Cost Analysis And Estimating For Engineering And Management

Contents: Characteristics of Credible Cost Estimates & a Reliable Process for Creating Them; Why Cost Estimates Are Required for Gov¿t. Programs & Challenges in Developing Results; Criteria for Cost Estimating, EVM, & Data Reliability; Cost Analysis Overview; The Cost Estimate¿s Purpose, Scope, & Schedule; The Cost Assessment Team; Technical Baseline Description; Work Breakdown Structure; Ground Rules & Assumptions; Data; Developing a Point Estimate; Estimating Software Costs; Sensitivity Analysis; Cost Risk & Uncertainty; Validating the Estimate; Documenting the Estimate; Presenting the Estimate to Mgmt.; Managing Program Costs: Planning, Execution, & Updating; & Appendixes. Tables, Figures, & Checklists.

Engineering has changed dramatically in the last century. With modern computing systems, instantaneous communication,

elimination of low/mid management, increased complexity, and extremely efficient supply chains, all have dramatically affected the responsibilities of engineers at all levels. The future will require cost effective systems that are more secure, interconnected, software centric, and complex. Employees at all levels need to be able to develop accurate cost estimates based upon defensible cost analysis. It is under this backdrop that this book is being written. By presenting the methods, processes, and tools needed to conduct cost analysis, estimation, and management of complex systems, this textbook is the next step beyond basic engineering economics. Features Focuses on systems life cycle costing Includes materials beyond basic engineering economics, such as simulation-based costing Presents cost estimating, analysis, and management from a total ownership cost perspective Offers numerous real-life examples Provides excel based textbook/problems Offers PowerPoint slides, Solutions Manual, and author website with downloadable excel solutions, etc.

Cost analysis and estimating is a vital part of the running of all organizations, both commercial and government. This volume comprises the proceedings of the 1992 conference of the Society for Cost Estimating and Analysis. Individual chapters are written by experts in their respective fields. Consequently, the volume as a whole provides an invaluable and up-to-date survey of the field.

Exposure Draft

Realistic Cost Estimating for Manufacturing

Tools and Techniques

Electrical Estimating Methods

Cost Estimation

This practical reference/text provides a thorough overview of cost estimating as applied to various manufacturing industries, with special emphasis on metal manufacturing concerns. It presents examples and study problems illustrating potential applications and the techniques involved in estimating costs.;Containing both US and metric units for easy conversion of world-wide manufacturing data, Estimating and Costing for the Metal Manufacturing Industries: outlines professional societies and publications dealing with cost estimating and cost analysis; details the four basic metalworking processes - machining, casting, forming, and joining; reveals five techniques for capital cost estimating, including the new AACE International's

Recommended Practice 16R-90 and the new knowledge and experience method; discusses the effect of scrap rates and operation costs upon unit costs; offers four formula methods for conceptual cost estimating and examines material-design-cost relationships; describes cost indexes, cost capacity factors, multiple-improvement curves, and facility cost estimation techniques; offers a generalized metal cutting economics model for comparison with traditional economic models; and more.;Estimating and Costing for the Metal Manufacturing Industries serves as an on-the-job, single-source reference for cost, manufacturing, and industrial engineers and as a text for upper-level undergraduate, graduate, and postgraduate students in cost estimating, engineering economics, and production operations courses.;A Solutions manual to the end-of-chapter problems is available free of charge to instructors only. Requests for the manual must be made on official school stationery.

In today's hypercompetitive global marketplace, accurate costestimating is crucial to bottom-line results. Nowhere is this moreevident than in the design and development of new products andservices. Among managing engineers responsible for developingrealistic cost estimates for new product designs, the number-onesource of information and guidance has been the Cost Estimator'sReference Manual. Comprehensive, authoritative, and practical, the Manual instructsreaders in the full range of cost estimating techniques andprocedures currently used in the fields of development, testing,manufacturing, production, construction, software, generalservices, government contracting, engineering services, scientificprojects, and proposal preparation. The authors clearly explain howto go about gathering the data essential to preparing a realisticestimate of costs and guide the reader step by step through eachprocedure. This new Second Edition incorporates a decade of progress in themethods,

