

Maintenance And Spare Parts Management

Knowledge-intensive product realization implies embedded intelligence; meaning that if both theoretical and practical knowledge and understanding of a subject is integrated into the design and production processes of products, this will significantly increase added value. This book presents papers accepted for the 9th Swedish Production Symposium (SPS2020), hosted by the School of Engineering, Jönköping University, Sweden, and held online on 7 & 8 October 2020 because of restrictions due to the Corona virus pandemic. The subtitle of the conference was Knowledge Intensive Product Realization in Co-Operation for Future Sustainable Competitiveness. The book contains the 57 papers accepted for presentation at the conference, and these are divided into nine sections which reflect the topics covered: resource efficient production; flexible production; virtual production development; humans in production systems; circular production systems and maintenance; integrated product and production development; advanced and optimized components, materials and manufacturing; digitalization for smart products and services; and responsive and efficient operations and supply chains. In addition, the book presents five special sessions from the symposium: development of changeable and reconfigurable production systems; smart production system design and development; supply chain relocation; management of manufacturing digitalization; and additive manufacturing in the production system. The book will be of interest to all those working in the field of knowledge-intensive product realization.

The two-volume set IFIP AICT 566 and 567 constitutes the refereed proceedings of the International IFIP WG 5.7 Conference on Advances in Production Management Systems, APMS 2019, held in Austin, TX, USA. The 161 revised full papers presented were carefully reviewed and selected from 184 submissions. They discuss globally pressing issues in smart manufacturing, operations management, supply chain management, and Industry 4.0. The papers are organized in the following topical sections: lean production; production management in food supply chains; sustainability and reconfigurability of manufacturing systems; product and asset life cycle management in smart factories of industry 4.0; variety and complexity management in the era of industry 4.0; participatory methods for supporting the career choices in industrial engineering and management education; blockchain in supply chain management; designing and delivering smart services in the digital age; operations management in engineer-to-order manufacturing; the operator 4.0 and the Internet of Things, services and people; intelligent diagnostics and maintenance solutions for smart manufacturing; smart supply networks; production management theory and methodology; data-driven production management; industry 4.0 implementations; smart factory and IIOT; cyber-physical systems; knowledge management in design and manufacturing; collaborative product development; ICT for collaborative manufacturing; collaborative technology; applications of machine learning in production management; and collaborative technology.

Overview No previous works have focused on the topic of inventory reduction and optimization to the extent that this one does. Spare Parts Inventory Management: A Complete Guide to Sparesology(tm) by Philip Slater covers the whole part's life cycle, from initial purchase to final disposal, and addresses issues throughout, including maintenance, repair, and overhaul (MRO). The author, Phillip Slater, was described in a recent podcast as "truly one of the leaders in the MRO information segment." Sparesology is a term coined by Slater to describe the discipline of optimizing the physical, financial, and human resource management processes of spare parts inventory management. Sparesology is much more than just inventory optimization. It involves an understanding of the complete "ecosystem," within which the spare parts inventory is managed, and seeks to ensure that all of the factors influencing this management work together to achieve an organization's goals.

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This book is written for industries in search of seeking solutions on their MRO Spare Parts and Storeroom problems. MRO Spare Parts and Storeroom Management is one of the most most neglected maintenance strategies in any maintenance optimization and strategies, which should not be the case. Others say that this is the missing link to any reliability and maintenance improvement. Almost every type of industry whether from manufacturing, processing, pharmaceutical, power plants, mining, construction, aviation, oil and gas have a storeroom in place to keep their spare parts. There are two main goals of MRO Spare Parts and Storeroom, which is quite conflicting. This is to create a balance on minimizing the cost of spares inventory as well as providing all the parts and supplies needed to keep the plant operating. It may sound conflicting or contradicting but thinking about this thoroughly it is really not conflicting if the MRO Storeroom is well managed. The role of maintenance is to make the equipment available. If the equipment fails and the part is not available in the storeroom, the machine becomes idle and operation is halt. On the contrary, we just cannot simply stock every single part of every piece of equipment we have in the plant that is if your industry still wants to remain in business. The items inside the storeroom can range from 1,000 for a small-scale industry to more than 200,000 parts or even more for a large-scale industry. All industries have a place to store and keep spares for their equipment, which is needed for repairs, and Preventive Maintenance activities, but not all industries have knowledge on how to manage their storeroom and spare parts. In fact, MRO storeroom and spare parts is one of the strategies where maintenance can truly save cost big time. In other industries, the problems on MRO Spare Parts are chronic and may have been existed for decades. If industries are serious in improving their storeroom and finding the correct solutions on their MRO Spare Parts and Storeroom, this book is a must read not only for storekeepers but also for maintenance, purchasing, finance, and especially the c-level people to find out what their missing. Here are some of the highlights included in this book.- Provide a decision making process on whether to stock or not to stock parts through a MRO Decision Diagram or Algothim- What can we do about squirrel stores and how to eliminate them permanently- Learn the

