

## Studies On Recast Layer In Edm Using Aluminium Powder

The urgent need to keep pace with the accelerating globalization of manufacturing in the 21st century has produced rapid advancements in technology, research and innovation. This book presents the proceedings of the 16th International Conference on Manufacturing Research incorporating the 33rd National Conference on Manufacturing Research (ICMR 2018), held in Skövde, Sweden, in September 2018. The aim of the conference is to create a friendly and inclusive environment, bringing together researchers, academics and industrialists with practical and theoretical knowledge to share and discuss emerging trends and new challenges. The book is divided into 12 parts, covering areas such as the manufacturing process; robots; product design and development; smart manufacturing; and lean, among others. Covering both cutting-edge research and recent industrial applications, the book will appeal to all those with an interest in recent advances in manufacturing technology.

Micro Electro Discharge Machining (EDM) is a prominent technology for the fabrication of micro components in many fields. Nowadays, it is used like a conventional machine tool due to favorable characteristics. This book provides the fundamental knowledge of the principles of the process and its variants, the different process parameters, the role of machine components and systems, the challenges, and how to eliminate processing errors. It also includes real life applications of micro EDM in different areas with the most relevant examples.

This book offers a comprehensive collection of micro electrical discharge machining (EDM) processes, including hybrid processes. It discusses the theory behind each process and their applications in various technological as well as biomedical domains, and also presents a brief background to various micro EDM processes, current research challenges, and detailed case studies of micro-manufacturing miniaturized parts. The book serves as a valuable guide for students and researchers interested in micro EDM and other related processes.

The cylindrical wire Electrical Discharge Machining (EDM) process was developed to generate precise cylindrical forms on hard, difficult-to-machine materials. A precise, flexible, and corrosion-resistant underwater rotary spindle was designed and added to a conventional two-axis wire EDM machine to enable the generation of free-form cylindrical geometries. A detailed spindle error analysis identified the major source of error at different frequencies. The mathematical models for material removal rate and surface finish were derived. Experimental results indicated that higher maximum material removal rate might be achieved in the cylindrical wire EDM than the 2D wire EDM. Effects of some key process parameters, wire feed rate, pulse on-time and part rotational speed, on the surface finish and roundness are explored. For WC-Co parts, an arithmetic average surface roughness and roundness as low as 0.68 and 1.7  $\mu\text{m}$ , respectively, can be achieved. Surfaces of the cylindrical EDM parts were examined using Scanning Electron Microscopy (SEM) to identify the macro-ridges and craters on the surface. Cross-sections of the EDM parts are examined using the SEM to quantify the recast layer and heat-affected zone under various process parameters. This study also used nanoindentation to investigate the influence of cylindrical wire EDM process on the mechanical properties of WC-Co composite. Multiple indents were conducted on the cross-section of the recast layer, heat-affected zone, and bulk material. The SEM micrographs were used to correlate the individual nano-indent to the measured hardness and modulus of elasticity. The experimental results showed that the heat-affected zone had more compact microstructure less indentation cracking. The recast layer had lower hardness and modulus of elasticity than the original material and heat-affected zone. EDS X-ray and X-ray diffraction were used to analyze the material compositions of the heat-affected zone and recast layer and to unders.

Non-Conventional Machining in Modern Manufacturing Systems

Ninth Conference on Production Research and Technology

Machines Advances and Trends in Non-conventional, Abrasive and Precision Machining

Advances in Manufacturing Engineering

Advances in Laser Materials Processing

Industry 4.0 and Advanced Manufacturing

In the present study, optimization of chromium powder mixed EDM parameters is studied during machining of H13 tool steel. Four input parameters of powder mixed EDM, namely peak current, pulse on time, duty cycle and powder concentration, are varied, each at three levels, to get the optimum responses. Material removal rate (MRR), Tool wear rate (TWR) and Surface Roughness (Ra) are considered as performance measures. Copper electrode of 16 mm is used as the tool. Response Surface Methodology is used to correlate input and output parameters. The variation of responses due to variation in input parameters has been studied and shown in the form of surface plots and contour plots.

This volume presents research papers on micro and nano manufacturing and surface engineering which were presented during the 7th International and 28th All India Manufacturing Technology, Design and Research conference 2018 (AIMTDR 2018). The papers discuss the latest advances in miniature manufacturing, the machining of miniature components and features as well as improvement of surface properties. This volume will be of interest to academicians, researchers, and practicing engineers alike.

This book sheds light on the development of traditional and advanced optimization methods. Their use in various tradition and non-tradition manufacturing and machining processes for an improved manufacturability is reported. This includes key elements of implementing conventional statistical methods, multi-objective and multi-criteria decision-making methods and evolution of single and multi-target optimization techniques using soft computing to enhance production performance, efficiency and sustainability in manufacturing. The latest research in this area as well as possible avenues of future research are also highlighted.

