

## Plant Equipment Maintenance Engineering Handbook

February issue includes Appendix entitled Directory of United States Government periodicals and subscription publications; September issue includes List of depository libraries; June and December issues include semiannual index

Now in its second edition and written by a highly acclaimed maintenance professional, this comprehensive and easy-to-understand resource provides a short review of all the major discussions going on in the management of the maintenance function. This revision of a classic has been thoroughly updated to include advances in technology and thinking and is sure to be found useful by maintenance professionals everywhere. It's the perfect reference for any maintenance professional that needs a quick update on any specific area within the subject. Contains five entirely new chapters, including Dealing with Contracts, 5S, Lean Maintenance, PM Optimizing, and Fire Fighting. Offers a complete survey of the field, an introduction to maintenance and a review of maintenance management. Provides a manual for cost reduction and a primer for the stockroom. Includes a training regime for new supervisors, managers and planners.

Rules of Thumb for Maintenance and Reliability Engineers will give the engineer the "have to have" information. It will help instill knowledge on a daily basis, to do his or her job and to maintain and assure reliable equipment to help reduce costs. This book will be an easy reference for engineers and managers needing immediate solutions to everyday problems. Most civil, mechanical, and electrical engineers will face issues relating to maintenance and reliability, at some point in their jobs. This will become their "go to" book. Not an oversized handbook or a theoretical treatise, but a handy collection of graphs, charts, calculations, tables, curves, and explanations, basic "rules of thumb" that any engineer working with equipment will need for basic maintenance and reliability of that equipment. • Access to quick information which will help in day to day and long term engineering solutions in reliability and maintenance • Listing of short articles to help assist engineers in resolving problems they face • Written by two of the top experts in the country

To be able to compete successfully both at national and international levels, production systems and equipment must perform at levels not even thinkable a decade ago. Requirements for increased product quality, reduced throughput time and enhanced operating effectiveness within a rapidly changing customer demand environment continue to demand a high maintenance performance. In some cases, maintenance is required to increase operational effectiveness and revenues and customer satisfaction while reducing capital, operating and support costs. This may be the largest challenge facing production enterprises these days. For this, maintenance strategy is required to be aligned with the production logistics and also to keep updated with the current best practices. Maintenance has become a multidisciplinary activity and one may come across situations in which maintenance is the responsibility of people whose training is not engineering. This handbook aims to assist at different levels of understanding whether the manager is an engineer, a production manager, an experienced maintenance practitioner or a beginner. Topics selected to be included in this handbook cover a wide range of issues in the area of maintenance management and engineering to cater for all those interested in maintenance whether practitioners or researchers. This handbook is divided into 6 parts and contains 26 chapters covering a wide range of topics related to maintenance management and engineering.

With the encroachment of the Internet into nearly all aspects of work and life, it seems as though information is everywhere. However, there is information and then there is correct, appropriate, and timely information. While we might love being able to turn to Wikipedia® for encyclopedia-like information or search Google® for the thousands of links on a topic, engineers need the best information, information that is evaluated, up-to-date, and complete. Accurate, vetted information is necessary when building new skyscrapers or developing new prosthetics for returning military veterans. While the award-winning first edition of Using the Engineering Literature used a roadmap analogy, we now need a three-dimensional analysis reflecting the complex and dynamic nature of research in the information age. Using the Engineering Literature, Second Edition provides a guide to the wide range of resources available in all fields of engineering. This second edition has been thoroughly revised and features new sections on nanotechnology as well as green engineering. The information age has greatly impacted the way engineers find information. Engineers have an effect, directly and indirectly, on almost all aspects of our lives, and it is vital that they find the right information at the right time to create better products and processes. Comprehensive and up to date, with expert chapter authors, this book fills a gap in the literature, providing critical information in a user-friendly format.

Providing both sophisticated and simplified solutions to facility maintenance problems for plant engineers, facilities engineers and managers, and maintenance engineers, this revised and updated fifth edition discusses every aspect of maintenance engineering from new technical advances to maintaining new machinery. All kinds of facilities are described, including generating plants, refineries, hospitals, schools and universities, and office buildings. The handbook also includes effective ways to use computers to manage maintenance procedures for machinery, physical plants and fixed support service.

