

# Analytical Reliability Methods and System Reliability

Reliability  
Foundation 2



*To cope with the latest economic developments, organizations must develop new products and systems with an intrinsic high level of reliability.*

**RMS (Reliability-Maintenance-Safety)**

*Engineering is an upcoming discipline in product development and helps in getting an integral grip on the Reliability of your product during the Design Phase with accurate and quantitative methods.*

**Working pro-active on the reliability of your products!**

Register: [www.holland-innovative.nl](http://www.holland-innovative.nl)

## Integration into the Product Creation Process

Based on the Holland Innovative experiences in design for value projects, this training offers to train you in the analytical reliability methodologies and system level approaches to ensure a high initial reliability designed into your systems. These pro-active methodologies will identify project reliability risks early, quantify these risks, and interrelate the various failure mechanisms within the components. Together this will lead to a complete system reliability analysis.

## A selection of the skills that will be acquired

During this training the following analytical methods will be covered: reliability block diagrams, fault tree analysis, event trees, petrinets, including quantifying risks. Furthermore probability calculations, Boolean Algebra, and Monte Carlo simulations will be covered. Design FMEA and root cause analysis will be treated extensively, as well as working with repairable systems. Cases will be using real-life data, supported by reliability software. Additional specialised software tools are provided by the teachers. For a more effective learning process, the training can be followed up by participation in the reliability user group (first year free).

## The aim and result of the training

You will be trained to become a reliability engineering professional. Capable of creating reliability and risk analyses of complex systems. Focusing on early design concepts, these analyses lead to pro-active and solid engineering and management recommendations throughout the entire product creation process. As an expert you will take the lead in projects on the aspect of system reliability, closely cooperating with the Six Sigma methodologies.

## Target group

The course aims at professionals concerned with design, testing, warranty analysis, reliability, project planning, maintenance, or inspection.

**Course duration and number of participants** 2 Blocks of 2 and 3 days, from 9.00 to 17.00. Maximum group size: 12 participants.

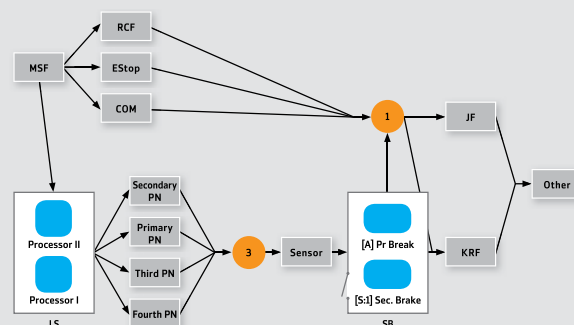
**Instructor** Ir. Elly van den Blik.

**Location and investment** Holland Innovative, High Tech Campus 29, Eindhoven. The investment is €3.500,- (ex. VAT) per participant. This includes 5 training days, a syllabus of the course material, the book 'Practical Reliability Engineering', lunch and refreshments. In addition, four times free participation in the Reliability User Group. Not included in the price are the costs for the theoretical exam and certification by the University of Stuttgart.

**Dates, registration and more info** See [www.holland-innovative.nl](http://www.holland-innovative.nl) under Academy.

**Contact** Team HI Academy, tel. +31 40 85 14 611, [academy@holland-innovative.nl](mailto:academy@holland-innovative.nl)

## Reliability Block Diagram Robotarm



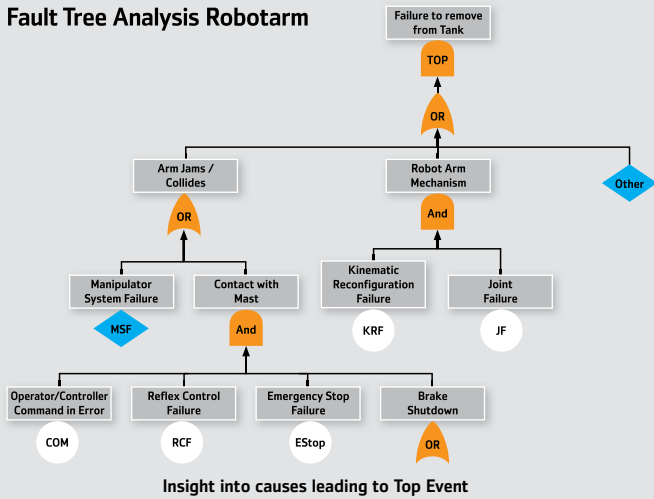
Modelling complex systems

**Headquarters**  
High Tech Campus 29  
NL - 5656 AE Eindhoven

T +31 40 85 14 611  
E [academy@holland-innovative.nl](mailto:academy@holland-innovative.nl)  
W [www.holland-innovative.nl](http://www.holland-innovative.nl)



Focus on complex business processes



**Program:**

**Block 1 / day 1-2**

- Introduction, reliability glossary
- RBD - Reliability Block Diagrams
- Boolean algebra and probability calculations
- Exercises using BlockSim software
- FTA - Fault Tree Analysis; qualitative FTA and quantification of Risks; by hand and with BlockSim
- ETA - Event Tree Analysis
- Relation FTA, RBD, and ETA

**Block 2 / day 3-5**

- FMEA - Failure Mode and Effects Analysis
- Monte Carlo simulations
- Introduction to Petri Nets
- Repairable system analysis
- RCA - Root Cause Analysis tools

**Product leadership: Factor 10**

What does it mean for your business if you can develop a reliable product - first time right? Or if you can gain insight into complex system designs with its risks identified, defined, and quantified at an early stage? Factor 10 approach: What is the value of controlling these risks and defining activities to mitigate risks on beforehand, thereby achieving a high reliability of your product immediately? Mastering reliability methods and techniques is important in order to achieve a superior product quality. In this training, the Factor 10 approach will be integrated in all subjects.

**Level**

University or college education, or equivalent level of knowledge gained through experience. Participants are recommended to first follow the Reliability Foundation 1 training on Life Data Analysis and Reliability Testing.

**Materials**

A laptop with Microsoft Office and the free demo version of ReliaSoft BlockSim (via [www.reliasoft.com](http://www.reliasoft.com)).\*

**Cooperation and certification**

The Reliability Foundation Program is a post-graduate education, focusing on the practical aspects of reliability engineering. The program has been developed in accordance with VDI 4002 Reliability guidelines in collaboration with the University of Stuttgart and consists of several modules that will result in a VDI Reliability Engineer certification.

*\*Note: demo version is valid for 21 days after activation.*



The Holland Innovative House: ■ ■ core ■ results ■ enablers

**Holland Innovative BV:**

- For solutions in project management, product & process development and improvement, and reliability
- 40 professionals with an experience level of more than 20 years
- Market areas: HighTech, Automotive, Solar & Energy, MedTech, Agro & Food

