

## Reliability Engineering – Introduction

The approach to reliability engineering will in part depend on the type of technology used, program objectives and requirements. These technologies include electronic, electrical and mechanical items or systems, which themselves could be a developmental, non-developmental or Commercial off the Shelf (COTS) solution. Tasks could be implemented to address component level to system level concerns and may range from the material and processes required to fabricate an item in question, to compiling software code that will be used to run a system's safety monitoring application (e.g. a nuclear power plant or manned space vehicle), to defining an effective redundant architecture for a system, such as a telecommunications network.

The general definition of reliability used throughout industry and quoted in many engineering books that have been published on this subject follows the example as taken from MIL-STD-785. The definition for Mission Reliability is given as; The ability of an item to perform its required functions for the duration of a specified mission profile.

The main focus of this section is to provide information on some of the classical qualitative and quantitative reliability analysis used by the automobile, defense, and space industry. The analyses used in the world of reliability engineering include the following:

- Reliability Programs
- Failure Modes and Effects Analysis (FMEA/ FMECA)
- Reliability Predictions
- Reliability Block Diagrams
- Failure Reporting and Corrective Action System
- Design for Reliability