

# **The Oee Primer Understanding Overall Equipment Effectiveness Reliability And Maintainability**

John Dewey and Education OutdoorsApplying Lean Six Sigma in the Pharmaceutical IndustryValue Stream Management for the Lean OfficeMaintenance Audits HandbookQuality AssuranceThe OEE PrimerMaximize the Effective Power of Oee AnalysisTelematics and ComputingOee for OperatorsDesign of Flexible Production SystemsIntelligent Manufacturing and Energy SustainabilityManufacturing Flexible PackagingSpeed-Based Target ProfitSerbianIdentification of Dynamic SystemsLean Production for Competitive AdvantageAdvanced Product Quality PlanningPackaging Machinery HandbookManufacturing Cost Policy Deployment (MCPD) Profitability ScenariosA Concise Guide to MacroeconomicsTCP/IP Clearly ExplainedRisk Management Using Failure Mode and Effect Analysis (FMEA)Advances in Production Management Systems. The Path to Intelligent, Collaborative and Sustainable ManufacturingArtificial Intelligence and Industrial ApplicationsMaintenance Costs and Life Cycle Cost AnalysisApplied Principles of Horticultural ScienceUnderstanding, Measuring, and Improving Overall Equipment EffectivenessISOM 2013 Proceedings (GIAP Journals, India)Oee, Inc.Modelling and Analysis of Sustainability Related Issues in New EraOperations ManagementOverall Equipment EffectivenessThe 4 Disciplines of ExecutionSustainable Business ModelsHow To Implement Lean ManufacturingMechanics Of Composite MaterialsWorld Class Manufacturing CasebookHandbook of Maintenance Management and EngineeringRCM--Gateway to World Class MaintenanceIntegrated Reliability

## **John Dewey and Education Outdoors**

Bring Lean Improvements to the Administrative Areas of Your Organization! Extending their eight-step process to the realization of a lean office, Tapping and Shuker use a customer service case studyto illustrate the effectiveness of the value stream storyboard.This popular volume provides organizations with a proven system for implementing lean principles in the office. In addition to providing a thorough overview of basic lean concepts, this book details methods for identifying the administrative activities in need of attention. To address these, it applies the eight-step process for removing waste and reorganizing workflow. Accompanying the book is a CD containing a lean assessment tool, a storyboard template, charts, a team charter, and worksheets. BONUS CD! Along with this book you receive a CD containing a lean assessment tool, a storyboard template, useful charts, a team charter, forms, reports, and worksheets!

## **Applying Lean Six Sigma in the Pharmaceutical Industry**

Lean Production for Competitive Advantage: A Comprehensive Guide to Lean Methodologies and Management Practices,

Second Edition introduces Lean philosophy and illustrates the effective application of Lean tools with real-world case studies. From fundamental concepts to integrated planning and control in pull production and the supply chain, the text provides a complete introduction to Lean production. Coverage includes small batch production, setup reduction, pull production, preventive maintenance, standard work, as well as synchronizing and scheduling Lean operations. Detailing the key principles and practices of Lean production, the text also: Illustrates effective implementation techniques with case studies from a range of industries. Includes questions and completed problems in each chapter. Explains how to effectively partner with suppliers and employees to achieve productivity goals Designed for students who have a basic foundation in production and operations management, the text provides a thorough understanding of the principles of Lean. It also offers practical know-how for implementing a culture of continuous improvement on the shop floor and in the office, creating a heightened sense of responsibility in all stakeholders, and enhancing productivity and efficiency to improve the bottom line. In this second edition, the author addresses management's role in Lean production. Early observers of Japanese methods focused on the shop floor to see amazing things unlike anything practiced elsewhere. And the thinking was, if the "methods" could be adopted by companies elsewhere, those companies would experience the success of the Japanese. What the early observers hadn't considered were dramatic differences in the way those companies were managed, both daily and strategically. The "management side" of Lean production is addressed in two new chapters, one devoted to daily management, the other to strategy deployment. Additionally, there is a new chapter that addresses breakthrough improvement and an approach to achieving it called Production Preparation Process. Every chapter has been revised and expanded to better tell the story of Lean production—its history, applications, practices, and methods.

### **Value Stream Management for the Lean Office**

A valuable tool for establishing and maintaining system reliability, overall equipment effectiveness (OEE) has proven to be very effective in reducing unscheduled downtime for companies around the world. So much so that OEE is quickly becoming a requirement for improving quality and substantiating capacity in leading organizations, as well as a req

### **Maintenance Audits Handbook**

This book balances introduction to the basic concepts of the mechanical behavior of composite materials and laminated composite structures. It covers topics from micromechanics and macromechanics to lamination theory and plate bending, buckling, and vibration, clarifying the physical significance of composite materials. In addition to the materials covered in the first edition, this book includes more theory-experiment comparisons and updated information on the design of composite materials.