basic "Golden Law" on MRO Spare Parts Management- Learn several options on what to do for obsolete parts inside the storeroom.- Learn one option on what to do with non-moving parts- Learn why not all critical parts need to be stock in the storeroom.- Learn several factors to consider before making a decision on whether to stock or not to stock parts in the storeroom- Learn a much better way of determining the minimum quantity to be stored besides min-max and EOQ calculation.- Provide the reader with a step by step roadmap on how to finally improve their MRO Storeroom- Understand who are the best people or function to handle the maintenance storeroom and why- Learn that one of the most important functions of the storekeeper is about maintaining and care for the spare parts.- Understand why improving the storeroom should be done inside and outside the storeroom. - And many more. Majority of the problems on industries can be solved as mentioned in this book if industries are willing to make changes in how they do things in the plant. Industries that achieve a level of World Class Maintenance were not born that way. They were also reactive in the past but the leaders have a change of heart, and propelled their workforce to a new direction so that they can stand off from the rest and compete globally in this fierce world of competition.

This well-received text, designed for the students of MBA, BTech (Mechanical Engineering and Industrial and Production Engineering) and MTech (Industrial Engineering and Management), has been revised and reorganized in its second edition. The book, divided into six sections, deals with the concepts of core maintenance and related auxiliary functions, core spares issues, related auxiliary spares functions, caselets and policy cases. This research-based study attempts to impart a comprehensive knowledge of maintenance and spare parts management, particularly in the Indian context. Illustrations, tables, caselets, cases and presentation of several topics in A-Z points add pedagogic value to the text.

This book gathers a selection of the best papers presented at the joint international conference ICIEOM-CIO-IIE 2015, offering recent research on industrial engineering, management and operations from an international and interdisciplinary perspective. It includes contributions from different fields, such as operations research, modeling and simulation, production and service management and logistics, information systems and quality, and as such is of interest to both researchers and practitioners. Reflecting the interconnected nature of today's production systems, characterized by intense flows of goods, information and individuals between companies and nations, it is a valuable resource for anyone wanting an in-depth understanding of the field to guide managerial practice in order to take full advantage of existing opportunities.

A completely revised and updated edition of a bestseller, Maintenance, Replacement, and Reliability: Theory and Applications, Second Edition supplies the tools needed for making data-driven physical asset management decisions. The well-received first edition quickly became a mainstay for professors, students, and professionals, with its clear prese

This book presents comprehensive coverage of project finance in Europe and North America. The Second Edition features two new case studies, all new pedagogical supplements including end-of-chapter questions and answers, and insights into the recent market downturn. The author provides a complete description of the ways a project finance deal can be organized - from industrial, legal, and financial standpoints - and the alternatives available for funding it. After reviewing recent advances in project finance theory, he provides illustrations and case studies. At key points Gatti brings in other project finance experts who share their specialized knowledge on the legal issues and the role of advisors in project finance deals. Foreword by William Megginson, Professor and Rainbolt Chair in Finance, Price College of Business, The University of Oklahoma
Comprehensive coverage of theory and practice of project finance as it is practiced today in Europe and North America Website contains interactive spreadsheets so that readers can input data and run and compare various scenarios, including up to the minute treatment of the cutting-edge areas of PPPs and the new problems raised by Basel II related to credit risk measurement

This book introduces readers to essential strategies, practices, and benchmarking for asset maintenance in operations intensive industries. Drawing on a case study from the oil and gas sector, it offers a methodology and practical solutions to help maintenance practitioners select and formulate an asset maintenance strategy, and to establish best maintenance practices at an organizational level using the frameworks developed here. It is intended for industry practitioners, young maintenance professionals, and students of engineering management who aspire to a career in operations intensive industries.

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.

