Cost Analysis And Estimating For Engineering And Management Paperback

Cost Analysis and Estimating for Engineering and ManagementPrentice Hall

This report presents a cost analysis of Monoethylene Glycol (MEG) production from ethylene oxide. The process examined is similar to Shell OMEGA process. In this process ethylene glycol is produced from ethylene oxide, with ethylene carbonate as an intermediate. This report examines one-time costs associated with the construction of a United States-based plant and the continuing costs associated with the daily operation of such a plant. More specifically, it discusses: * Capital Investment, broken down by: - Total fixed capital required, divided in production unit (ISBL); infrastructure (OSBL) and contingency - Alternative perspective on the total fixed capital, divided in direct costs, indirect costs and contingency - Working capital and costs incurred during industrial plant commissioning and start-up * Production cost, broken down by: - Manufacturing variable costs (raw materials, utilities) - Manufacturing fixed costs (maintenance costs, operating charges, plant overhead, local taxes and insurance) - Depreciation and corporate overhead costs * Raw materials consumption, products generation and labor requirements * Process block flow diagram and description of industrial site installations (production unit and infrastructure) Keywords: Shell, OMEGA, Only MEG Advantage, Oxidation, Catalytic Process, Mitsubishi

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

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.

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.

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.

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

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.

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.

This report presents a cost analysis of Polycarbonate (PC) production from bisphenol A (BPA) and phosgene. The process examined is a typical interfacial process. In this process, BPA, dissolved in an aqueous solution, is reacted with phosgene, in an organic solution, at the interface of the two-phase mixture. The carbonate oligomers produced are then polycondensed to Polycarbonate resin. This report examines one-time costs associated with the construction of a United States-based plant and the continuing costs associated with the daily operation of such a plant. More specifically, it discusses: * Capital Investment, broken down by: - Total fixed capital required, divided in production unit (ISBL); infrastructure (OSBL) and contingency - Alternative perspective on the total fixed capital, divided in direct costs, indirect costs and contingency - Working capital and costs incurred during industrial plant commissioning and start-up * Production cost, broken down by: - Manufacturing variable costs (raw materials, utilities) - Manufacturing fixed costs (maintenance costs, operating charges, plant overhead, local taxes and insurance) - Depreciation and corporate overhead costs * Raw materials consumption, products generation and labor requirements * Process block flow diagram and description of industrial site installations (production unit and infrastructure) This report was developed based essentially on the following reference(s): "Polycarbonates", Ullmann's Encyclopedia of Industrial Chemistry, 7th edition Keywords: Thermoplastic Polymer, Interfacial Polymerization, Polycondensation

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.

This report presents a cost analysis of Ethylene Dichloride (EDC) production from ethylene and chlorine using a direct chlorination process. The process examined is similar to

Vinnolit process. This process consists in a liquid-phase low temperature chlorination (LTC). This report examines one-time costs associated with the construction of a United States-based plant and the continuing costs associated with the daily operation of such a plant. More specifically, it discusses: * Capital Investment, broken down by: - Total fixed capital required, divided in production unit (ISBL); infrastructure (OSBL) and contingency - Alternative perspective on the total fixed capital, divided in direct costs, indirect costs and contingency - Working capital and costs incurred during industrial plant commissioning and start-up * Production cost, broken down by: - Manufacturing variable costs (raw materials, utilities) - Manufacturing fixed costs (maintenance costs, operating charges, plant overhead, local taxes and insurance) - Depreciation and corporate overhead costs * Raw materials consumption, products generation and labor requirements * Process block flow diagram and description of industrial site installations (production unit and infrastructure) Keywords: Ethene, 1,2-Dichloroethane, Vinnolit, Westlake

"Engineering has changed dramatically in the last century. With modern computing systems, instantanious communcation, elimination of low/mid management, and extremely efficent supply chains has dramatically affected the responsibilities of engineers at all levels. The future will requires systems that are move 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"--

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

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.

A discussion of principles and techniques for the economic evaluation of technical designs for operations, products, projects, or systems.

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.

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.

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.

To use public funds effectively, the gov¿t. must meet the demands of today's changing world by employing effective mgmt. practices and processes, including the measurement of gov¿t. program performance. Legislators, gov¿t. officials, and the public want to know whether gov¿t. programs are achieving their goals and what their costs are. To make those evaluations, reliable cost information is required and fed. standards have been issued for the cost accounting that is needed to prepare that information. This Cost Guide has been developed in order to establish a consistent methodology that is based on best practices and that can be used across the fed. gov¿t. for developing, managing, and evaluating capital program cost estimates. Illustrations.

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.

This guidebook assists Air Force Program Office engineering and management personnel in costing embedded software for avionics applications. A methodology for cost reporting and avoiding the '90 percent complete' syndrome is presented. An annotated bibliography gives the author's personal view of source material relevant to avionics software costing using modern programming practices. (Author).