No matter which industry a company is a part of, its profitability, like its products, is driven by the reliability and performance of its plant(s). The fundamentals for maintenance found in this volume are applicable to a multitude of industries: power, process, materials, manufacturing, transportation, communication, and many others. This book shows the engineer how to select, install, maintain, and troubleshoot critical plant machinery, equipment, and systems. NEW to this edition: New material includes a chapter on inspections, providing practical guidelines for effective visual inspections, the key to effective preventive maintenance. Also included in the revision will be multiple chapters on equipment, such as pumps, compressors, and fans. Provides practical knowledge about plant machinery, equipment, and systems for the new hire or the veteran engineer. Covers a wide array of topics, from shaft alignment and bearings to rotor balancing and flexible intermediate drives. Delivers must-have information to the engineer which he/she will use on a daily basis, in day-to-day activities, that will affect the reliability and profitability of the plant.

This comprehensive sister volume to Cliff Matthews' highly successful Handbook of Mechanical Works Inspection gives a detailed coverage of pressure equipment and other mechanical plant such as cranes and rotating equipment. Key features: Accessible source of information Lavishly illustrated with numerous diagrams, photographs, and tables A wealth of valuable information Detailed, comprehensive coverage Written in easily accessible style A 'must buy' reference book The Handbook of Mechanical In-Service Inspection is a vital source of information for: plant owners and operators maintenance engineers inspection engineers from insurance companies and 'competent bodies' who perform in-service inspection health and safety operatives engineers operating pressure systems and mechanical plant all those concerned with the safe and efficient operation of machinery, plant, and pressure equipment. All engineering pressure systems and other types of mechanical equipment must be installed, operated, and maintained properly. It must be safe and comply with standards, regulations, and guidelines. In-service inspection is more formally controlled by statutory requirements than other types of inspection.

The Handbook of Mechanical In-service Inspection puts a good deal of emphasis on the 'compliance' aspects and the 'duty of care' requirements placed on plant owners, operators, and inspectors. The book is suitable for those who operate pressure systems, lifting equipment, and similar mechanical plant are subject to rigorous inspection from external bodies as a matter of course. All operators have a duty to conduct in-service checks and internal inspection procedures to ensure the safe, reliable, and economic running of their equipment.

This book provides practical guidance on procurement formation techniques, from planning to placing the contract, in mechanical, electrical, process, and mining engineering. It covers the commercial and technical aspects of an engineering contract for the

Introduction and Scope of Biotechnology - Development of Industrial Strains - Fermentation Process - Production of Pharmaceuticals - Microbial Biotransformation - Introduction to Genetics - DNA Replication, Transcription and Translation - Genetic Recombination Gene Transfer - Recombinant DNA Technology Gene Cloning - Techniques of Genetic Engineering - Healthcare Biotechnology - Enzyme Technology - Plant Cell Culture - Animal Cell Culture - Appendices - I -II- Index

This book discusses the maintenance aspect of rotating machines, which it addresses through a collection of contributions. Sharing the "hands-on" views of experienced engineers on the aspect of maintenance for rotating machines, it offers a valuable reference guide for practicing engineers in the related industries, providing them a glimpse of some of the most common problems associated with rotating machines and equipment in the field, and helping them achieve maximum performance efficiency and high machine availability.

This excellent book systematically identifies the issues surrounding the effective linking of project management techniques and engineering applications. It is not a technical manual, nor is it procedure-led. Instead, it encourages creative learning of project engineering methodology that can be applied and modified in different situations. In short, it offers a distillation of practical 'on-the job' experience to help project engineers perform more effectively. While this book specifically addresses process plants, the principles are applicable to other types of engineering project where multidisciplinary engineering skills are required, such as power plant and general factory construction. It focuses on the technical aspects, which typically influence the configuration of the plant as a whole, on the interface between the various disciplines involved, and the way in which work is done – the issues central to the co-ordination of the overall engineering effort. It develops an awareness of relationships with other parties – clients, suppliers, package contractors, and construction managers – and of how the structure and management of these relationships impact directly on the performance of the project engineer. Readers will welcome the author's straightforward approach in tackling sensitive issues head on. COMPLETE CONTENTS Introduction A process plant A project and its management A brief overview The engineering work and its management The project's industrial environment The commercial environment The contracting environment The economic environment Studies and proposals Plant layout and modelling Value engineering and plant optimization Hazards, loss, and safety Specification, selection and purchase Fluid transport Bulk solids transport Slurries and two-phase transport Hydraulic design and plant drainage Observations on multidiscipline engineering Detail design and drafting The organization of work Construction Construction contracts Commissioning Communication Change and chaos Fast-track projects Advanced information management Project strategy development Key issues summary

R. Keith Mobley

This is a practical, comprehensive guide for the selection, applications, operation, diagnostic testing, troubleshooting, maintenance, and refurbishment of all types of electrical equipment and systems used in power stations and in other industries.

