

## INTRODUCTION

Reliability is used to describe the ability of a component or a system to meet certain performance standards over a certain period of time, assuming normal day-to-day operating conditions. In layman terms, reliability calculation is to estimate the chance that a system will work properly after ‘n’ number of hours or days of regular use. With this perspective, every organization today strives to ensure that customer expectations for reliability are fully met throughout the life of the product with low overall life-cycle costs. Simply put, a company must have a systematic, streamlined, engineering process in which reliability engineering is weaved into the total development cycle of the product design process. With products are getting more complex, there is an increase in complexity across all aspects of product development, driving the need well-defined process for incorporating reliability factors at every stage of the design cycle. By implementing reliability, a company can save potential field failures, and in turn save unwanted warranty costs. A reliable product in the market always ensures highest customer satisfaction.

Keeping this in mind, IMTMA is organizing a 5 days online training program in **Design for reliability**.

## FOCUS AREAS

- Importance of product reliability
- Definition of Reliability, Risk with few examples
- Definition of Function, Failure & different types failures with examples
- Concept of probability in Reliability & Failure.
- Use of basic statistics in the expression of metrics of Reliability & Examples.
- Product life, Bath Tub Concept application during product life.
- Estimation of reliability of components & in different types systems.
- Probability Density function Failure rate in the stages of Bath Tub Curve
- Different types of distribution of PDF, Weibull, Normal in Bath Tub Curve
- Definition of MTTF, MTTR, MTBF to be used as metrics for Reliability
- Estimation of MTTF, MTTR, MTBF for assumed PDF
- Tools and techniques for reliability enhancement during design.
- Concepts of DFMEA, FTA & DOE in brief & their applicability for reliability.
- The necessity for experiments & the reason for accelerated testing in lab and the models to relate the lab data to the Product population.
- How to use the reliability data to make the product guarantee & warranty.

## KEY TAKE AWAYS

- Understand the meaning of Function, reliability, failure and types of functional failures.
- Understand the different methods of assessing the reliability of their deigned system.
- Apply reliability to enhance the customer satisfaction by enhanced guarantee & warranty

## FEE PER PARTICIPANT (PER LOGIN)

**Rs. 13500/-**  
 +18% GST  
**IMTMA Members/ Micro Companies/ Individuals/ Educational Institutions / Students/ IMTMA Non Members/ Others**

**USD 540/-**  
**Overseas Participants**

**Group Concession : 10% for 3 to 5 and 30% for 6 and more delegates being nominated from the same company**

## FACULTY

This program will be conducted by **Mr. Sivanarul Selvan P.**  
 Mr. Selvan is a well-known specialist consultant and Instructor in the RAMS Field, having a total of 30 years of experience, and serving Multinational Companies and an entrepreneur. He is an Instrumentation & Control Engineer with CAD/ CAM/ CAE & Programming knowledge. He is practicing RAMS for the last 15 years and executed many Training Programs and Consultancy assignments to various Industrial verticals. He is specialized in RAMS, Reliability TEST methods & Plans, HALT, HASS & ALT, Physics of the failure, Design of Experiments, LEAN – Six Sigma.

### For Registration Contact

**Amarendu Debnath**  
**Programme Coordinator**  
 +91 9977133067  
[amarendu@imtma.in](mailto:amarendu@imtma.in)  
**Back End Operations**  
 9742626488  
[enquiry@imtmablr.com](mailto:enquiry@imtmablr.com)

### Contact Address

**INDIAN MACHINE TOOL MANUFACTURERS' ASSOCIATION**  
 Plot 249F, Phase IV, Udyog vihar, Sector - 18,  
 Gurgaon - 122015  
 Tata no- +91-124-6463101  
 Tel : 0124 4014101 - 04  
 Fax : +91-124-4014108

