement as well as to identify the bad actors that more impact on the reliability performance. In addition, the System FMEA enable to identify all system level effect in case of main function failures.

Oil & Gas industry

Reliability & Safety Engineering: More than 10 years' experience worked by major Oil and Gas industry companies as employee and consultant in South America, Middle East, Europe and Asia.

Asset Management & Asset Integrity: Currently working with the Partner Enkelt to develop the Integrity Pro SaaS solution concerning Reliability 4.0 and Prognostic Health Management for client in Europe, Africa and Middle East.
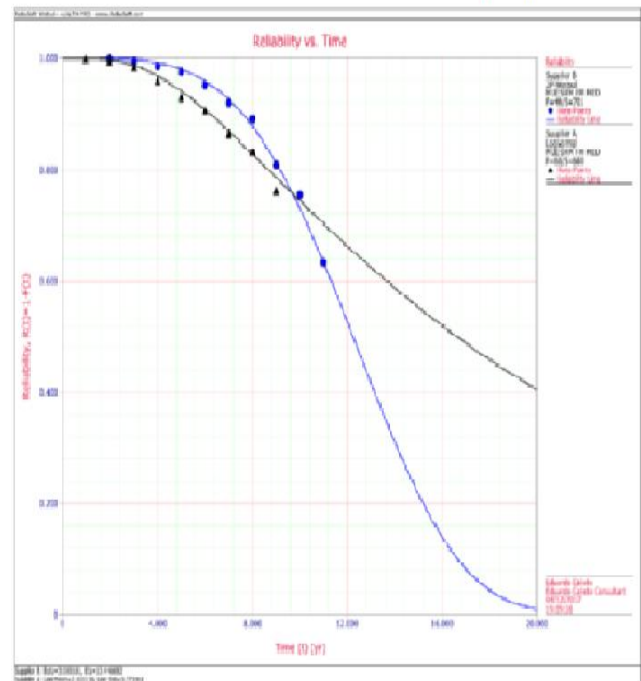
HBM Software Blocksim++: RAM and Production Analysis
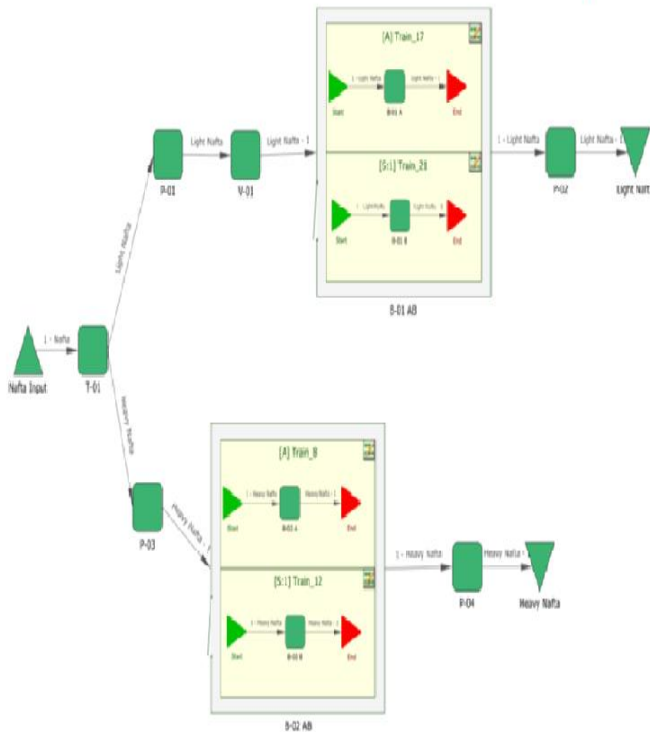
HBM Software Weibul++: Lifetime Data Analysis (Weibul Analysis)

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

HBM Software RCM++: RCM analysis

Product 2: Asset Management based on ISO 55000: Integrity PRO SaaS

Step 01 Monitoring Performance
record & trend the performance
of plant process & people, report
deterioration

Step 02 Failure Reporting
report failures or deterioration in
condition or performance,
treat every event as an opportunity to
learn, consider the potential for
recurrence or escalation

Step 03 Risk Analysis
analyse and categorise the risk, review
risk register, understand asset priorities
& allocate responsible person to
identify mitigation & adapt

Step 06 Cost, Benefit Analysis
evaluate the benefits and explore
options, approve budget, schedule
improvement & forward planning

Step 04 Organisational Learning
icross assets &
s elsewhere,
tions in similar
events

Step 05 Corrective Action System
learn & adapt, understand the root cause of the
event, define the corrective actions to prevent
escalation & recurrence. Ensure mitigation is
technically feasible & financially viable

Step 07 Performance Assurance Plan
direct resources & investment, manage
shutdowns, life extension & prioritise the
corrective backlog in a single point of
reference that supports & promotes the
needs of the business

integrityPRO

"The Integrity PRO was successful implemented for different Oil and Gas companies, is based on ISO 55001 concepts and it's totally customized for your company internal process"
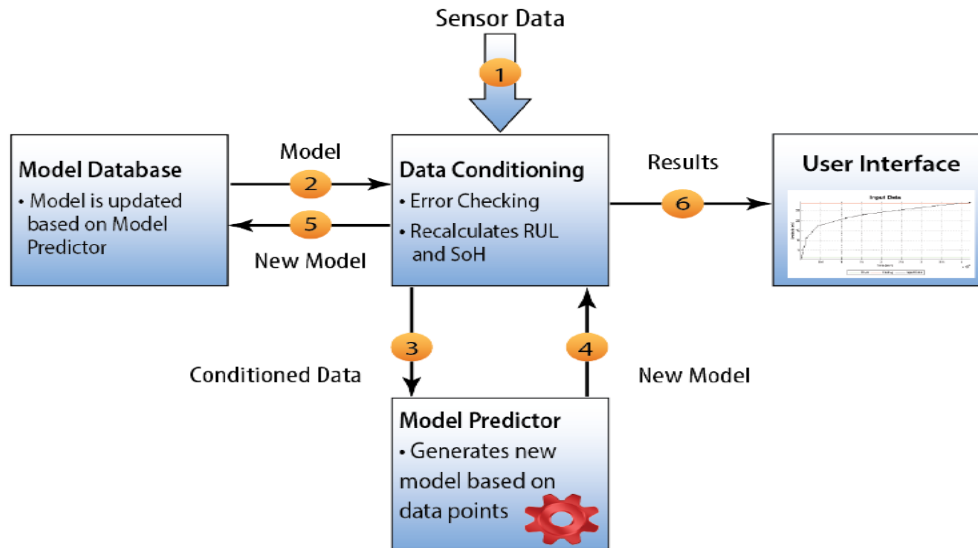
"The Aladdin is a smart and efficient CMMS Maintenance Management Software successful implemented for different industries sectors such as Hospital Health Care, Houses Utilities, Shopping Centers, Process Plants and others"

Remaining useful life representation of a system with ARULE API deployed in a Sentinel IT™ application

"The ARULE is the Artificial Intelligence Software Solution for Prognostic Health Management successfully implemented in different industries across the globe such Military, Aerospace, Railway and Process"

Contact us

Eduardo Calixto Consulting (ECC)
Ravensburgerstraße 12, 89079, Ulm, Germany
Email: ec@eduardocalixto.com
Website: http//www.eduardocalixto.com
Phone GER: 0049 17651 656067

ECC and Partners