The Best On-the-Job Guide to Industrial Plant Equipment and Systems This practical, one-of-a-kind field manual explains how equipment in industrial facilities operates and covers all aspects of commissioning relevant to engineers and project managers. Plant Equipment and Maintenance Engineering Handbook contains a data log of all major industrial and power plant components, describes how they function, and includes rules of thumb for operation. Hundreds of handy reference materials, such as calculations and tables, plus a comprehensive listing of electrical parts with common supplier nomenclature are also included in this time-saving resource. FEATURES DETAILED COVERAGE OF: Compressors \* Air conditioning \* Ash handling \* Bearings and lubrication \* Boilers \* Chemical cleaning and Flushing \* Condensers and circulating water systems \* Controls \* Conveyor systems \* Cooling towers \* Corrosion Deaerators \* Diesel and gas turbines \* Electrical \* Fans \* Fire protection \* Fuels and combustion \* Piping \* Pumps Turbines \* Vibration \* Water treatment

The Text Provided In The Book Contains Detailed Information About Reliability And Maintenance At One Place. The Knowledge Of Reliability Concept For Technical Personnel Is The Requirements Today, Which Has Been Discussed At Length With Some Live Problems To Evaluate It. Reliability Of Mechanical, Electrical And Welded Joints Has Been Discussed. Parameters, Which Affect Reliability Directly Or Indirectly, Have Been Included. Importance Of Computers In Reliability And Maintenance Has Also Been Discussed. On The Other Hand, Maintenance Is The Act Of Optimizing The Available Resources Of Manpower, Materials, Tools Out Test Equipments Etc. To Keep The Organizations In The Healthy Position At Minimum Cost. To Meet Out The Challenges Of The Modernized And Sophisticated Equipments/Machineries, It Is Desired To Keep The System Operative For A Longer Period. Therefore, The Need To Educate Engineering Graduates Regarding All Aspects Of Maintenance Has Become Essential. Here Attempt Has Been Made To Include All Aspects Of Maintenance With The Newer Ideas Of Condition-Based Maintenance. In 21 Chapters Of This Book, Attention Has Been Focused To Include All Important Features Of Reliability And Maintenance. This Book Will Be Useful To Practicing Engineers As Well As To Undergraduate Students.

The Most Complete, Current Guide to Every Aspect of Maintenance Engineering Extensively updated to cover the latest technologies and methods, Maintenance Engineering Handbook, Eighth Edition offers in-depth details on identifying and repairing faulty equipment. This definitive resource focuses on proven best practices for maintenance, repair, and overhaul (MRO), inventory management, root-cause analysis, and performance management. This thoroughly revised edition contains new chapters on: Reliability-based maintenance Preventive maintenance Sustaining maintenance Ultrasonics Operating

dynamics Simplified failure modes and effects analysis Criticality analysis Process and value-stream mapping Featuring contributions from noted experts in the field, this authoritative reference will help you to successfully reduce excessive downtime and high maintenance costs by detecting and mitigating repetitive failures. Comprehensive coverage of: Organization and management of the maintenance function \* Best practices for maintenance and predictive maintenance \* Engineering and analysis tools \* Maintenance of mechanical, electrical, and facilities equipment "Updated, modernized, digitized, and streamlined edition of this classic handbook which has been educating plant and facility professionals in every aspect of maintenance engineering for more than half a century"--

Generations of engineers and managers have turned to this popular handbook for expert guidance on maintenance for all types of facilities, including industrial plants, power generating stations, refineries, schools, hospitals, and office buildings. Now revised and updated with 40% new material, the Fifth Edition offers you detailed information on every aspect of maintenance engineering - from new technical advances to maintaining the latest machinery. You'll find practical advice from 55 specialists on the organization and management of the maintenance function ... establishing costs and controls ... maintenance of plant facilities ... sanitation and housekeeping ... maintenance of mechanical and electrical equipment ... and maintenance of service equipment. The Fifth Edition also discusses new ways of using computers to manage maintenance procedures for machinery, physical plant, and fixed support service - and presents all-new material on lubrication, instruments and vibration, and chemical corrosion control and cleaning. Whether you're a plant engineer, facilities manager, or maintenance engineer, this updated handbook will give you the on-the-job information and skills needed to solve virtually any maintenance problem!

