

Operating And Maintenance Cost Estimating Guideline

This report presents a cost analysis of Polymer Grade (PG) Propylene production from propane using a dehydrogenation process. The process examined is similar to Uhde STAR process. In this process, Propylene is produced through two dehydrogenation steps: a steam reforming step followed by oxyreaction. 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): US Patent 7678956, issued to Uhde in 2010 Keywords: PG Propylene, Steam Active Reforming, Thyssenkrupp, Propene, PDH, On-Purpose Propylene Production

The first-ever publication to address the cost of all aspects of maintaining your facility: maintenance and repair, preventive maintenance, general maintenance and complete details about the cost and repair frequencies of thousands of work items. This book provides comprehensive coverage of all aspects of buildings and grounds, from preventive maintenance schedules on large boilers, to replacing fire hydrants, to resurfacing parking lots and more.

Stay Up to Date on the Latest Issues in Maintenance Engineering The most comprehensive resource of its kind, Maintenance Engineering Handbook has long been a staple for engineers, managers, and technicians seeking current advice on everything from tools and techniques to planning and scheduling. This brand-new edition brings you up to date on the most pertinent aspects of identifying and repairing faulty equipment, such dated subjects as sanitation and housekeeping have been removed. Maintenance Engineering Handbook has been advising plant and facility professionals for more than 50 years. Whether you're new to the profession or a practiced veteran, this updated edition is an absolute necessity. New and updated sections include: Belt Drives, provided by the Gates Corporation Repair and Maintenance Cost Estimation Ventilation Fans and Exhaust Systems 10 New Chapters on Maintenance of Mechanical Equipment Inside: • Organization and Management of the Maintenance Function • Maintenance Practices • Engineering and Analysis Tools • Maintenance of Facilities and Equipment • Maintenance of Mechanical Equipment • Maintenance of Electrical Equipment • Instrumentation and Reliability

Tools • Lubrication • Maintenance Welding • Chemical Corrosion Control and Cleaning

LDPE via High-Pressure Tubular Process - Cost Analysis - LDPE E11A

Operations and Maintenance Cost Estimates

Operating and Maintenance Cost Estimate Results Report

Maintenance Engineering Handbook

Costs of Operation and Maintenance Activities (army): Techniques for Analysis and Estimation

Predictive Operations and Maintenance Cost Model

The research reported in this paper develops a methodology for determining the cost impact of the operation and maintenance, Army (OMA) appropriation for the analysis of proposed force changes. The methodology is built around the Army's financial accounting system and relies primarily on Army budget data. Each account is classified to a level of activity detail that can be matched with quantities, either physical or measured in dollars, and for which there are descriptions of what specific OMA costs the account includes. Classification of OMA activities as to type of force dependency enables the computation of coefficients that relate specific activity costs to physical measures. A complete set of OMA cost-estimating relations(CERs) except for costs of training military occupational specialties illustrates how CERs can be developed from the Army's financial accounting system.

This report describes a model which can be used to estimate the operations and support costs of avionics line replaceable units (LRU's). The model relates available LRU design parameters to operations and support costs using various cost estimating relationships. This document is Volume I of the final report which describes the development of the revised version of the Westinghouse Avionics Laboratory Predictive Operations and Support (ALPOS) cost model developed in 1977-1978 and described in AFAL-TR-78-49. This revised version, known as ALPOS II, has more expansive data base than ALPOS and includes digital avionics systems not included in ALPOS.

This report updates the costs developed for Operating and Maintaining Generator Sets established by the Cost Estimating Relationships (CER's) in TROSCOM Technical Report 74-12. The methodology employed is based on ratio and proportion analysis, wherein each individual component of Operating and Maintenance (O and M) Cost is updated using a specialized index. Then, the cost components are reaggregated into a revised O and M Cost, which more accurately reflects the actual cost than would escalation by a single gross factor. The report covers full load and half load operating costs for most common 60 HZ and 400 HZ Gasoline Engine Driven (GED) Generator Sets, and also those for common 60 HZ Diesel Engine Driven (DED) Generator Sets. The escalation factor for 400 HZ DED Generator Sets is assumed to be the same as that for corresponding 60 HZ DED Generator Sets, using the previous TROSCOM Tech Report 74-12. The complete statement of methodology is included which allows the analysis to be adapted by the user to fit the specific time period desired. The Generator Sets referenced in this Tech Report are used to support various types of equipment, which means that the cost escalation factors provided should be of value in determining O and M Cost for generators used in a variety of applications. (Author).

Budgeting for Facilities Maintenance and Repair Activities

Maintenance Costs and Life Cycle Cost Analysis

Combined Sewer Overflow Storage and Treatment

Final Report

Cross-county MetroLink Extension, Capital, Operating and Maintenance Cost Estimation Methodology, Draft Technical Report

1976 Needs Survey : Summaries of Technical Data for Combined Sewer Overflows and Stormwater Discharges

Provides cost estimating relationships for annual nonfuel operation and maintenance costs for light-water reactor nuclear power plants for electric power generation.