procedures, and strategies of cost estimating. All thematerial has been updated and five new chapters have been added toreflect the most recent information on such increasingly importanttopics as activity-based costing, software estimating,design-to-cost techniques, and cost implications of new concurrentengineering and systems engineering approaches to projects. Indispensable to virtually anyone whose work requires accurate costestimates, the Cost Estimator's Reference Manual will be especiallyvaluable to engineers, estimators, accountants, and contractors ofproducts, projects, processes, and services to both government andindustry. The essential ready-reference for the techniques, methods, andprocedures of cost estimating COST ESTIMATOR'S REFERENCE MANUAL Second Edition Indispensable for anyone who depends on accurate cost estimates forengineering projects, the Cost Estimator's Reference Manual guidesthe user through both the basic and more sophisticated aspects ofthe estimating process. Authoritative and comprehensive, the Manualseamlessly integrates the many functions--accounting, financial,statistical, and management--of modern cost estimating practice.Its broad coverage includes estimating procedures applied to suchareas as: * Production * Software * Development * General services * Testing * Government contracting * Manufacturing * Engineering * Proposal preparation * Scientific projects * Construction This updated and expanded Second Edition incorporates all the mostimportant recent developments in cost estimating, such asactivity-based costing, software estimating, design-to-costtechniques, computer-aided estimating tools, concurrentengineering, and life cycle costing. For engineers, estimators, accountants, planners, and others whoare involved in the cost aspects of projects, the Cost Estimator'sReference Manual is an invaluable information source that will payfor itself many times over.

This book contains material on the use of software, organization strategies in cost estimating, new types of costs, learning curves, and much more. Topics presented include manufacturing costs, standard vs. actual costs, cost in relation to product volume, analysis, types of estimates, cost estimating controls, cost requests from other departments, evaluating supplier quotes, calculating selling prices, and much more.

A Method for Obtaining Costs of Construction Work and Compilation of the Data for Estimating Space Programs

Engineering Economics of Life Cycle Cost Analysis

Estimating and Cost Analysis

Tools, Techniques and Best Practices

This revision of the author's bestselling earlier work on cost estimating has been updated to provide currently applicable examples, data and techniques. Two new chapters have been added covering: computer tools and models for cost estimating, where to get these tools, and the features to look for; software cost estimating with special emphasis on the effect of CASE tools on software productivities and resulting software costs. A complete set of inflation tables is now included to permit conversion from any year dollars to any other year dollars from 1959 through 1997. Retains its comprehensive coverage of the elements needed to embark on a cost estimating task. Strengthened are the invaluable parts of the book which

tell the estimator how to produce a competitive and credible cost estimate. Manufacturing standards for hardware and electronics are retained as are handy tables for determining the costs of engineering, design, documentation, drafting and testing.

This comprehensive reference covers the full spectrum of technical data required to estimate costs for major construction projects. Widely used in the industry for tasks ranging from routine estimates to special cost analysis projects, the book has been completely updated and reorganized with new and expanded technical information. RSMeans Estimating Handbook will help construction professionals: Evaluate architectural plans and specifications Prepare accurate quantity takeoffs Compare design alternatives and costs Perform value engineering Double-check estimates and quotes Estimate change orders FEATURES: This new edition includes expanded coverage of: Construction specialties—green building, metal decking, plastic pipe, demolition items, and more Preliminary or square foot estimating tools Updated city cost indexes to adjust costs—by trade—for 30 major cities Historic indexes to factor costs for economic effects over time Complete reorganization to the newest CSI MasterFormat classification system

This paper documents a Texas Instruments 'TI Programmable 59' calculator program that uses the U.S. Air Force Cost Analysis Cost Estimating (CACE) model described in Air Force Regulation 173-10, Volume I, USAF Cost and Planning Factors, dated 6 February 1975. The CACE model was designed with a 'building block' approach to estimate annual operating costs of aircraft weapon systems. The model is useful to Air Force organizations, other Government agencies, and government contractors for cost analysis, life cycle cost exercises, or studies concerned with cost effectiveness comparisons between weapon systems. The program described in this paper provides the user with a means of using the CACE model with a hand-held programmable calculator, eliminating lengthy manual computation or the necessity of using a computer. With its calculator connected to the Texas Instruments 'PC-100A Print Cradle, ' the program allows the user to select among several cost factor input methods, estimate output formats, and summarization options.

Estimating and Costing for the Metal Manufacturing Industries

Shifting U.S. Priorities

The Journal of Cost Analysis & Management

An Institutional Cost Analysis

Cost Estimating and Contract Pricing

The authors present the latest principles and techniques for the evaluation of engineering design. The text is suitable for undergraduate or graduate courses in cost estimating in engineering, management and technology settings.