## **Quality Assurance**

Understanding, Measuring, and Improving Overall Equipment Effectiveness: How to Use OEE to Drive Significant Process Improvement explains why the Overall Equipment Effectiveness (OEE) measure was created and how it should be used. Based on 20 years of hands on experience applying OEE at over 150 sites, this step-by-step practical guide provides templates, assessments, a comprehensive loss-analysis framework to identify all possible variables that could affect OEE, and supporting spreadsheets to measure and improve OEE. It outlines the different operational situations in which OEE can foster improvements, and the implications, before providing an easy-to-understand template for creating appropriate definitions for all the losses and a loss model. The author explains how to calculate OEE using examples to improve performance, and then shows, in detail, how to use an OEE Loss Analysis Spreadsheet to understand all losses, set an ideal vision, and then classify losses so improvement can be approached in the most sustaining way.

## **The OEE Primer**

Although regularly introducing new products or services is the lifeblood of most industries, bringing them to market can be fraught with peril. Timing, cost, and quality all play important roles in a successful product launch and avoiding expensive — often in more than just dollars — recalls and redesigns. Quality Assurance: Applying Methodologies for Launching New Products, Services, and Customer Satisfaction details continual improvement (CI), a proven process for avoiding common problems and creating customer satisfaction. The book explores the three fundamental approaches required to create a truly CI culture in any organization: a) consistent philosophy of improvement by management, b) receptive organizational culture, and c) the entire culture of the organization must be willing to make decisions based on measurement and data. It outlines the seven principles: research/plan, assure, explain, prioritize, demonstrate, confirm, and show. However, as with CI itself, this attitude must be incorporated into the processes of any organization and create products or services for the market place that will delight customers rather than just satisfying them. Time and cost constraints are the biggest culprits here, not any one person's lack of due diligence. When this happens, organizations must look at the bigger picture internally and identify it as a system problem. Based on the author's 35 years of experience, this book covers the essential items for doing the right thing the first time especially during launching a good product and/or service to the customer. It identifies key indicators and methodologies that will help you attain excellent performance, delivery, and cost with both the customer and supplier. In other words, by following these methodologies and indicators, the job will get done right the first time.

## **Maximize the Effective Power of Oee Analysis**

## **Telematics and Computing**

The two-volume set IFIP AICT 513 and 514 constitutes the refereed proceedings of the International IFIP WG 5.7 Conference on Advances in Production Management Systems, APMS 2017, held in Hamburg, Germany, in September 2017. The 121 revised full papers presented were carefully reviewed and selected from 163 submissions. They are organized in the following topical sections: smart manufacturing system characterization; product and asset life cycle management in smart factories of industry 4.0; cyber-physical (IIoT) technology deployments in smart manufacturing systems; multi-disciplinary collaboration in the development of smart product-service solutions; sustainable human integration in cyber-physical systems: the operator 4.0; intelligent diagnostics and maintenance solutions; operations planning, scheduling and control; supply chain design; production management in food supply chains; factory planning; industrial and other services; operations management in engineer-to-order manufacturing; gamification of complex systems design development; lean and green manufacturing; and eco-efficiency in manufacturing operations.

## **Oee for Operators**

Overall Equipment Effectiveness (OEE) is a crucial measure in TPM that reports on how well equipment is running. It factors three elements ---the time the machine is actually running, the quantity of products the machine is turning out, and the quantity of good output - into a single combined score. Directly addressing those who are best positioned to track and improve the effectiveness of equipment, OEE for Operators defines basic concepts and then provides a systematic explanation of how OEE should be applied to maximize a piece of equipment's productivity and recognize when its efficiency is being compromised. Features

## **Design of Flexible Production Systems**

Risk is everywhere. It does not matter where we are or what we do. It affects us on a personal level, but it also affects us in our world of commerce and our business. This indispensable summary guide is for everyone who wants some fast information regarding failures and how to deal with them. It explores the evaluation process of risk by utilizing one of the core methodologies available: failure modes and effects analysis (FMEA). The intent is to make the concepts easy to understand and explain why FMEA is used in many industries with positive results to either eliminate or mitigate risk.

## **Intelligent Manufacturing and Energy Sustainability**

An innovative book that centers on developing and measuring true Overall Equipment Effectiveness (OEE), which as the

author demonstrates, correlates with factory output and has a strong link to profitability.

## **Manufacturing Flexible Packaging**

A Practical, Hands-on Guide to Lean Manufacturing This real-world resource offers proven solutions for implementing lean manufacturing in an enterprise environment, covering the engineering and production aspects as well as the business culture concerns. Filled with detailed examples, the book focuses on the rapid application of lean principles so that large, early financial gains can be made. How to Implement Lean Manufacturing explains Toyota Production System (TPS) practices and specifies the distinct order in which lean techniques should be applied to achieve maximum gains. Global case studies illustrate successes and pitfalls of lean manufacturing initiatives. Discover how to: Rigorously test and retest the state of your "leanness" with unique evaluators Develop and deploy plant-wide strategies and goals Improve speed and quality and dramatically reduce costs Reduce variation in the manufacturing system in order to reduce inventory Reduce lead times to enable improved responsiveness and flexibility Synchronize production and supply to the customer Create flow and establish pull-demand systems Perform system-wide and specific value-stream evaluations Generate a comprehensive list of highly focused Kaizen activities Sustain process gains Manage constraints and reduce bottlenecks Implement cellular manufacturing