Plant Maintenance and Reliability Engineering provides both theoretical and practical knowledge together with the latest technological concepts and research in the field. The topics covered in this book are an integral part of the syllabi in most of the universities in India and meet the requirements of the course plant maintenance and reliability engineering taught in mechanical engineering and all allied branches. This book aims at providing the readers an insight into the working and maintenance of plant equipment and machinery. The text substantially deals with the emerging issues faced by plant engineers on a day-to-day basis and discusses the measures to address such issues. This book emphasises on the safety of workplace and workers and discusses the increasing role of plant managers in the corporate management. This text is precise, systematic, and uses an easy-to-understand language and is enriched with several illustrative examples.

Monitoring and predictive maintenance methods are not reliable enough in indicating certain important problems in manufacturing equipment, such as cracking of power transmission components, inadequate lubrication of parts, and excessive cutting edge wear of a tool or die. These problems are best dealt with at the design stage. Plant and Machinery Failure Prevention is based on the premise of "Zero-Failure Performance". The book introduces the general features and investigative methods at the design phase for determining failures in mechanical components such as: Flat Belt Failures, Vee-belt Failures, Pulley Failures, Gear Failures, Steel Wire Rope Failures, Spring Failures, and Gasket Failures.

This second edition of An Introduction to Predictive Maintenance helps plant, process, maintenance and reliability managers and engineers to develop and implement a comprehensive maintenance management program, providing proven strategies for regularly monitoring critical process equipment and systems, predicting machine failures, and scheduling maintenance accordingly. Since the publication of the first edition in 1990, there have been many changes in both technology and methodology, including financial implications, the role of a maintenance organization, predictive maintenance techniques, various analyses, and maintenance of the program itself. This revision includes a complete update of the applicable chapters from the first edition as well as six additional chapters outlining the most recent information available. Having already been implemented and maintained successfully in hundreds of manufacturing and process plants worldwide, the practices detailed in this second edition of An Introduction to Predictive Maintenance will save plants and corporations, as well as U.S. industry as a whole, billions of dollars by minimizing unexpected equipment failures and its resultant high maintenance cost while increasing productivity. A comprehensive introduction to a system of monitoring critical industrial equipment Optimize the availability of process machinery and greatly reduce the cost of maintenance Provides the means to improve product quality, productivity and profitability of manufacturing and production plants

This utterly comprehensive work is thought to be the first to integrate the literature on the physics of the failure of complex systems such as hospitals, banks and transport networks. It has chapters on particular aspects of maintenance written by internationally-renowned researchers and practitioners. This book will interest maintenance engineers and managers in industry as well as researchers and graduate students in maintenance, industrial engineering and applied mathematics.

This text is an accessible and comprehensive guide to the principles, practices, functions and challenges of maintenance engineering and management. With a strong emphasis on basic concepts and practical techniques throughout, the book demonstrates in detail how effective technical competencies in maintenance management can be built in engineering organizations. The book thus provides students and practising engineers alike with the methodologies and tools needed to understand and implement the systems approach to maintenance management. The major goals for the text include : To provide a good understanding of different types of maintenance management systems such as breakdown, preventive, predictive, proactive. To explain benefits of planned maintenance. To explain condition-based monitoring techniques with focus on vibration monitoring, thermography, and motor condition monitoring. To stress the role of reliability engineering in maintenance with tools like Failure Mode and Effect Analysis, Root Cause Analysis, and Criticality Matrix. To explain activities of maintenance planning with focus on shutdown planning, human resources development, and tools employed for monitoring. To emphasize management functions such as procurement of spares, measurement of maintenance effectiveness, etc. To give an overview of project management tools such as PERT etc. To introduce computerized maintenance management systems. To explain the basics of hazard analysis and fault tree analysis. Review questions in each chapter, worked-out examples wherever applicable, case studies and an exclusive appendix on "Selected Questions and Answers" are all designed to provoke critical thinking. This text is suitable for undergraduate and postgraduate courses in Maintenance Engineering taught in the department of mechanical engineering in almost all universities.

