Module Overview – MADe Safety and Risk Assessment

Assess the criticality and safety impact of risks in a system

Key benefits

- Model-based approach
- Consistent risk identification and classification
- Objective risk assessment
- Configuration managed risk assessment process
- Risk resolution decision support

Key features

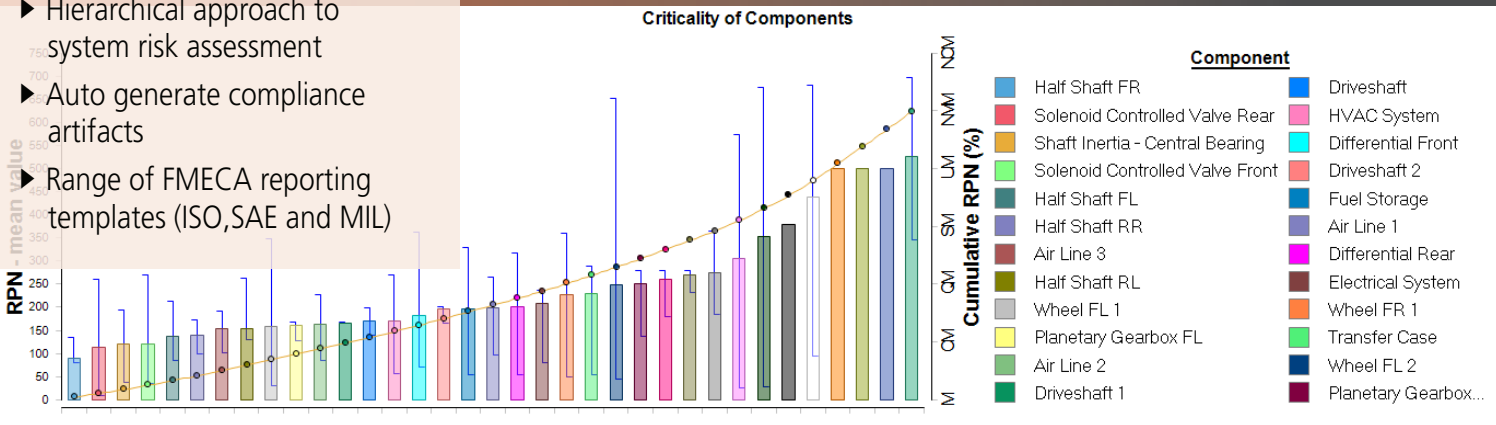
- Automated criticality calculation of 'end effects'
- Hierarchical approach to system risk assessment
- Auto generate compliance artifacts
- Range of FMECA reporting templates (ISO,SAE and MIL)

Overview

MADe Safety and Risk Assessment (SRA) is used to analyze and understand the criticality of functional risks in a design configuration, and to establish and document the potential impact of failures on operations and the cost of ownership. Criticality parameters for component functions and their associated failure concepts are defined by the user to support automated generation of a range of safety and risk assessments that are required for the design and support of safety / mission critical equipment, including FMECA & Functional Fault Tree Analysis.

How does MADe Safety and Risk Assessment work?

SRA uses Occurrence, Detectability and Severity parameters that are defined by the user to calculate the criticality of each specific functional failure in the system based on a range of assessment methodologies (e.g. Risk Priority Number [RPN], Failure Assessment Index [FAI], etc.). MADe ensures consistency in the process of identification and calculation for all potential impacts of a failure in complex systems – with a range of thresholding options to categorize risks (e.g. Critical Item Analysis).



FMECA

Criticality of the system components are assigned to flows specified in the system model / functional block diagram and faults from the failure diagram. These values are used to identify critical items of the system based on user specified thresholding (Fuzzy Criticality, RPN, HRI) and automatically generate a FMECA report using the report wizard.

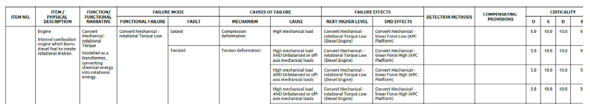


Figure 1: FMECA

Functional FTA

Functional Fault Tree Analysis identifies the dependencies of engineering risks in a specific system configuration. MADe FFTA is generated from the system model to identify potential causes of failures, their relative importance and probability of occurrence.