Cost Analysis and Estimating for Engineering and ManagementPrentice Hall

Data Envelopment Analysis (DEA) was developed with the idea of evaluating the performance (measurign productivity or efficiency) of not-for-profit organizations. However, it appears that DEA also has potential as a tool for use in 'traditional' cost estimating/analysis roles. The purpose of this paper is to briefly introduce the DEA methodology to the cost analysis community. We proceed in this paper by first presenting the DEA model formulation. This is followed by a description of the characteristics and conventions of the DEA model. The next section provides an example of the formulation of the DEA model for a specific analysis. The paper concludes with a discussion on possible avenues of DEA use in cost estimating/analysis.

Solutions Manual

Estimating the Cost of a Bachelor's Degree

U.S. Air Force Cost Analysis Cost Estimating Model Program For Use With the "Ti Programmable 59" Handheld Calculator

Life-cycle Cost Analysis and Probabilistic Cost Estimating in Engineering Design Using an Air Duct Design Case Study

Cost Estimating and Analysis

The environment for today's cost estimator and analyst is certainly very challenging. Computerization, software, robots, composites, uncertainty, and inte grated systems all challenge the applicability of our existing tools and techniques. These Proceedings serve to document some of the completed and on-going re search in the dynamic world of costing. This document is published in conjunction with the first Society of Cost Es timating and Analysis (SCEA) National Conference, held in Boston, MA, June 19-21,1991. It serves to foster and promote cost research, and to provide a forum to report these findings in furtherance of public interest. This volume is the third of the series. The first and second were published in conjunction with the 1989 ICNNES Joint Conference in Washington, D.C., and the 1990 ICNNES Joint Conference in Los Angeles. My thanks to our Editors, Professor Jane Robbins and Dr. Roland Kankey; our Managing Editor, Mr. Frank Hett; the Program Chair, Ms. Ann-Marie Sweet; and all those who contributed. R. R. Crum, President Society of Cost Estimating and Analysis PREFACE We wish to thank the professionals who submitted papers to us for review. As any editor will indicate, you cannot review or publish papers that are not sub mitted. The articles in this Proceedings successfully completed the referee process. Each of these authors was rewarded by an additional cycle of minor changes, word processing, and express mailings.

Simplify the estimating process with the latest data, materials, and practices Electrical Estimating Methods, Fourth Edition is a comprehensive guide to estimating electrical costs, with data provided by leading construction database RS Means. The book covers the materials and processes encountered by the modern contractor, and provides all the information professionals need to make the most precise estimate. The fourth edition has been updated to reflect the changing materials, techniques, and practices in the field, and provides the most recent Means cost data available. The complexity of electrical systems can make accurate estimation difficult, but this guide contains all the necessary information in one place. An electrical estimate represents the total cost for materials, labor, overhead and profit, but accuracy is virtually impossible without a basic knowledge of the field, and real-world experience in the type of work required. Inaccurate estimates lead to problems with customer satisfaction, which often create payment issues. A thorough, complete, and accurate estimate is in the best interest of all parties involved in the work. Electrical Estimating Methods provides more than just data. Detailed discussions about the work itself help highlight factors that may escape notice, and access to the latest cost data helps tie everything together. Features include: Discussion of current equipment, materials, and processes Means data for both residential

and commercial projects Case studies that illustrate best practices Online access to the latest Means data for fast access on the job The book discusses specific situations as well as general practices, and provides comprehensive guidance to the creation of a true, current, estimation of costs. For electrical contractors and estimators, Electrical Estimating Methods contains must-have content that simplifies the estimating process.

This work provides principles & techniques for the evaluation of construction design, emphasizing the importance of strong analysis skills & exploring estimation. It aims to provide readers with a balanced & cohesive overview of these two areas.

Cost Analysis and Estimating for Engineering and Management

Cost and Assessment Guide: Best Practices for Estimating and Managing Program Costs

Cost Estimating and Cost Analysis in Reproductionwork

Estimating, Cost Analysis and Cost Planning

A U.S. Air Force Cost Analysis Cost Estimating Model Program for Use with the "TI Programmable 59" Handheld Calculator