Intended for an audience of graduate students, executive MBA students, and mid-to upper level government and corporate managers, Design, Analysis and Optimization of Supply Chains: A System Dynamic Approach examines the complexity of the types of organizations that comprise a modern supply chain, the problems that arise as a result of this complexity, and the solutions

and analytical approaches available to managers that can help resolve these real world problems and dilemmas. The modern enterprise, be it a large corporation or a government agency, has two key dimensions of complexity: static and dynamic. The static complexity refers to the remarkable number of companies and agencies that enable delivery of the product or service. A static "snapshot" of this end-to-end enterprise would reveal hundreds if not thousands of companies involved in the supply network and many additional firms involved in the distribution and delivery to customers. Planning, communication, coordination and execution of this large system network is fundamentally challenging just because of the sheer size. This large, extended network represents the static complexity. The dynamic complexity arises from the difficulty of managing the performance of this extended enterprise over time. This requires having the appropriate metrics to track performance over time, the management skills to develop strategies, the ability to collect and monitor the correct data for true visibility, and the recognition and understanding of the long lags between actions and results. *Design, Analysis and Optimization of Supply Chains: A System Dynamic Approach* incorporates real-world examples and cases, representing actual complex enterprise systems including firms involved and with long lead times, to illustrate the multi-faceted activities occurring within a modern supply chain and the challenges they pose to managers. Simulation and optimization techniques are introduced and used to develop strategies for improved performance.

After the IPS2 conferences in Cranfield and Linköping in 2009 and 2010 the 3rd CIRP International Conference on Industrial Product Service Systems (IPS2) 2011 takes place in Braunschweig, Germany. IPS2 itself is defined as "an integrated industrial product and service offering that delivers value in use". The customers expect comprehensive solutions, which are adapted to their individual needs. IPS2 offers the possibility to stand out from competition and for long-term customer loyalty. Particularly in times of economic crisis it becomes apparent which producing companies understand to satisfy the needs and requirements of their customers. Especially in this relatively new domain IPS2 it will be important to keep track of the whole context and to seek cooperation with other research fields and disciplines. The 3rd CIRP International Conference on Industrial Product Service Systems (IPS2) 2011 serves as a platform for such collaborations and the discussion of new scientific ideas.

These proceedings include a collection of papers on a range of topics presented at the 12th World Congress on Engineering Asset Management (WCEAM) in Brisbane, 2 – 4 August 2017. Effective strategies are required for managing complex engineering assets such as built environments, infrastructure, plants, equipment, hardware systems and components. Following the release of the ISO 5500x set of standards in 2014, the 12th WCEAM addressed important issues covering all aspects of engineering asset management across various sectors including health. The topics discussed by the congress delegates are grouped into a number of tracks, including strategies for investment and divestment of assets, operations and maintenance of assets, assessment of assets' health conditions, risk and vulnerability, technologies, and systems for management of assets, standards, education, training and certification.

The *Journal of Global Business and Management Research (GBMR)* is a quarterly peer-reviewed journal which strives to comply with highest research standards and scientific/research/practice journals' qualities. Being international and inter-disciplinary in scope, GBMR seeks to provide a platform for debate among diverse academic and practitioner communities who address a broad area of business and management issues across the globe. It is currently indexed in a number of prestigious databases including Gale and Ebsco.

This Proceedings contains the papers presented at the 14th International Conference on Condition Monitoring and Diagnostic Engineering Management (COMADEM 2001), held in Manchester, UK, on 4-6 September 2001. COMADEM 2001 builds on the excellent reputation of previous conferences in this series, and is essential for anyone working in the field of condition monitoring and maintenance management. The scope of the conference is truly interdisciplinary. The Proceedings contains papers from six continents, written by experts in industry and academia the world over, bringing together the latest thoughts on topics including: Condition-based maintenance Reliability centred maintenance Asset management Industrial case studies Fault detection and diagnosis Prognostics Non-destructive evaluation Integrated diagnostics Vibration Oil and debris analysis Tribology Thermal techniques Risk assessment Structural health monitoring Sensor technology Advanced signal processing Neural networks Multivariate statistics Data compression and fusion This Proceedings also contains a wealth of industrial case studies, and the latest developments in education, training and certification. For more information on COMADEM's aims and scope, please visit <http://www.comadem.com>

With the pressure of time-based competition increasing, and customers demanding faster service, availability of service parts becomes a critical component of manufacturing and servicing operations. *Service Parts Management* first focuses on intermittent demand forecasting and then on the management of service parts inventories. It guides researchers and practitioners in finding better management solutions to their problems and is both an excellent reference for key concepts and a leading resource for further research.