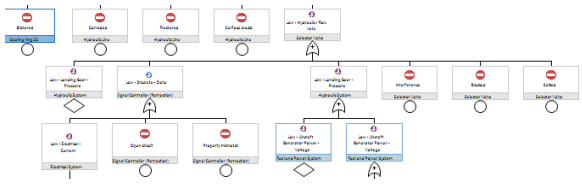


Figure 2: Fault Tree

Failure Diagram

MADe Failure Diagrams are a graphical representation of the causes, mechanisms and faults that can lead to loss of functionin the system. Failure Diagrams are developed for each item and used to define how a component can fail based on the physics of failure. Each fault has failure conditions, compensating provisions and detection methods which can be displayed in the FMECA report.

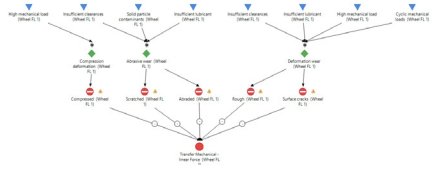


Figure 3: Failure Diagram

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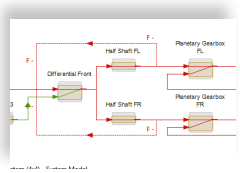
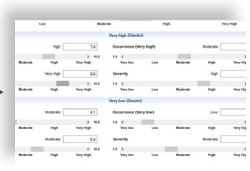
MADe Module: MADe Safety and Risk Assessment

Functionality

FMECA

System Model → Parameters → Failure Criticality

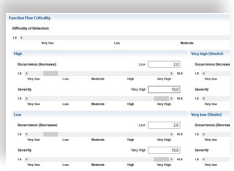


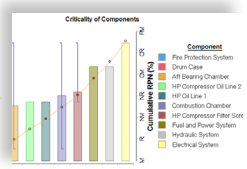


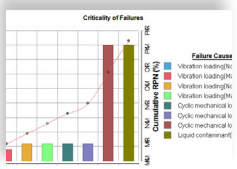
FMECA Report.PDF

Criticality Charting

Criticality Editor → Criticality Chart → Failure Criticality

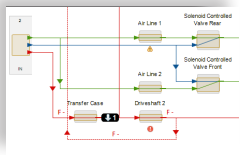


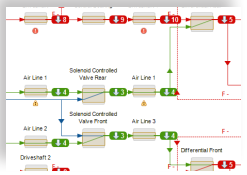


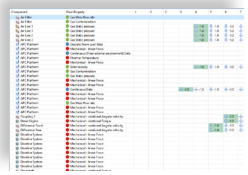


Automated Dependency Mapping

Failure Injection → Dependency Mapping → Step Table

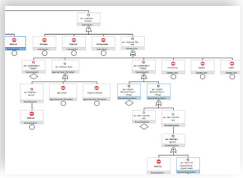


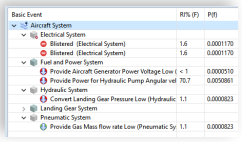




Fault Tree Analysis

Functional Fault Tree → Cut Set → Fault Tree Probability





Outputs

- **FMECA** (MIL / AIAG / SAE / ISO / VDA / ARP)
- **Fault Tree Analysis (Functional)**
- **Critical Item Analysis**
- **Origins of Failures**
- **Causes of Failures**
- **Criticality of Failures**

Features

- **System Modelling**
- **Criticality Editor**
- **Critical Item Analysis**
- **Failure Charting**
- **Failure Conditions**
- **Automated Reporting**

Other Modules

- MADe Modelling
- MADe RAM – Reliability Availability and Maintainability
- MADe PHM – Prognostics and Health Monitoring

Licensed Plugin

- Teamcenter Import

Minimum System Requirements	
Processor	32-bit, AMD Athlon II X2 or Intel Core i3 2.8 GHz
RAM	4GB
Hard disk	1GB for installation, 2GB additional free space for saving projects and related files
OS	Windows XP Service Pack 2
Resolution	1366x768 High Definition screen resolution
Java	Java 8 Standard Edition (bundled)

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