

1. Record Nr.	UNINA9910824839203321
Titolo	Design for reliability [[electronic resource] /] / edited by Dev Raheja, Louis J. Gullo
Pubbl/distr/stampa	Hoboken, N.J., : Wiley, 2012
ISBN	1-280-87856-8 9786613719874 1-118-31003-9 1-118-31005-5 1-118-30999-5
Edizione	[1st ed.]
Descrizione fisica	1 online resource (334 p.)
Collana	Wiley series in quality & reliability engineering
Classificazione	TEC007000
Altri autori (Persone)	RahejaDev GulloLouis J
Disciplina	620/.00452
Soggetti	Reliability (Engineering)
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Design for Reliability; Contents; Contributors; Foreword; Preface; Introduction: What You Will Learn; 1 Design for Reliability Paradigms; Why Design for Reliability?; Reflections on the Current State of the Art; The Paradigms for Design for Reliability; Summary; References; 2 Reliability Design Tools; Introduction; Reliability Tools; Test Data Analysis; Summary; References; 3 Developing Reliable Software; Introduction and Background; Software Reliability: Definitions and Basic Concepts; Software Reliability Design Considerations; Operational Reliability Requires Effective Change Management Execution-Time Software Reliability Models Software Reliability Prediction Tools Prior to Testing; References; 4 Reliability Models; Introduction; Reliability Block Diagram: System Modeling; Example of System Reliability Models Using RBDs; Reliability Growth Model; Similarity Analysis and Categories of a Physical Model; Monte Carlo Models; Markov Models; References; 5 Design Failure Modes, Effects, and Criticality Analysis; Introduction to FMEA and FMECA; Design FMECA; Principles of FMECA-MA; Design FMECA Approaches; Example of a Design FMECA Process; Risk Priority Number; Final Thoughts

References  
6 Process Failure Modes, Effects, and Criticality Analysis; Introduction; Principles of P-FMECA; Use of P-FMECA; What Is Required Before Starting; Performing P-FMECA Step by Step; Improvement Actions; Reporting Results; Suggestions for Additional Reading;  
7 FMECA Applied to Software Development; Introduction; Scoping an FMECA for Software Development; FMECA Steps for Software Development; Important Notes on Roles and Responsibilities with Software FMECA; Lessons Learned from Conducting Software FMECA; Conclusions; References;  
8 Six Sigma Approach to Requirements Development  
Early Experiences with Design of Experiments  
Six Sigma Foundations; The Six Sigma Three-Pronged Initiative; The RASCI Tool; Design for Six Sigma; Requirements Development: The Principal Challenge to System Reliability; The GQM Tool; The Mind Mapping Tool; References;  
9 Human Factors in Reliable Design; Human Factors Engineering; A Design Engineer's Interest in Human Factors; Human-Centered Design; Human Factors Analysis Process; Human Factors and Risk; Human Error; Design for Error Tolerance; Checklists; Testing to Validate Human Factors in Design; References  
10 Stress Analysis During Design to Eliminate Failures  
Principles of Stress Analysis; Mechanical Stress Analysis or Durability Analysis; Finite Element Analysis; Probabilistic vs. Deterministic Methods and Failures; How Stress Analysis Aids Design for Reliability; Derating and Stress Analysis; Stress vs. Strength Curves; Software Stress Analysis and Testing; Structural Reinforcement to Improve Structural Integrity; References;  
11 Highly Accelerated Life Testing; Introduction; Time Compression; Test Coverage; Environmental Stresses of HALT; Sensitivity to Stresses; Design Margin; Sample Size  
Conclusions

---

Sommario/riassunto

"The aim of Design for Reliability (DFR) is to design for zero failures of critical system functions, which results in enormous savings in life cycle costs for producers and users. This practical guide helps readers to understand the best-of-breed methods, technologies, and tools for incorporating reliability into the complex systems design process. A significant feature of the book is the integration of ideas from computer science and market engineering. By adopting these design principles and learning from "insight" panels, engineers and managers will improve their ability to compete in global markets"--

---