Demand forecasting techniques are presented for parametric and nonparametric approaches, and multi echelon cases and inventory pooling are also considered. Inventory control is examined in the continuous and periodic review cases, while the following are all examined in the context of forecasting: • error measures, • distributional assumptions, and • decision trees. *Service Parts Management* provides the reader with an overview and a detailed treatment of the current state of the research available on the forecasting and inventory management of items with intermittent demand. It is a comprehensive review of service parts management and provides a starting point for researchers, postgraduate students, and anyone interested in forecasting or managing inventory.

This text is an unbound, three hole punched version. In *Operations Management: An Integrated Approach, Binder Ready Version, 6th Edition*, Dan Reid and Nada Sanders have strengthened their commitment to improve the teaching and learning experience in the introductory operations management course. The text provides a solid foundation of Operations Management with clear, guided instruction and a balance between quantitative and qualitative concepts. Through an integrated approach, the authors illustrate how all business students will interact with Operations Management in future careers.

This volume contains thirty-nine revised and extended research articles, written by prominent researchers participating in the World Congress on Engineering and Computer

Science 2014, held in San Francisco, October 22-24 2014. Topics covered include engineering mathematics, electrical engineering, circuit design, communications systems, computer science, chemical engineering, systems engineering and applications of engineering science in industry. This book describes some significant advances in engineering technologies and also serves as an excellent source of reference for researchers and graduate students.

This book offers a comprehensive reference guide for the theory and practice of intelligent and fuzzy techniques in Aviation 4.0. It provides readers with the necessary intelligent and fuzzy tools for Aviation 4.0 when incomplete, vague, and imprecise information or insufficient data exist in hand, where classical modeling approaches cannot be applied. The respective chapters, written by prominent researchers, explain a wealth of both basic and advanced concepts including baggage services, catering services, check-in and boarding services, maintenance and cargo management, security, etc. To foster reader comprehension, all chapters include relevant numerical examples or case studies. Taken together, they form an excellent reference guide for researchers, lecturers, and postgraduate students pursuing research on Aviation 4.0. Moreover, by extending all the main aspects of Aviation 4.0 to its intelligent and fuzzy counterparts, the book presents a dynamic snapshot of the field that is expected to stimulate new directions, ideas, and developments.

Offers a holistic approach to guiding product design, manufacturing, and after-sales support as the manufacturing industry transitions from a product-oriented model to service-oriented paradigm This book provides fundamental knowledge and best industry practices in reliability modelling, maintenance optimization, and service parts logistics planning. It aims to develop an integrated product-service system (IPSS) synthesizing design for reliability, performance-based maintenance, and spare parts inventory. It also presents a lifecycle reliability-inventory optimization framework where reliability, redundancy, maintenance, and service parts are jointly coordinated. Additionally, the book aims to report the latest advances in reliability growth planning, maintenance contracting and spares inventory logistics under non-stationary demand condition. Reliability Engineering and Service provides in-depth chapter coverage of topics such as: Reliability Concepts and Models; Mean and Variance of Reliability Estimates; Design for Reliability; Reliability Growth Planning; Accelerated Life Testing and Its Economics; Renewal Theory and Superimposed Renewals; Maintenance and Performance-Based Logistics; Warranty Service Models; Basic Spare Parts Inventory Models; Repairable Inventory Systems; Integrated Product-Service Systems (IPSS), and Resilience Modeling and Planning Guides engineers to design reliable products at a low cost Assists service engineers in providing superior after-sales support Enables managers to respond to the changing market and customer needs Uses end-of-chapter case studies to illustrate industry best practice Lifecycle approach to reliability, maintenance and spares provisioning Reliability Engineering and Service is an important book for graduate engineering students, researchers, and industry-based reliability practitioners and consultants.