Continuous improvements in machining practices have created opportunities for businesses to develop more streamlined processes.

This not only leads to higher success in day-to-day production, but also increases the overall success of businesses. Non-

Conventional Machining in Modern Manufacturing Systems provides emerging research exploring the theoretical and practical aspects of technological advancements in industrial environments and applications in manufacturing. Featuring coverage on a broad range of

topics such as optimization techniques, electrical discharge machining, and hot machining, this book is ideally designed for business managers, engineers, business professionals, researchers, and academicians seeking current research on non-conventional and technologically advanced machining processes.

Advances in Manufacturing Technology XXXII

Principles and Applications

Intelligent Manufacturing

The Use of Small-scale Specimens for Testing Irradiated Material

Data-Driven Optimization of Manufacturing Processes

Advanced Manufacturing and Processing Technology

This book covers the area of tribology broadly, providing important introductory chapters to fundamentals, processing, and applications of tribology. The book is designed primarily for easy and cohesive understanding for students and practicing scientists pursuing the area of tribology with focus on materials. This book helps students and practicing scientists alike understand that a comprehensive knowledge about the friction and wear properties of advanced materials is essential to further design and development of new materials. The description of the wear micromechanisms of various materials will provide a strong background to the readers as how to design and develop new tribological materials. This book also places importance on the development of new ceramic composites in the context of tribological applications. Some of the key features of the book include: Fundamentals section highlights the salient issues of ceramic processing and mechanical properties of important oxide and non-oxide ceramic systems; State of the art research findings on important ceramic composites are included and an understanding on the behavior of silicon carbide (SiC) based ceramic composites in dry sliding wear conditions is presented as a case study; Erosion wear behavior of ceramics, in which case studies on high temperature erosion behavior of SiC based composites and zirconium diboride (ZrB<sub>2</sub>) based composites is also covered; Wear behavior of ceramic coatings is rarely discussed in any tribology related books therefore a case study explaining the abrasion wear behavior of WC-Co coating is provided. Finally an appendix chapter is included in which a collection of several types of questions including multiple choice, short answer and long answer are provided.

Advanced Materials and Processing are important areas of research in Engineering Science and Technology, and require a critical focus on bridging the gap between researchers and engineers. Advanced materials and processing play an increasingly important role in the global economy and in daily life. Researchers and engineers strive to develop new devices and processes, using mathematical and analytical tools to create technologies to handle the rapidly expanding range of materials and manufacturing processes. The Advances in Materials and Processing Technologies conference series creates a stimulating environment for the research collaboration of scholars at the local, national and international levels, contributes to the collective development of a knowledge-based society and economy.

Electrical discharge machining (EDM) is one of the most widely disseminated manufacturing technologies, in particular as regards the generation of accurate and complex geometrical shapes on hard metallic components. Nevertheless, current EDM has major limitations when dealing with fine surface finish and material removal rate. Recently EDM with powder mixed dielectric (PMEDM) has been a focus of intense research work in order to overcome these technological performance barriers. The present study is done with an objective to modify the machining characteristics like surface roughness, material removal rate, and hardness by adding different concentrations of TiO<sub>2</sub> into the dielectric fluid of EDM. XRD and MAPING analysis has been carried out to find the migration of powder from the dielectric to the machined surface. SEM of the surface and the cross-section is also done to analyze the surface texture and recast layer. The results achieved show that minor amount of powder was migrated to machined surface, which resulted in surface improvement. The dielectric with added powder also shows significant improvement in material removal rate.

This book presents selected papers from the 5th International Conference on Mechanical, Manufacturing and Plant Engineering (ICMMPE 2019), held in Kuala Lumpur, Malaysia. It highlights the latest advances in the area, brings together researchers and professionals in the field and provides a valuable platform for exchanging ideas and fostering collaboration. Joining technologies could be change to manufacturing technologies. Addressing real-world problems concerning joining technologies that are at the heart of various manufacturing sectors, the respective papers present the outcomes of the latest experimental and numerical work on problems in soldering, arc welding and solid-state joining technologies. technologies.