This report presents a cost analysis of Linear Alpha Olefins (LAO) production from ethylene. The process examined is similar to Chevron Phillips process. In this process, ethylene is oligomerized to produce Linear Alpha Olefins ranging from C4 to C30+. 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): (1) "Olefins, Higher", Kirk-Othmer Encyclopedia of Chemical Technology, 5th edition; (2) US Patent 5510556, issued to Chevron in 1996 Keywords: Ethene, Ethylene Oligomerization, Gulf Oil Chemicals Company

A comprehensive approach to maintenance and repair planning and budgeting for all major building types. Facilities professionals faced with the task of providing higher quality services on smaller budgets will find guidance for evaluating and budgeting facilities operations, maintaining and repairing major building components, and assembling costs into a defensible budget.

Cost Estimating Relationships for Nuclear Power Plant Operation and Maintenance

Cost Estimates for Construction of Publicly-owned Wastewater Treatment Facilities

Life Cycle Cost Estimating--its Status and Potential Use in Major Weapon System Acquisitions, Department of Defense

Multi-Corridor Project Technical Report

Draft Operating and Maintenance Cost Estimating Methodology Report

Butadiene Production from n-Butane - Cost Analysis - Butadiene E11A

Cost Planning and Estimating for Facilities MaintenanceRSMeans

*This report presents a cost analysis of Low Density Polyethylene (LDPE) production from polymer grade (PG) ethylene. The process examined is a typical high-pressure tubular polymerization process. 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): (1) US Patent 6899852, issued to ExxonMobil in 2005; (2) US Patent 20130333832, issued to LyondellBasell in 2013 Keywords: Ethene, PE, BASF, Tubular Reactor, ExxonMobil, LyondellBasell, Lupotech*

This report describes a model which can be used to estimate the operations and support costs of avionics line replaceable units (LRU's). The model relates available LRU design parameters to operations and support costs using various cost estimating relationships. This document is Volume II of the final report which describes the development of the revised version of the Westinghouse Avionics Laboratory Predictive Operations and Support (ALPOS) cost model developed in 1977 -1978 and described in AFAL-TR-78-49. This revised version, known as ALPOS II, has a more expansive data base than ALPOS and includes digital avionics systems not included in ALPOS.

Cost trends

Bureau of Reclamation Operations and Maintenance Costs

Estimating Cost Per Lane Mile for Routine Highway Operations and Maintenance

Propylene Production from Propane - Cost Analysis - Propylene E33A

Report to the Chairman, Subcommittee on Coast Guard and Maritime Transportation, Committee on Transportation and Infrastructure, House of Representati

Desalination Project Cost Estimating and Management examines the key issues associated with the estimation of costs for desalination plants. It covers all aspects of desalination project cost estimating and management: direct and indirect capital costs, fixed and variable operation and maintenance costs, and total costs for water production. In addition, it provides a detailed overview of the factors that influence project costs and discusses the technological and project delivery methods to control and optimize project costs. The book includes cost curves for the most commonly used seawater desalination facilities and numeric examples illustrating how to prepare a budgetary cost estimate for a typical desalination project. Features: •Presents a comprehensive engineering overview of key issues associated with desalination project cost estimating. •Includes cost curves which can be used for budgetary level estimates of capital, and operation and maintenance (O&M) expenditures. •Contains easy to use cost-estimating rules of thumb derived from actual desalination projects. •Includes several numeric examples illustrating the cost estimating process.

This report presents a cost analysis of 1,3-Butadiene (BD) production from n-butane using a dehydrogenation process. The process examined is similar to CB&I Lummus Catadiene process. 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): "Butadiene", Ullmann's Encyclopedia of Industrial Chemistry, 7th edition Keywords: Houdry Catadiene, Sud-Chemie, Catalytic Dehydrogenation, BD, Fixed-Bed Reactor, BASF, NMP extraction

This report presents a cost analysis of Linear Low Density Polyethylene (LLDPE) production from polymer grade (PG) ethylene and 1-octene using a solution process. The process under analysis is similar to NOVA Chemicals Advanced SCLAIRTECH process. 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): US Patent 6319996, issued to Nova Chemical in 2001 Keywords: Ethene, PE, Methylpentane, Stirred-Reactor, Dual-Reactor

Cross-county MetroLink Extension, Socio-economic and Environmental Analysis Draft Technical Report

Coast Guard Cutters, Depot Maintenance Is Affecting Operational Availability and Cost Estimates Should Reflect Actual Expenditures

Methanol Production from Natural Gas - Cost Analysis - Methanol E12A

Methods of Projecting Operations and Maintenance Costs for Nuclear Power Plants

Cumene Production Process - Cost Analysis - Cumene E15A

Cost Estimating Manual

More than 80 percent of all projects start with underestimated schedules and costs, and are doomed to exceed projections. This concise book demonstrates how to establish realistic estimates, how to control a projects schedule and costs, and how to develop the projects plan and processes for successful project completion.