## **Speed-Based Target Profit**

OEE: Organizational Efficiency Engineering is the original name for the application of efficiency principles to the operation of organizations. Share adventures in management engineering with Jesse and Bill, the action arm of OEE, Inc. Watch as they provide their elegant, and yet simplistic, analysis; and as they apply efficiency techniques to attain remarkable benefits for senior managers. This is a doorway to a new level of effect for those who must face challenges common in today's management environment. Whether they resolve a problem with part II exception management or repair a management that lacks innovation, these two are there to show how to use recognized good-management processes to gain the desired result. This is more than just a fiction work, it is a casebook for the senior manager who wants to gain the benefits of direct engineering solutions to common management problems. The reader will receive an introduction to organizational metrics and the plumber syndrome. A manager can observe a number of inefficiency sources that arise from today's management approaches, along with initial directions for solution. And somehow, the solution is always the application of recognized good-management practices and approaches.

## **Serbian**

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.

## **Identification of Dynamic Systems**

Geared toward executives and managers, a revised guide explains important concepts in macroeconomics using detailed examples from history and helps break down how the economy really works and what impact it has on the business world. 12,500 first printing.

## **Lean Production for Competitive Advantage**

## **Advanced Product Quality Planning**

This book is a printed edition of the Special Issue "Sustainable Business Models" that was published in Sustainability

## **Packaging Machinery Handbook**

Precise dynamic models of processes are required for many applications, ranging from control engineering to the natural sciences and economics. Frequently, such precise models cannot be derived using theoretical considerations alone. Therefore, they must be determined experimentally. This book treats the determination of dynamic models based on measurements taken at the process, which is known as system identification or process identification. Both offline and

online methods are presented, i.e. methods that post-process the measured data as well as methods that provide models during the measurement. The book is theory-oriented and application-oriented and most methods covered have been used successfully in practical applications for many different processes. Illustrative examples in this book with real measured data range from hydraulic and electric actuators up to combustion engines. Real experimental data is also provided on the Springer webpage, allowing readers to gather their first experience with the methods presented in this book. Among others, the book covers the following subjects: determination of the non-parametric frequency response, (fast) Fourier transform, correlation analysis, parameter estimation with a focus on the method of Least Squares and modifications, identification of time-variant processes, identification in closed-loop, identification of continuous time processes, and subspace methods. Some methods for nonlinear system identification are also considered, such as the Extended Kalman filter and neural networks. The different methods are compared by using a real three-mass oscillator process, a model of a drive train. For many identification methods, hints for the practical implementation and application are provided. The book is intended to meet the needs of students and practicing engineers working in research and development, design and manufacturing.

## **Manufacturing Cost Policy Deployment (MCPD) Profitability Scenarios**

This book constitutes the thoroughly refereed proceedings of the 8th International Congress on Telematics and Computing, WITCOM 2019, held in Merida, Mexico, in November 2019. The 31 full papers presented in this volume were carefully reviewed and selected from 78 submissions. The papers are organized in topical sections: GIS & climate change; telematics & electronics; artificial intelligence & machine learning; software engineering & education; internet of things; and informatics security.

## **A Concise Guide to Macroeconomics**

Reliability-Centered Maintenance provides valuable insights into current preventive maintenance practices and issues, while explaining how a transition from the current "preserve equipment" to "preserve function" mindset is the key ingredient in a maintenance optimization strategy. This book defines the four principal features of RCM and describes the nine essential steps to achieving a successful RCM program. There is an easy to follow example illustrating the Classical RCM systems analysis process using the water treatment system for a swimming pool. As well as the use of software in the system analysis process, making a specific recommendation on a software product to use. Additionally, this new edition possesses an appendix devoted to discussing an economic model that has been used successfully to decide the most cost effective use of maintenance. Top Level managers, engineers, and especially technicians who rely on PM programs in their plant operations can't afford to miss this inclusive guide to Reliability-Centered Maintenance. Includes detailed instructions for implementing and sustaining an RCM program for extremely cost effective manufacturing Presents seven real-world cross-

industry RCM success case studies that have profited from this plan Provides essential information on how RCM focuses your maintenance organization to become a recognized "center for profit" Offers over 35 accumulated years of the authors' experiences in Lessons Learned for the proper use of RCM (and pitfalls to avoid)

## **TCP/IP Clearly Explained**

Applied Principles of Horticultural Science is that critical thing for all students of horticulture - a book that teaches the theory of horticultural science through the practice of horticulture itself. The book is divided into three sections - Plant science, Soil science, Pest and disease. Each section contains a number of chapters relating to a major principle of applied horticulture. Each chapter starts with a key point summary and introduces the underpinning knowledge which is then reinforced by exercises. The book contains over 70 practical exercises, presented in a way that makes students think for themselves. Answers to the exercises are given at the end of chapters. Clear step-by-step instructions make practical work accessible to students of all abilities. This new third edition provides an even wider sweep of case studies to make this book an essential practical workbook for horticulture students and gardeners alike. Updated material fits with the latest RHS, City and Guilds and Edexcel syllabus. It is particularly suitable for the RHS Certificate, Advanced Certificate and Edexcel Diplomas as well as for those undertaking NPTC National, Advanced National courses and Horticulture NVQs at levels 2 and 3, together with the new Diploma in Environmental and Land-based studies. Laurie Brown is a horticultural scientist and educator. He is Director of Academex, a consultancy company aspiring to excellence in teaching and learning. Laurie previously worked with the Standards Unit on the design of exemplary teaching resources in the land-based sector.