THE DEFINITIVE GUIDE TO SELECTING, OPERATING, AND MAINTAINING POWER PLANT EQUIPMENT Power Plant Equipment Operation and Maintenance Guide provides detailed coverage of different types of power plants such as modern co-generation, combined-cycle, and integrated gasification combined cycle (IGCC) plants. The book describes the design, selection, operation, maintenance, and economics of all these power plants. The best available power enhancement options are discussed, including duct burners, evaporative cooling, inlet-air chilling, absorption chilling, steam and water injection, and peak firing. This in-depth resource addresses the sizing, selection, calculations, operation, diagnostic testing, troubleshooting,

maintenance, and refurbishment of all power plant equipment, including steam turbines, steam generators, boilers, condensers, heat exchangers, gas turbines, compressors, pumps, advanced sealing mechanisms, magnetic bearings, and advanced generators. Coverage includes: Methods for enhancing the reliability and maintainability of all power plants Economic analysis of modern co-generation and combined-cycle plants Selection of the best emission-reduction method for power plants Preventive and predictive maintenance required for power plants Gas turbine applications in power plants, protective systems, and tests

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 Maximize your company's energy output while ensuring the reliability and longevity of your industrial electrical equipment! Everything you need for selection, applications, operations, diagnostic testing, troubleshooting and maintenance for all capital equipment placed firmly in your grasp. Keeping your equipment running efficiently and smoothly could make the difference between profit and loss. Electrical Equipment Handbook: Troubleshooting and Maintenance provides you with the state-of-the-art information for achieving the highest performance from your transformers, motors, speed drives, generator, rectifiers, and inverters. With this book in hand you'll understand various diagnostic testing methods and inspection techniques as well as advance fault detection techniques critical components and common failure modes. This handbook will answer all your questions about industrial electrical equipment. In Electrical Equipment Handbook: Troubleshooting and Maintenance, you will: Learn about the various types of transformers, motors, variable speed drives, generators, rectifiers, inverters, and uninterrupted power systems. Understand diagnostic testing and inspection, advanced fault detection techniques, critical components, and common failure modes. Study selection criteria, commissioning requirements, predictive and preventive maintenance, reliability, testing and cost discover the maintenance required to minimize their operating cost and maximize their efficiency, reliability and longevity.

Plant engineers are responsible for a wide range of industrial activities, and may work in any industry. This means that breadth of knowledge required by such professionals is so wide that previous books addressing plant engineering have either been limited to only certain subjects or cursory in their treatment of topics. The Plant Engineering Handbook offers comprehensive coverage of an enormous range of subjects which are of vital interest to the plant engineer and anyone connected with industrial operations or maintenance. This handbook is packed with indispensable information, from defining just what a Plant Engineer actually does, through selection of a suitable site for a factory and provision of basic facilities (including boilers, electrical systems, water, HVAC systems, pumping systems and floors and finishes) to issues such as lubrication, corrosion, energy conservation, maintenance and materials handling as well as environmental considerations, insurance matters and financial concerns. One of the major features of this volume is its comprehensive treatment of the maintenance management function; in addition to chapters which outline the operation of the various plant equipment there is specialist advice on how to get the most out of that equipment and its operators. This will enable the reader to reap the rewards of more efficient operations, more effective employee contributions and in turn more profitable performance from the plant and the business to which it contributes. The Editor, Keith Mobley and the team of expert contributors, have practiced at the highest levels in leading corporations across the USA, Europe and the rest of the world. Produced in association with Plant Engineering magazine, this book will be a source of information for plant engineers in any industry worldwide. \* A Flagship reference work for the Plant Engineering series \* Provides comprehensive coverage on an enormous range of subjects vital to plant and industrial engineer \* Includes an international perspective including dual units and regulations Rules of Thumb for Maintenance and Reliability Engineers will give the engineer the "have to have? information. It will help instill knowledge on a daily basis, to do his or her job and to maintain and assure reliable equipment to help reduce costs. This book will be an easy reference for engineers and managers needing immediate solutions to everyday problems. Most civil, mechanical, and electrical engineers will face issues relating to maintenance and reliability, at some point in their jobs. This will become their "go to? book. Not an oversized handbook or a theoretical treatise, but a handy collection of graphs, charts, calculations, tables, curves, and explanations, basic "rules of thumb? that any engineer working with equipment will need for basic maintenance and reliability of that equipment. • Access to quick information which will help in day to day and long term engineering solutions in reliability and maintenance • Listing of short articles to help assist engineers in resolving problems they face • Written by two of the top experts in the country