“...a much-needed handbook with contributions from well-chosen practitioners. A primary accomplishment is to provide guidance for those involved in modeling and simulation in support of Systems of Systems development, more particularly guidance that draws on well-conceived academic research to define concepts and terms, that identifies primary challenges for developers, and that suggests fruitful approaches grounded in theory and successful examples.” Paul Davis, The RAND Corporation Modeling and Simulation Support for System of Systems Engineering Applications provides a comprehensive overview of the underlying theory, methods, and solutions in modeling and simulation support for system of systems engineering. Highlighting plentiful multidisciplinary applications of modeling and simulation, the book uniquely addresses the criteria and challenges found within the field. Beginning with a foundation of concepts, terms, and categories, a theoretical and generalized approach to system of systems engineering is introduced, and real-world applications via case studies and examples are presented. A unified approach is maintained in an effort to understand the complexity of a single system as well as the context among other proximate systems. In addition, the book features: Cutting edge coverage of modeling and simulation within the field of system of systems, including transportation, system health management, space mission analysis, systems engineering methodology, and energy State-of-the-art advances within multiple domains to instantiate theoretic insights, applicable methods, and lessons learned from real-world applications of modeling and simulation The challenges of system of systems engineering using a systematic and holistic approach Key concepts, terms, and activities to provide a comprehensive, unified, and concise representation of the field A collection of chapters written by over 40 recognized international experts from academia, government, and industry A research agenda derived from the contribution of experts that guides scholars and researchers towards open questions Modeling and Simulation Support for System of Systems Engineering Applications is an ideal reference and resource for academics and practitioners in operations research, engineering, statistics, mathematics, modeling and simulation, and computer science. The book is also an excellent course book for graduate and PhD-level courses in modeling and simulation, engineering, and computer science.

This book focuses on the tactical planning level for spare parts management. It describes a series of multi-item inventory models and presents exact and heuristic optimization methods, including greedy heuristics that work well for real, life-sized problems. The intended audience consists of graduate students, starting scholars in the field of spare parts inventory control, and spare parts planning specialists in the industry. In individual chapters the authors consider topics including: a basic single-location model; single-location models with multiple machine types and/or machine groups; the multi-location model with lateral transshipments; the classical METRIC model and its generalization to multi-indenture systems; and a single-location model with an explicit modeling of the repair capacity for failed parts and the priorities that one can set there. Various chapters of the book are used in a master course at Eindhoven University of Technology and in a PhD course of the Graduate Program Operations Management and Logistics (a Dutch network that organizes PhD courses in the field of OM&L). The required pre-knowledge consists of probability theory and basic knowledge of Markov processes and queuing theory. End-of-chapter problems appear for all chapters, with some answers appearing in an appendix.

In order to keep up with the constant changes in technology, business have adopted supply chain management to improve competitive strategies on a strategic and operational level. Supply Chain Management: Concepts, Methodologies, Tools, and Applications is a reference collection which highlights the major concepts and issues in the application and advancement of supply chain management. Including research from leading scholars, this resource will be useful for academics, students, and practitioners interested in the continuous study of supply chain management and its influences.

Engineers and reliability professionals are increasingly being held accountable for materials and spare parts inventory management and in response they need to gain a better understanding of materials and spare parts inventory management principles and practices. This practical book delivers just that. This new edition will help you get the right parts, in the right place, at the right time, for the right reason. Fully revised, it provides specific coverage of the issues faced in, and requirements for, managing engineering materials and spare parts and what to do to improve your results. It includes 29 exclusive examples and real life case studies to demonstrate the application of the concepts and ideas so that you will easy and quickly understand how to implement them. What's more it will show you: What to do to truly optimize your inventory holdings, Why inventory levels are almost always too high, How to identifying the factors that have greatest impact on your inventory levels, When to apply the 7 Actions for Inventory

Reduction, Where to focus your efforts for greatest effect, and Who to involve in taking action. The concepts, ideas, tools, and processes in this book have helped many companies achieve and sustain results that other inventory tools and approaches just could not match. And it is sure to help you achieve true inventory optimization as well! The second edition includes? A new chapter on The Mechanics of Inventory Management, a pragmatic review of the management of inventory including? Introducing the Materials and Inventory Management Cycle, Comparing theoretical and actual inventory outcomes, Discussion on normal and Poisson distribution models, How to determine the re order point, How to determine the re order quantity, and Commentary on Monte Carlo simulation. An expanded chapter on the financial impact of inventory, including a discussion of the key reports that need to be understood. Chapters on the influence of policies, procedures, and people. Additional discussion on issues faced and how to address them. An expansion of the central process discussed in the first edition to a more comprehensive review process?Inventory Process™ Optimization. An expanded section on executing an inventory review program. A closing 'where to from here' chapter. 57 figures and diagrams - 30 of them new and the others all revised and updated and six new tables (with 8 in total). Eight new checklists - specifically included as a new tool for the reader and is the result of direct reader requests. An expanded glossary.

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