## **Risk Management Using Failure Mode and Effect Analysis (FMEA)**

With over 30,000 copies sold in previous editions, this fourth edition of TCP/IP Clearly Explained stands out more than ever. You still get a practical, thorough exploration of TCP/IP networking, presented in plain language, that will benefit newcomers and veterans alike. The coverage has been updated, however, to reflect new and continuing technological changes, including the Stream Control Transmission Protocol (SCTP), the Blocks architecture for application protocols, and the Transport Layer Security Protocol (TLS). The improvements go far beyond the updated material: they also include an all-new approach that examines the TCP/IP protocol stack from the top down, beginning with the applications you may already understand and only then moving deeper to the protocols that make these applications possible. You also get a helpful overview of the "life" of an Internet packet, covering all its movements from inception to final disposition. If you're looking for nothing more than information on the protocols comprising TCP/IP networking, there are plenty of books to choose from. If you want to understand TCP/IP networking - why the protocols do what they do, how they allow applications to be extended, and how changes in the environment necessitate changes to the protocols—there's only the one you hold in your

hands. Explains clearly and holistically, but without oversimplification—the core protocols that make the global Internet possible Fully updated to cover emerging technologies that are critical to the present and future of the Internet Takes a top-down approach that begins with the familiar application layer, then proceeds to the protocols underlying it, devoting attention to each layer's specifics Divided into organized, easy-to-follow sections on the concepts and fundamentals of networking, Internet applications, transport protocols, the Internet layer and infrastructure, and practical internetworking

## **Advances in Production Management Systems. The Path to Intelligent, Collaborative and Sustainable Manufacturing**

Performance . . . downtime . . . quality . . . availability . . . defects . . . How well do you know your machines? Do you truly know how substantial your equipment-related losses are? Calculating overall equipment effectiveness is a crucial element of any serious commitment to reduce equipment- and process-related wastes through Total Productive Maintenance and other lean manufacturing methods. Success with TPM, in particular, depends on consistently and accurately measuring machine and process performance. "OEE Toolkit: Practical Software for Measuring Overall Equipment Effectiveness" provides detailed information daily on how effectively your machines are running by quantifying and visually highlighting where losses in availability, speed, and quality occur and how they impact overall equipment effectiveness. This calculation, made easy by the OEE Toolkit software, provides a powerful performance measurement on which you can base systematic, focused improvement efforts. Capturing and processing performance data on critical machines is challenging. Daily data collection and analysis often involve time-consuming and costly processes. Now, Productivity's OEE Toolkit eliminates most of the burden of data processing. The OEE Toolkit's emphasis on visual management helps you get more information from collected data. You enter very small amounts of data, the OEE Toolkit does the calculations and analysis for you, and you get more information about your machine performance than you ever thought possible. In today's competitive environment you cannot settle for a goal less ambitious than the total elimination of breakdowns and other losses. You can't improve what you don't measure, and OEE is a powerful indicator of where your losses are occurring. The fine-tuned, automated analysis of the OEE Toolkit pinpoints where to make improvements that will significantly impact your bottom line. There are no excuses for ineffective equipment, only causes. Expose those causes and root them out today with the OEE Toolkit. Key Benefits: One universal tool -- processes information about machines through the same interface (Basic package covers 10 machines) Calculates losses in availability, performance, and quality Easy to learn and use Every operator can participate Minimal input, maximal information Flexible to the needs of the user Lets you measure the performance of many machines Supports operators in learning about equipment and focusing on the losses Expandable to future needs Key Features: Data-entry screen designed for optimal speed and ease of use Extensive data analysis for concrete information to pinpoint the causes of losses Standardized reporting formats for effective comparisons of equipment effectiveness Color-coded visual control features for determining at a glance whether OEE is in your acceptable range Many ways to analyze and look at