The most effective way to generate an estimate of a new product's cost engineering change cost, or innovation cost is through a detailed cost investigation. Analysis of the available materials and processes leads to the most

economical and financial decisions. Now in its third edition, Realistic Cost Estimating for Manufacturing has been used by students and practitioners since 1968 in this endeavor. Revised and expanded, the book recognizes the extremely important role estimating is playing in today's highly competitive global economy. Realistic Cost Estimating for Manufacturing provides a survey of the myriad manufacturing processes and practices and combines this with in-depth explanations and examples of costing methods and tools. A comprehensive, standardized approach to their application is given. Among the manufacturing processes surveyed are: machining, casting, stamping, forging, welding, plastics technology, finishing, and rapid prototyping. To develop realistic baseline estimates, an engineering or costing professional must have an in-depth understanding of costing methods and techniques. As a fundamental reference, the book provides insight into the art, science, and functions of cost estimation in a wide range of activities: product design and manufacturing, engineering change control, proposal development, make or buy studies, identifying cost reduction opportunities, component costing, reverse engineering, benchmarking, and examining alternative processes, materials, machines, and tooling. As examples, it will aid the practitioner in efforts to justify the replacement or improvement of existing technology with new creative solutions; perform a feasibility study; develop a basis for cost-oriented decision support; improve

supply chain evaluation and sourcing analysis; and minimize costs. The third edition has been greatly enhanced with new chapters and material dedicated to the roles of economics and finance, cost reduction, continuous improvement, plastic parts, electronics cost estimating, costing studies, advanced manufacturing processes, and quality costs. Further, the existing chapters have been significantly expanded to include new processes and operations and examples to enhance learning. Since nontraditional technology is widely applied in manufacturing, its costing aspects are also explored. Five Appendices provide additional information on productivity based on efficiency, cost reduction, matching part features to manufacturing processes, packaging cost, and inspection and measurement costs. As with its previous editions, instructors of cost estimating courses can rely on the book to provide a solid foundation for manufacturing engineering courses and programs of study. The book is also useful for on-the-job training courses for engineers, managers, estimators, designers, and practitioners. It can be applied in seminars and workshops specifically dedicated to product or component cost reduction, alternative cost analysis, engineering change cost control, or proposal development. As in the previous editions, there are multiple equations and calculation examples, as well as end-of-chapter questions to test student's knowledge. An instructor's guide is also available.

"Provides a step-by-step introduction to the need for cost estimation, the various applications, and the available resources for obtaining relevant data"--

The process of estimating the cost for the development and delivery of a product, service, or solution can range from simple to highly complex based upon multiple factors including: technology maturity, urgency, geographic location, quantity, quality, availability of resources, hardware and software, systems integration and more. This book provides a comprehensive discussion of cost estimating and contract pricing with extensive use of tools, techniques, and best practices from both the public and private sectors. Key topics of discussion include: Cost estimating methods Cost accounting standards Cost analysis Profit analysis Contract pricing arrangements Price analysis Total ownership cost Earned value management systems

Cost Analysis

Realistic Cost Estimating for Manufacturing, 3rd Edition

Simulated Markets, Hypothetical Markets, and Travel Cost Analysis

Cost Analysis of Electronic Systems

Plan Analysis and Cost Estimating for Residential Construction

Improve the accuracy of project estimates and make better in-progress modifications by following the discipline-independent approach mapped out in this book. Learn the best ways to apply new tools, including a breakdown structure for both work and resources and proven estimating

models. In addition, you'll gain insights into best practices for progress monitoring and cost management, as well as for dealing effectively with external projects.

Changes in production processes reflect the technological advances permeat ing our products and services. U. S. industry is modernizing and automating. In parallel, direct labor is fading as the primary cost driver while engineering and technology related cost elements loom ever larger. Traditional, labor-based ap proaches to estimating costs are losing their relevance. Old methods require aug mentation with new estimating tools and techniques that capture the emerging environment. This volume represents one of many responses to this challenge by the cost analysis profession. The Institute of Cost Analysis (lCA) is dedicated to improving the effective ness of cost and price analysis and enhancing the professional competence of its members. We encourage and promote exchange of research findings and appli cations between the academic community and cost professionals in industry and government. The 1990 National Meeting in Los Angeles, jointly spo~sored by ICA and the National Estimating Society (NES), provides such a forum. Presen tations will focus on new and improved tools and techniques of cost analysis. This volume is the second in a series. The first was produced in conjunction with the 1989 National Meeting of ICA/NES in Washington, D.C. The articles in this volume, all refereed, were selected from about 100 submitted for presen tation at the Los Angeles meeting.

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 managementare used as examples of the application of the cost estimation methods developed within the book.

Methods and Tools

Cost Estimator's Reference Manual

Use of Data Envelopment Analysis in Cost Analysis and Estimating

Cost Estimating