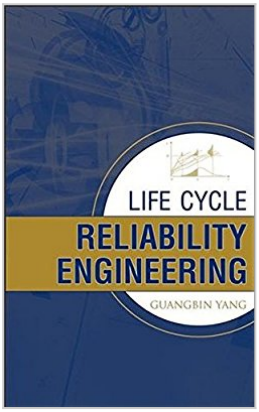

Life Cycle Reliability Engineering

By Guang Yang

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As the Lead Reliability Engineer for Ford Motor Company, Guangbin Yang is involved with all aspects of the design and production of complex automotive systems. Focusing on real-world problems and solutions, Life Cycle Reliability Engineering covers the gamut of the techniques used for reliability assurance throughout a product's life cycle. Yang pulls real-world examples from his work and other industries to explain the methods of robust design (designing reliability into a product or system ahead of time), statistical and real product testing, software testing, and ultimately verification and warranting of the final product's reliability

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Editorial Review

Review
"This book is quite different from traditional books written on reliability engineering so far and is authored by a person who has a rich industrial experience of working with Ford Motor Company. The book is quite informative and provides a good insight of methodologies and techniques used in reliability engineering. This will go a long way in creating competitive products that perform well in the market and also provide customer satisfaction." (*International Journal of Performability Engineering*; 1/09)

"It is a very practical book which provides a comprehensive discussion on reliability engineering concepts and techniques throughout a product life cycle. The author has done a great job in explaining the up-to-date reliability techniques in a very practical manner and using simple and straightforward language. This book will prove very useful for reliability engineers, testing engineers, quality engineers and design engineers." (*Reliability Review*, December 2008)

"This book gives both starting and experienced engineers a very nice overview of the different methods and tools that can be used for reliability engineering. It is very nice that the book gives a lot of (often simplified) examples; it will therefore not be difficult to apply the theory in industrial practice." (*Quality and Reliability Engineering International*, 2008)

" This is a useful and an important book. It should be on the shelf of all reliability engineers and other engineers who have responsibility for product reliability. It will also be of interest to many of those doing research in the area. Overall, the book is well-written and easy to read." (*Journal of Quality Technology*, April 2008)

"The author has done a great job in explaining the practical and state-of-the-art techniques to access and enhance reliability throughout the product life cycle. This book deliberates on a wide range of topics in reliability engineering. Practical examples and exercises, mostly from the automotive industry, are used to illustrate the ideas and methodologies. Readers of this book are expected to have some knowledge of basic statistical inference, statistical modeling, and probability theory. This book will be of practical use for a variety of engineers, including reliability engineers, quality engineers, test engineers, systems engineers, or design engineers, who are working in different stages of the product life cycle. It will also serve well as a textbook or a reference book to students in a course on reliability, quality, or industrial engineering." (*Technometrics*, February 2008)

From the Back Cover
Product reliability engineering from concept to marketplace

In today's global, competitive business environment, reliability professionals are continually challenged to improve reliability, shorten design cycles, reduce costs, and increase customer satisfaction. *Life Cycle Reliability Engineering* details practical, effective, and up-to-date techniques to assure reliability throughout the product life cycle, from planning and designing through testing and warranting performance. These techniques allow ongoing quality initiatives, including those based on Six Sigma and the Taguchi methods, to yield maximized output. Complete with real-world examples, case studies, and exercises, this resource covers:

- Reliability definition, metrics, and product life distributions (exponential, Weibull, normal, lognormal, and

more)

- Methodologies, tools, and practical applications of system reliability modeling and allocation
- Robust reliability design techniques
- Potential failure mode avoidance, including Failure Mode and Effects Analysis (FMEA) and Fault Tree Analysis (FTA)
- Accelerated life test methods, models, plans, and data analysis techniques
- Degradation testing and data analysis methods, covering both destructive and nondestructive inspections
- Practical methodologies for reliability verification and screening
- Warranty policies, data analysis, field failure monitoring, and warranty cost reduction

All reliability techniques described are immediately applicable to product planning, designing, testing, stress screening, and warranty analysis. This book is a must-have resource for engineers and others responsible for reliability and quality and for graduate students in quality and reliability engineering courses.

About the Author
DR. GUANGBIN YANG is a Reliability Technical Expert at Ford Motor Company. He is Chair of the Automotive Systems Committee of the IEEE Reliability Society and was the recipient of the Society's Engineer of the Year Award for 2002. A recognized leader in areas of reliability and quality, he has published numerous articles in technical journals.

Users Review

From reader reviews:

Christina Ochs:

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