data, including: Bar/line graphs of OEE and its components for a specific shift or team for a specific day or period Bar/line graphs of OEE trends over time Bar graphs of OEE and losses in effectiveness over time Pareto charts for time use categories, sorted by minutes, frequency, and average duration Bar graph of specific time use categories over time Commonly used reliability and maintainability indicators: mean time between failures, failure frequency rate, mean time to repair, and failure rate Mountain graph of production output (good product, scrap, rework) over time Bar graph of production and on status (in relation to user-defined target output for each machine) for all machines tracked during a period Pie chart of utilization categories Contents Software CD 112-page manual System Requirements Personal computer with 100 MHz (or higher) Pentium processor 16 Mbytes or more of system RAM 10 Mbytes free hard disk space SVGA 800 x 600 video adapter 4X CD-ROM DRIVE Microsoft Windows-supported color printer Windows 95, Windows 98, or Windows NT 4.0 (with Service Pack 2 or greater) ABOUT THE AUTHOR Arno Koch has been involved in the information technology field for over ten years and has trained hundreds of people in the fields of automation and systems administration and participated in numerous IT projects. He currently is a senior consultant with Blom Consultancy, Netherlands, Europe's leading World Class Manufacturing consultancy bureau. There, he merges his knowledge of IT, administration, and management with the Japanese approach to making systems work. Call your Productivity Press Account Manager at 800-394-6868 about multiple-user licensing and network pricing. Includes: Software CD, 112-page manual, 30 days phone and email technical support Basic package tracks 10 machines. Call for pricing for additional machines

### **Artificial Intelligence and Industrial Applications**

This casebook, designed as a companion volume to Richard J. Schonberger's "World Class Manufacturing: The Lessons of Simplicity Applied," contains 26 cases that let students of WCM concepts solve actual JIT and TQC implementation problems in a wide variety of manufacturing and corporate settings. For readers with specific concerns, each case lists the topics covered (i.e., kanban, total preventive maintenance, partnership with customer) and each case includes questions on issues that companies commonly face in implementing WCM concepts. Dr. Schonberger also explains two JIT and TQC concepts not previously published -- micro-JIT analysis of shop-floor conditions by ratios and the "naturalistic" approach to quality improvement.

### **Maintenance Costs and Life Cycle Cost Analysis**

This book defines, develops, and examines the foundations of the APQP (Advanced Product Quality Planning) methodology. It explains in detail the five phases, and it relates its significance to national, international, and customer specific standards. It also includes additional information on the PPAP (Production Part Approval Process), Risk, Warranty, GD&T (Geometric Dimensioning and Tolerancing), and the role of leadership as they apply to the continual improvement process of any

organization. Features Defines and explains the five stages of APQP in detail Identifies and zeroes in on the critical steps of the APQP methodology Covers the issue of risk as it is defined in the ISO 9001, IATF 16949, the pending VDA, and the OEM requirements Presents the role of leadership and management in the APQP methodology Summarizes all of the change requirements of the IATF standard

### **Applied Principles of Horticultural Science**

This book shows how to consistently obtain annual and multiannual manufacturing target profit regardless of the evolution of sales volumes, increasing or decreasing, using the Manufacturing Cost Policy Deployment (MCPD) system. Managers and practitioners within the manufacturing companies will discover a practical approach within the MCPD system that will help them develop and support their long-term, medium-term, and short-term profitability and productivity strategy. The book presents both the basic concepts of MCPD and the key elements of transforming manufacturing companies through MCPD system, as well as supporting the consistent growth of external and internal profit by directing all systematic and systemic improvements based on meeting the annual and multiannual Manufacturing Cost Improvement (MCI) targets and means for each Product-Family Cost (PFC). This book is unique because it presents two types of systematic and systemic improvement projects for MCI that have been applied over the years in various multinational manufacturing companies operating in highly competitive markets, in order to address the consistent reduction of unit manufacturing costs by improving the Cost of Losses and Waste (CLW). Readers will discover the practical approach of MCI based on a structured approach to MCPD system beyond the traditional approach to manufacturing improvements based mainly on improved time and quality. Therefore, from the perspective of the MCPD system, the multiannual manufacturing target profits are met while the annual and multiannual manufacturing target costs are a predetermined stake and not a result of the improvements already made.

### **Understanding, Measuring, and Improving Overall Equipment Effectiveness**

BUSINESS STRATEGY. "The 4 Disciplines of Execution "offers the what but also how effective execution is achieved. They share numerous examples of companies that have done just that, not once, but over and over again. This is a book that every leader should read! (Clayton Christensen, Professor, Harvard Business School, and author of "The Innovator s Dilemma)." Do you remember the last major initiative you watched die in your organization? Did it go down with a loud crash? Or was it slowly and quietly suffocated by other competing priorities? By the time it finally disappeared, it s likely no one even noticed. What happened? The whirlwind of urgent activity required to keep things running day-to-day devoured all the time and energy you needed to invest in executing your strategy for tomorrow. "The 4 Disciplines of Execution" can change all that forever.

