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References6 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 ExperimentsSix 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 FailuresPrinciples 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"--