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## Cost Analysis of Electronic Systems (Wspc Series in Advanced Integration and Packaging)

By Peter Sandborn



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### Cost Analysis of Electronic Systems (Wspc Series in Advanced Integration and Packaging) By Peter Sandborn

Understanding the cost ramifications of design, manufacturing and life-cycle management decisions is of central importance to businesses associated with all types of electronic systems. *Cost Analysis of Electronic Systems* contains carefully developed models and theory that practicing engineers can directly apply to the modeling of costs for real products and systems. In addition, this book brings to light and models many contributions to life-cycle costs that practitioners are aware of but never had the tools or techniques to address quantitatively in the past.

*Cost Analysis of Electronic Systems* melds elements of traditional engineering economics with manufacturing process and life-cycle cost management concepts to form a practical foundation for predicting the cost of electronic products and systems. Various manufacturing cost analysis methods are addressed including: process-flow, parametric, cost of ownership, and activity-based costing. The effects of learning curves, data uncertainty, test and rework processes, and defects are considered. Aspects of system sustainment and life-cycle cost modeling including reliability (warranty, burn-in), maintenance (sparing and availability), and obsolescence are treated. Finally, total cost of ownership of systems and return on investment are addressed.

Real life design scenarios from integrated circuit fabrication, electronic systems assembly, substrate fabrication, and electronic systems management are used as examples of the application of the cost estimation methods developed within the book.

Readership: Graduate students and professionals in electrical and electronic engineering, mechanical engineering and industrial engineering.



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### **Editorial Review**

#### **From the Inside Flap**

This book provides an introduction to the cost modeling for electronic systems that is suitable for advanced undergraduate and graduate students in electrical, mechanical and industrial engineering, and professionals involved with electronics technology development and management. This book melds elements of traditional engineering economics with manufacturing process and life cycle cost management concepts to form a practical foundation for predicting the cost of electronic products and systems. Various manufacturing cost analysis methods are addressed including: process-flow, parametric, cost of ownership, and activity-based costing. The effects of learning curves, data uncertainty, test and rework processes, and defects are considered. Aspects of system sustainment and life cycle cost modeling including reliability (warranty, burn-in), maintenance (sparing and availability), and obsolescence are treated. Finally, total cost of ownership of systems and return on investment are addressed.

#### **About the Author**

Peter Sandborn is a Professor in the CALCE Electronic Products and Systems Center at the University of Maryland. Dr. Sandborn's group develops obsolescence forecasting algorithms, performs strategic design refresh planning, and lifetime buy quantity optimization. Dr. Sandborn is the developer of the MOCA refresh planning tool. MOCA has been used by private and government organizations worldwide to perform optimized refresh planning for systems subject to technology obsolescence. Dr. Sandborn also performs research in several other life cycle cost modeling areas including maintenance planning and return on investment analysis for the application of prognostics and health management (PHM) to systems, total cost of ownership of electronic parts, transition from tin-lead to lead-free electronics, and general technology tradeoff analysis for electronic systems.

Dr. Sandborn has also developed and implemented part selection and management benchmarking and part obsolescence management benchmarking for Nortel, Schlumberger, Microsoft, Motorola, Honeywell, Lucas Aerospace and others. Dr. Sandborn has taught industry short courses on electronic systems cost modeling and obsolescence management to Ericsson, Harris, IBM, StorageTek, Motorola, United Defense, FAA, UK Ministry of Defense, the U.S. Navy and other organizations. Dr. Sandborn is a member of the U.S. Navy TRENT Shareholder Council and is the author of the U.S. DoD's DMSMS working group's DMSMS tool/data taxonomy. Dr. Sandborn has been the principle investigator on programs for the U.S. Air Force, Army and Navy; the Defense Logistics Agency, Lockheed Martin, Northrop Grumman, Motorola, Argon ST, Ericsson, the Naval Surface Warfare Centers, and others.

Dr. Sandborn is an Associate Editor of the IEEE Transactions on Electronics Packaging Manufacturing and a member of the editorial board of the International Journal of Performability Engineering. He is a past conference chair and program chair of the ASME Design for Manufacturing and Life Cycle Conference. He is the author of over 150 technical publications and several books on electronic packaging and electronic systems cost analysis and was the winner of the 2004 SOLE Proceedings and 2006 Eugene L. Grant awards. He has a B.S. degree in engineering physics from the University of Colorado, Boulder, in 1982, and the M.S. degree in electrical science and Ph.D. degree in electrical engineering, both from the University of Michigan, Ann Arbor, in 1983 and 1987, respectively.

## **Users Review**

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