## **ISOM 2013 Proceedings (GIAP Journals, India)**

The purpose of this Special Issue is to investigate topics related to sustainability issues in the new era, especially in Industry 4.0 or other new manufacturing environments. Under Industry 4.0, there have been great changes with respect to production processes, production planning and control, quality assurance, internal control, cost determination, and other management issues. Moreover, it is expected that Industry 4.0 can create positive sustainability impacts along the whole value chain. There are three pillars of sustainability, including environmental sustainability, economic sustainability, and social sustainability. This Special Issue collects 15 sustainability-related papers from various industries that use various methods or models, such as mathematical programming, activity-based costing (ABC), material flow cost accounting, fuel consumption model, artificial intelligence (AI)-based fusion model, multi-attribute decision model (MADM), and so on. These papers are related to carbon emissions, carbon tax, Industry 4.0, economic sustainability, corporate social responsibility (CSR), etc. The research objects come from China, Taiwan, Thailand, Oman, Cyprus, Germany, Austria, and Portugal. Although the research presented in this Special Issue is not exhaustive, this Special Issue provides abundant, significant research related to environmental, economic, and social sustainability. Nevertheless, there still are many research topics that require our attention to solve problems of sustainability.

## **Oee, Inc.**

In the last decade, the production of mechanical components to be assembled in final products produced in high volumes (e.g. cars, mopeds, industrial vehicles, etc.) has undergone deep changes due to the overall modifications in the way companies compete. Companies must consider competitive factors such as short lead times, tight product tolerances, frequent market changes and cost reduction. Anyway, companies often have to define production objectives as trade-offs among these critical factors since it can be difficult to improve all of them. Even if system flexibility is often considered a fundamental requirement for firms, it is not always a desirable characteristic of a system because it requires relevant investment cost which can jeopardize the profitability of the firm. Dedicated systems are not able to adapt to changes of the product characteristics while flexible systems offer more flexibility than what is needed, thus increasing investment and operative costs. Production contexts characterized by mid to high demand volume of well identified families of products in continuous evolution do not require the highest level of flexibility; therefore, manufacturing system flexibility must be rationalized and it is necessary to find out the best trade-off between productivity and flexibility by designing manufacturing systems endowed with the right level of flexibility required by the production problem. This new class of production systems can be named Focused Flexibility Manufacturing Systems-FFMSs. The flexibility degree in FFMSs is related to their ability to cope with volume, mix and technological changes, and it must take into account both present and future changes. The required level of system flexibility impacts on the architecture of the system and the explicit design of

flexibility often leads to hybrid systems, i.e. automated integrated systems in which parts can be processed by both general purpose and dedicated machines. This is a key issue of FFMSs and results from the matching of flexibility and productivity that respectively characterize FMSs and Dedicated Manufacturing Systems (DMSs). The market share of the EU in the machine tool sector is 44%; the introduction of focused flexibility would be particularly important for machine tool builders whose competitive advantage is based on the ability of customizing their systems on the basis of needs of their customers. In fact, even if current production contexts frequently present situations which would fit well with the FFMS approach, tradition and know-how of machine tool builders play a crucial role. Firms often agree with the focused flexibility vision, nevertheless they decide not to pay the risk and efforts related to the design of this new system architecture. This is due also to the lack of well-structured design approaches which can help machine tool builders to configure innovative systems. Therefore, the FFMS topic is studied through the book chapters following a shared mission: "To define methodologies and tools to design production systems with a minimum level of flexibility needed to face, during their lifecycle, the product and process evolution both in the technological and demand aspects. The goal is to find out the optimal trade-off between flexibility and productivity". The book framework follows the architecture which has been developed to address the FFMS Design problem. This architecture is both broad and detailed, since it pays attention to all the relevant levels in a firm hierarchy which are involved in the system design. Moreover, the architecture is innovative because it models both the point of view of the machine tool builder and the point of view of the system user. The architecture starts analyzing Manufacturing Strategy issues and generating the possible demand scenario to be faced. Technological aspects play a key role while solving process plan problems for the products in the part family. Strategic and technological data becomes input when a machine tool builder performs system configuration. The resulting system configurations are possible solutions that a system user considers when planning its system capacity. All the steps of the architecture are deeply studied, developing methods and tools to address each subproblem. Particular attention is paid to the methodologies adopted to face the different subproblems: mathematical programming, stochastic programming, simulation techniques and inverse kinematics have been used. The whole architecture provides a general approach to implement the right degree of flexibility and it allows to study how different aspects and decisions taken in a firm impact on each other. The work presented in the book is innovative because it gives links among different research fields, such as Manufacturing Strategy, Process Plan, System Design, Capacity Planning and Performance Evaluation; moreover, it helps to formalize and rationalize a critical area such as manufacturing system flexibility. The addressed problem is relevant at an academic level but, also, at an industrial level. A great deal of industrial sectors need to address the problem of designing systems with the right degree of flexibility; for instance, automotive, white goods, electrical and electronic goods industries, etc. Attention to industrial issues is confirmed by empirical studies and real case analyses which are presented within the book chapters.