Micro-electrical Discharge Machining Processes

Technology, Research and Applications

Electrical Discharge Machining

Automotive, Energy Generation, Quality Control and Efficiency

Micro Electro-fabrication

Proceedings of the 2nd Annual International Conference on Material, Machines and Methods for Sustainable Development (MMMS2020)

***Inconsistency in material removal rate (MRR) and minimizing recast layer are critical issues in non-conductive ceramic machined using micro-EDM. Thus, this research presents the analysis of MRR and recast layer of zirconium oxide (ZrO<sub>2</sub>) due to micro-EDM using EDM-3 dielectric fluid and tungsten tool electrode. The investigation was performed using multi-process micro machine tools. The two main parts of this research are process development and the analysis of MRR and recast layer. For process development, assisting electrode (AE), polarity, flushing, feed rate, gap voltage, and rotational speed were the control parameters. The machined parts were observed using scanning electron microscope. The better machinability of ZrO<sub>2</sub> was found to be with copper adhesive as AE, positive polarity of workpiece, feed rate 3 μm/s, and workpiece submerged in dielectric fluid with one way circulation. The best conditions in process development were used as the fixed parameters. Rotational speed and gap voltage were the control parameters for the analysis of MRR and recast layer. The results of MRR were obtained by measuring the mass of material removed over machining time. The recast layer***

**hardness was measured using micro-Vickers hardness tester. The MRR and hardness data were analyzed and empirical models were developed using design expert software. The optimum parameters for maximum MRR found to be 375 rpm rotational speed and 80 V gap voltage. The optimum value for minimum recast layer hardness was 874.8 Hv with rotational speed of 378 rpm and gap voltage of 110 V.**

**This book presents recent developments in the areas of engineering and technology, focusing on experimental, numerical, and theoretical approaches. In the first part, the emphasis is on the emerging area of electromobility and its sub-disciplines, e.g. battery development, improved efficiency due to new designs and materials, and intelligent control approaches. In turn, the book's second part addresses the broader topic of energy conversion and generation based on classical (petrol engines) and more modern approaches (e.g. turbines). The third and last part addresses quality control and boosting engineering efficiency in a broader sense. Topics covered include e.g. modern contactless screening methods and related image processing. The work included in this book pertains to advanced abrasive and nonconventional machining processes. These processes are at the forefront of modern technology, with significant practical significance. Their importance is also made clear by the case studies that are included in the research that is presented in the book, pertaining to important materials and high-end applications. However, the particularities of these manufacturing processes need to be further investigated and the processes themselves need to be optimized. This is conducted in the presented works with significant experimental and modeling work, incorporating modern tools of analysis and measurements.**

**Advances in Laser Materials Processing: Technology, Research and Application, Second Edition, provides a revised, updated and expanded overview of the area, covering fundamental theory, technology and methods, traditional and emerging applications and potential future directions. The book begins with an overview of the technology and challenges to applying the technology in manufacturing. Parts Two thru Seven focus on essential techniques and process, including cutting, welding, annealing, hardening and peening, surface treatments, coating and materials deposition. The final part of the book considers the mathematical modeling and control of laser processes. Throughout, chapters review the scientific theory underpinning applications, offer full appraisals of the processes described and review potential future trends. A comprehensive practitioner guide and reference work explaining state-of-the-art laser processing technologies in manufacturing and other disciplines Explores challenges, potential, and future directions through the continuous development of new, application-specific lasers in materials processing Provides revised, expanded and updated coverage**

**Micro Electro Discharge Machining**

**Proceedings of the 16th International Conference on Manufacturing Research, incorporating the 33rd National Conference on Manufacturing Research, September 11 - 13, 2018, University of Skövde, Sweden**

**Next Generation Materials and Processing Technologies**

**3-Volume Set**

**Advances in Micro and Nano Manufacturing and Surface Engineering**

**Proceedings of the International Conference on Advanced Mechanical Engineering, Automation, and Sustainable Development 2021 (AMAS2021)**

This article deals with the study of the effect of nonpolar surfactant on the performance characteristics of Electrical Discharge Machining (EDM) of the Ti-6Al-4V alloy. The selected process parameters, like pulse on-time, pulse off-time, discharge current, and nonpolar surfactant concentration, and their effect on machining performance characteristics, like Thermal Conductivity (TC), Material Removal Rate (MRR), Surface Roughness (SR), Tool Wear Rate (TWR), and Recast Layer Thickness (RLT), were studied. In this article, the one-factor-at-a-time approach and Taguchi technique were used to determine the machining process parameters. Nonpolar surfactant is mixed into dielectric fluid, which increases the TC and suspends the debris particles in EDM oil to reduce the discontinued discharge conditions during machining. It was observed from the results that RLT, SR, and TWR are reduced, while MRR and TC are increased, compared to machining without nonpolar surfactant. Furthermore, the experimental results indicated that the surfactant was decomposed in EDM oil and that a small recast layer, which could be seen on migrated elements in EDX analysis peaks, formed on the machined surface.

This book presents selected, peer-reviewed proceedings of the 2nd International Conference on Material, Machines and Methods for Sustainable Development (MMMS2020), held in the city of Nha Trang, Vietnam, from 12 to 15 November, 2020. The purpose of the conference is to explore and ensure an understanding of the critical aspects contributing to sustainable development, especially materials, machines and methods. The contributions published in this book come from authors representing universities, research institutes and industrial companies, and reflect the results of a very broad spectrum of research, from micro- and nanoscale materials design and processing, to mechanical engineering technology in industry. Many of the contributions selected for these proceedings focus on materials modeling, eco-material processes and mechanical manufacturing.