This report presents a cost analysis of Cumene production from benzene and refinery grade (RG) propylene. The process examined is a typical alkylation process using a zeolite catalyst. 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: Propene, UOP Qmax, CB&I Lummus, CDTECH, CDCumene, Mobil/Badger, Zeolite

This report presents a cost analysis of large-scale Methanol production from natural gas. The process examined employs combined reforming for syngas generation similarly to the technologies developed by the following companies: Lurgi, Toyo, KBR, Johnson Matthey/Davy and Haldor-Topsoe. In this process, natural gas is converted into syngas in two steps: steam reforming and autothermal reforming. In the steam reformer, the natural gas reacts with steam and, in the secondary (autothermal) reformer, it reacts with oxygen. The syngas generated is then converted to Methanol.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):(1) US Patent 8629190, issued to Lurgi in 2014; (2) US Patent 8388864, issued to Lurgi in 2013Keywords: Synthesis Gas, Lurgi MegaMethanol, Johnson Matthey, JM Davy Technologies, Toyo, Kellogg Brown and Root, KBR, Johnson Matthey/Davy, Haldor-Topsoe

Cross-County MetroLink Extension, Segment I Conceptual Design

Planning, Monitoring and Controlling the Baseline

Regional Transit Project

Facilities Maintenance & Repair Costs with Rsmeans Data: 60302

Hearing Before the Subcommittee on Water and Power of the Committee on Energy and Natural Resources, United States Senate, One Hundred Sixth Congress, First Session, to Conduct Oversight on the Practices of the Bureau of

Reclamation Regarding Operations and Maintenance Costs and Contract Renewals, September 29, 1999

Historical Escalation of Operation and Maintenance Costs for Field Generator Sets

"This is the first NEA attempt at a comprehensive international comparison of different methodologies used to estimate operations and maintenance (O & M) costs which have increased for nuclear power plants in the last decade ..."--Back cover.

" The Coast Guard is procuring the FRC and NSC to replace its aging cutters. Both cutters have had operational problems-such as propulsion system issues-that are being addressed through maintenance. Prior GAO work identified issues related to performance and maintenance of these vessels, particularly related to the main diesel engines on both cutters. The House Subcommittee on Coast Guard and Maritime Transportation, Committee on Transportation and Infrastructure asked that GAO examine maintenance of the FRC and NSC. This report addresses the extent to which (1) maintenance issues are affecting FRC's and NSC's operational status, (2) design changes affect the maintenance of the cutters, and (3) the Coast Guard's cost estimates reflect actual expenditures for maintenance for the FRC and NSC. To conduct this work, GAO analyzed data on cutter maintenance and operations; analyzed the costs and timing of design changes; reviewed Coast Guard budgets and compared GAO best practices in cost estimating to the Coast Guard's process for estimating depot maintenance costs; and interviewed Coast Guard officials. " The House Subcommittee on Coast Guard and Maritime Transportation, Committee on Transportation and Infrastructure asked that GAO examine maintenance of the FRC and NSC. This report addresses the extent to which (1) maintenance issues are affecting FRC's and NSC's operational status, (2) design changes affect the maintenance of the cutters, and (3) the Coast Guard's cost estimates reflect actual expenditures for maintenance for the FRC and NSC. To conduct this work, GAO analyzed data on cutter maintenance and operations; analyzed the costs and timing of design changes; reviewed Coast Guard budgets and compared GAO best practices in cost estimating to the Coast Guard's process for estimating depot maintenance costs; and interviewed Coast Guard officials.

Authors have attempted to create coherent chapters and sections on how the fundamentals of maintenance cost should be organized, to present them in a logical and sequential order. Necessarily, the text starts with importance of maintenance function in the organization and moves to life cycle cost (LCC) considerations followed by the budgeting constraints. In the process, they have intentionally postponed the discussion about intangible costs and downtime costs later on in the book mainly due to the controversial part of it when arguing with managers. The book will be concluding with a short description of a number of sectors where maintenance cost is of critical importance. The goal is to train the readers for a deeper study and understanding of these elements for decision making in maintenance, more specifically in the context of asset management. This book is intended for managers, engineers, researchers, and practitioners, directly or indirectly involved in the area of maintenance. The book is focused to contribute towards better understanding of maintenance cost and use of this knowledge to improve the maintenance process. Key Features: • Emphasis on maintenance cost and life cycle cost especially under uncertainty. • Systematic approach of how cost models can be applied and used in the maintenance field. • Compiles and reviews existing maintenance cost models. • Consequential and direct costs considered. • Comparison of maintenance costs in different sectors, infrastructure, manufacturing, transport. **Report to the Congress**

Guideline for Uniform Presentation of Desalting Cost Estimates
Project Scheduling and Cost Control
Linear Alpha Olefins from Ethylene - Cost Analysis - LAO E12A
LLDPE Production via Solution Process - Cost Analysis - LLDPE E12A
Estimating High-speed Train Operating & Maintenance Cost for the CA HSRA 2012 Business Plan