## **Modelling and Analysis of Sustainability Related Issues in New Era**

Consider a Viable and Cost-Effective Platform for the Industries of the Future (IOF) Benefit from improved safety, performance, and product deliveries to your customers. Achieve a higher rate of equipment availability, performance, product quality, and reliability. Integrated Reliability: Condition Monitoring and Maintenance of Equipment incorporate

## **Operations Management**

Profitable production planning is and will remain an eternal challenge to ensuring the prosperity and dignity of companies in a global market. Even though there are different approaches to achieving the target profitability through productivity in the production planning stage, these approaches do not guarantee consistent planning, creation, and sustenance of synchronous profitable operations for multiannual and annual target profit. In feedback to this predicament, Alin Posteuca develops a new system called speed-based target profit (SBTP). SBTP is the profitable production management and manufacturing improvement system that approaches production planning to achieve unit speed of target profit for target products through manufacturing cost improvement and bottleneck profitability control for maximum takt time. Managers and practitioners within manufacturing companies will discover a practical approach for cost down and cash up by applying a powerful operational profitable production planning formula to meet profitability expectations through productivity based on strong leadership with the help of a specific system for feedforward, concurrent, and feedback control. Therefore, the SBTP system in this book presents a holistic approach to profitability for target products and the development of its own mechanism since the acceptance of each order from customers to achieve continuous synchronization of all manufacturing processes to market requirements, profitability management, and profitable production planning. The uniqueness of the book is reinforced by a detailed presentation of the successful application of the SBTP system in two case studies, as a way of life and a unit speed of target profit improvement ethos at all hierarchical levels, in two multinational manufacturing companies operating in highly competitive markets in order to address the synchronous profitable operations for both the sales increase scenario and the sales decrease scenario. By adopting the SBTP system, your company will be able to consistently achieve unit speed of target profit in the bottleneck process for fulfilling annual and multiannual target profit as a unique and effective way through a new profitable production planning paradigm that operates according to its own production system.

## **Overall Equipment Effectiveness**

Bikash Chatterjee emphasizes the criticality of applying the principles of Lean and Six Sigma within the paradigm of the drug development process. His guide to operational excellence in the pharmaceutical and biotech industries is a focused summary of the application of Lean Six Sigma theory to the regulated life sciences. From molecule discovery to the application of PAT Applying Lean Six Sigma in the Pharmaceutical Industry will highlight the importance of framing these

initiatives within the key deliverables of drug development manufacturing and quality. Challenging conventional wisdom the author offers a quality and efficiency perspective as a foundation for the principles of Quality by Design, PAT and the new philosophies underlying Process Validation. Each chapter includes discussion around the considerations for applying Lean manufacturing and Six Sigma principles and their tools, culminating in a case study to illustrate the application. The book is organized to reflect the major work centers involved in the drug development lifecycle. Each chapter is stand-alone but together they illustrate the necessary synergy between Lean, Six Sigma and compliance sensibilities required to be successful in the pharmaceutical industry. These design, manufacturing and management techniques are not without their challenges. Bikash Chatterjee's book offers the roadmap for an industry that is struggling to reinvent many of its development and business processes.

## **The 4 Disciplines of Execution**

Maintenance Audits Handbook: A Performance Measurement Framework explores the maintenance function and performance of an organization, and outlines the key aspects required for an effective and efficient maintenance performance measurement (MPM) system. Incorporating different aspects of traditional literature and considering various frameworks on the subject, it examines the auditing process as well as the use and development of maintenance metrics. It identifies different frameworks and models showcasing how MPM systems should be implemented as well as the values that are created when different frameworks are used. The book presents performance indicators within a framework that classifies and sorts according to functional and hierarchical aspects. It introduces techniques that can help determine the right set of performance indicators. It also outlines a process that combines both numerical indicators with the classical result of massive questionnaires successfully incorporating both the quantitative and qualitative aspects of maintenance performance. In addition, the author provides examples of MPM frameworks that are used in organizations with condition-based, vibration-based, and reliability-centered maintenance. A useful handbook for students and maintenance professionals, this book provides readers with an understanding of how to Align the organizational strategy to the strategies of the maintenance function Link the maintenance performance measures to the different hierarchies of the organization and establish effective communication between them Translate the MPis at operational level to the corporate level (to create value for the whole organization and its customers) Identify the weaknesses and strengths of the implemented maintenance strategy Maintenance Audits Handbook: A Performance Measurement Framework provides readers with a sound foundation for developing and measuring a comprehensive maintenance improvement strategy using qualitative and quantitative data, and serves as an ideal resource for maintenance/mechanical engineers, maintenance/performance/business/production managers and industry professionals involved in maintenance.

## **Sustainable Business Models**

Efficiently and profitably delivering quality flexible packaging to the marketplace requires designing and manufacturing products that are both "fit-to-use" and "fit-to-make". The engineering function in a flexible packaging enterprise must attend to these dual design challenges. Flexible Packaging discusses the basic processes used to manufacture flexible packaging products, including rotogravure printing, flexographic printing, adhesive lamination, extrusion lamination/coating; and finishing/slitting. These processes are then related to the machines used to practice them, emphasising the basics of machines' control systems, and options to minimize wasted time and materials between production jobs. Raw materials are also considered, including the three basic forms: Rollstock (paper, foil, plastic films); Resin; and Wets (inks, varnishes, primers). Guidance is provided on both material selection, and on adding value through enhancement or modification of the materials' physical features. A 'measures' section covers both primary material features - such as tensile, elongation, modulus and elastic and plastic regions - and secondary quality characteristics such as seal and bond strengths, coefficient of friction, oxygen barrier and moisture vapour barrier. Helps engineers improve existing raw material selection and manufacturing processes for manufacturing functional flexible packaging materials. Covers all aspects of delivering high value packaging to the customer - from the raw materials, to the methods of processing them, the machines used to do it, and the measures required to gauge the characteristics of the product. Helps engineers to minimize waste and unproductive time in production.