Maintenance of equipment, machinery systems and allied infrastructure comprises the ways and means of optimizing the available resources of manpower, materials, tools and test equipment, within a set of constraints, to help achieve the targets of an organization by minimizing the downtimes. Whether the goal is to produce and sell a product at a profit or is simply to perform a mission in a cost-effective manner, the maintenance principles discussed in this text apply equally to all such types of organizations. In consonance with the growth of the industry and its modernization and the need to minimize the downtimes of machinery and equipment, the engineering education system has included maintenance engineering as a part of its curriculum. This second edition of the book continues to focus on the basics of this expanding subject, with a broad discussion of management aspects as well, for the benefit of the engineering students. It explains the concept of a maintenance system, the evaluation of its maintenance functions, maintenance planning and scheduling, the importance of motivation in maintenance, the use of computers in maintenance and the economic aspects of maintenance. This book also discusses the manpower planning and energy conservation in maintenance management. Presented in a readable style, the book brings together the numerous aspects of maintenance functions emphasizing the importance of this discipline in the engineering education. In this edition a new chapter titled, Advances in Maintenance (Chapter 21), has been included to widen the coverage of the book. Besides the students of engineering, especially

those in streams of mechanical engineering and its related disciplines such as mining, industrial and production, this book will be useful to the practising engineers as well.

Let our teams of experts help you to stay competitive in a global marketplace. It is every company's goal to build the highest quality goods at the lowest price in the shortest time possible. With the Manufacturing Engineering Handbook you'll have access to information on conventional and modern manufacturing processes and operations management that you didn't have before. For example, if you are a manufacturing engineer responding to a request for proposal (RFP), you will find everything you need for estimating manufacturing cost, labor cost and overall production cost by turning to chapter 2, section 2.5, the manufacturing estimating section. The handbook will even outline the various manufacturing processes for you. If you are a plant engineer working in an automotive factory and find yourself in the hot working portion of the plant, you should look up section 6 on hot work and forging processing. You will find it very useful for learning the machines and processes to get the job done. Likewise, if you are a Design Engineer and need information regarding hydraulics, generators & transformers, turn to chapter 3, section 3.2.3, and you'll find generators & transformers. Covering topics from engineering mathematics to warehouse management systems, Manufacturing Engineering Handbook is the most comprehensive single-source guide to Manufacturing Engineering ever published.

Machines drive our world. Mechanical devices in assembly lines churn out all our products, from candy bars to cars. Engines power our vehicles and factories. Our homes depend on appliances like washers and water heaters. The work of machine maintenance professionals is crucial to keep these devices humming. Careers in this field are rewarding because they involve problem-solving and hands-on work. Makerspaces give young people the opportunity to explore and develop the skills needed for machine maintenance careers. This instructive resource reveals how sharing ideas, equipment, and knowledge through makerspaces can open doors to a wide range of opportunities in machine maintenance.

Here is the best single guide to efficient, cost-effective plant engineering - from construction to internal operation, maintenance, and management of the plant facility. With contributions from more than 70 well-known leaders in their specialties, this new edition of Standard Handbook of Plant Engineering offers you state-of-the-art information on the basic plant facility, plant operation equipment, repair and replacement methods, and much more. Packed with tables, formulas, charts, graphs, and checklists, the Second Edition now features greater emphasis on practical, hands-on information in the areas of maintenance, cost control, maintenance management, and staff training; more than 40% new material, with all sections revised and updated, and software listed for most topics; a Board of Advisors specifically chosen to select new and expanded coverage; and both metric and S.I. units for ease of use in domestic and international markets. Covering virtually every aspect of modern plant engineering, the new edition of this definitive handbook will give you the expertise required to keep manufacturing and service facilities operating at peak productivity.

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