### **How To Implement Lean Manufacturing**

In this book we take the reader on a journey through the various curriculum reforms that have emerged in the USA around the idea of conducting education outdoors - through initiatives such as nature-study, camping education, adventure education, environmental education, experiential education and place based education. This is a historical journey with an underlying message for educators, one we are able to illuminate through the educational theories of John Dewey. Central to this message is a deeper understanding of human experience as both aesthetic and reflective, leading to a more coherent comprehension of not just outdoor education, but of education itself. Whether we knew it or not, all of us interested in the field of education have been waiting for this book. John Dewey and Education Outdoors is the tool we need to help understand and explain experiential education in general and outdoor education in particular. This is an expertly researched and written account of how and why outdoor education has developed, and been such a vital feature in exemplary educational practices. Because of this work I will no longer have to stumble through some inadequate explanation of the history and philosophy of outdoor education, I can now simply point to this book and suggest that everyone read it. —Dr. Dan Garvey, President Emeritus, Prescott College, Former President and Executive Director, Association for Experiential Education. John Dewey and Education Outdoors is a well-researched book that explores the tenets of Dewey within the contexts of progressive reforms in education. The authors provide detailed explanations of Dewey's thoughts on education while exploring the historical intersections with outdoor education, camping, and

environmental education. While situated within a historical perspective, this book provides insights relevant for today's discussions on new educational reform possibilities, learning focused on the whole child that includes out-of-school time experiences such as camp, and the development of 21st century skills needed to navigate our global society. —Dr. Deb Bialeschki, Director of Research, American Camp Association.

## **Mechanics Of Composite Materials**

This book includes selected, high-quality papers presented at the International Conference on Intelligent Manufacturing and Energy Sustainability (ICIMES 2019) held at the Department of Mechanical Engineering, Malla Reddy College of Engineering & Technology (MRCET), Maisammaguda, Hyderabad, India, from 21 to 22 June 2019. It covers topics in the areas of automation, manufacturing technology and energy sustainability.

## **World Class Manufacturing Casebook**

An up-to-date and practical reference guide to the most important aspects of Serbian as used by contemporary native speakers of the language, this jargon-free text presents an accessible description of the language, focusing on the real patterns of use today.

## **Handbook of Maintenance Management and Engineering**

Operations Management is an area of business concerned with managing the process that converts inputs into outputs, in the form of goods and/or services. Increasingly complex environments together with the recent economic swings and substantially squeezed industrial margins put extra pressure on companies, and decision makers are pushed to increase operations efficiency and effectiveness. This book presents the contributions of a selected group of researchers, reporting new ideas, original results and practical experiences as well as systematizing some fundamental topics in Operations Management. Although it represents only a small sample of the research activity on Operations Management, people from diverse backgrounds, academia, industry and research as well as engineering students can take advantage of this volume.

## **RCM--Gateway to World Class Maintenance**

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.

### **Integrated Reliability**

Finally, a comprehensive book about packaging machinery. The Packaging Machinery Handbook is the first book covering the range of packaging machinery in common use. It includes chapters on filling, capping, labeling, cartoning, inspecting and more. The chapter on packaging line design provides a framework for developing a new packaging line from initial idea to production. More than 120 illustrations allow readers to see inside the machines and what makes them tick. A companion website at [www.packmachbook.com](http://www.packmachbook.com) includes links to hundreds of videos of these machines in action. The book is designed for the newcomer who wants to learn about machinery, for the package designer who needs to understand how their package will be produced and for the seasoned professional who wants a handy reference. What the experts are saying: "Experience is the best teacher. But if you can't wait 10 years and don't want to learn the hard way, read John Henry's Packaging Machinery Handbook Through a fast-moving conversational writing style - from big-picture "here's why it's done" to nitty-gritty "here's how it's done" - John transfers his extensive packaging knowledge nearly as effortlessly as a Vulcan mind-meld." Lisa McTigue Pierce, packaging journalist since 1982 "From his wealth of practical experience, John has put together a great resource for anyone who is thinking about buying a piece of packaging machinery or who is engaged in putting together a packaging operation. It will help even the most seasoned veterans avoid some common pitfalls." Larry Luciano, President, Luciano Packaging Technology "John Henry's Packaging Machinery Handbook will be the definitive work he day it is published. This is the book we in the field will reach for when we need insight into packaging machinery. His technical integrity gives us a book of great utility. This book is first rate and badly needed. Bravo to John Henry!" Iver Phallen, President, Oden Corporation

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