This book disseminates recent research, theories, and practices relevant to the areas of surface engineering and the processing of materials for functional applications in the aerospace, automobile, and biomedical industries. The book focuses on the hidden technologies and advanced manufacturing methods that may not be standardized by

research institutions but are greatly beneficial to material and manufacturing industrial engineers in many ways. It details projects, research activities, and innovations in a global platform to strengthen the knowledge of the concerned community. The book covers surface engineering including coating, deposition, cladding, nanotechnology, surface finishing, precision machining, processing, and emerging advanced manufacturing technologies to enhance the performance of materials in terms of corrosion, wear, and fatigue. The book captures the emerging areas of materials science and advanced manufacturing engineering and presents recent trends in research for researchers, field engineers, and academic professionals.

This book presents the select proceedings of Conference on Research and Developments in Material Processing, Modelling and Characterization (RDMPMC 2020). It highlights the new technologies developed in the generation of rational materials for various applications with tailored properties. It covers fundamental research in emerging materials which includes biomaterials, composites, ceramics, functionally graded materials, energy materials, thin film materials, nanomaterials, nuclear materials, intermetallic, high strength materials, structural materials, super alloys, shape memory alloys and thermally enhanced materials. It includes the numerical modeling and computer simulation to investigate the properties and structure of materials. Few of the most relevant manufacturing techniques highlighted in this book are welding, coating, additive manufacturing, laser-based manufacturing, advanced machining processes, casting, forming and micro and nanoscale manufacturing processes. Given its contents, this book is beneficial to students, researchers and industry professionals. .

Recent Advances in Solids/structures and Application of Metallic Materials

Research Anthology on Artificial Neural Network Applications

Electrical Discharge Machining. Optimization of Chromium Powder Mixed EDM Parameters During Machining of H13 Tool Steel

Advanced Analysis of Nontraditional Machining

A Symposium Sponsored by ASTM Committee E-10 on Nuclear Technology and Applications, Albuquerque, N.M., 23 Sept. 1983

Friction and Wear of Ceramics

*This work offers a comprehensive source of information on metallographic techniques and their application to the study of metals, ceramics, and polymers. It contains an extensive collection of micro- and macrographs.*

*This book provides readers with the comprehensive insights of the recent research breakthroughs in additive, subtractive, and hybrid technologies. Further, the book examines incomparable design and manufacturing independences, as well as strategies to upgrade the product performance characteristics through collaborating additive and subtractive technologies. Indeed, the intrinsic benefits and limitations of both additive and subtractive manufacturing technologies could be merged to obtain appreciable hybridizations. The editorial team members and contributors to Additive, Subtractive, and Hybrid Technologies are highly motivated experts committed to and the advance of hybrid manufacturing technologies.*

*All machining process are dependent on a number of inherent process parameters. It is of the utmost importance to find suitable combinations to all the process parameters so that the desired output response is optimized. While doing so may be nearly impossible or too expensive by carrying out experiments at all possible combinations, it may be done quickly and efficiently by using computational intelligence techniques. Due to the versatile nature of computational intelligence techniques, they can be used at different phases of the machining process design and optimization process. While powerful machine-learning methods like gene expression programming (GEP), artificial neural network (ANN), support vector regression (SVM), and more can be used at an early phase of the design and optimization process to act as predictive models for the actual experiments, other metaheuristics-based methods like cuckoo search, ant colony optimization, particle swarm optimization, and others can be used to optimize these predictive models to find the optimal process parameter combination. These machining and optimization processes are the future of manufacturing. Data-Driven Optimization of Manufacturing Processes contains the latest research on the application of state-of-the-art computational intelligence techniques from both predictive modeling and optimization viewpoint in both soft computing approaches and machining processes. The chapters provide solutions applicable to machining or manufacturing process problems and for optimizing the problems involved in other areas of mechanical, civil, and electrical engineering, making it a valuable reference tool. This book is addressed to engineers, scientists, practitioners, stakeholders, researchers, academicians, and students interested in the potential of recently developed powerful computational intelligence techniques towards improving the performance of machining processes.*

*This three-volume set addresses a new knowledge of function materials, their processing, and their characterizations. "Functional and Smart Materials", covered the synthesis and fabrication route of functional and smart materials for universal applications such as material science, mechanical engineering, manufacturing, metrology, nanotechnology, physics, chemical, biology, chemistry, civil engineering, and food science. "Advanced Manufacturing and Processing Technology" covers the advanced manufacturing technologies includes coating, deposition, cladding, nanotechnology, surface finishing, precision machining, processing, and emerging advanced manufacturing technologies for processing of materials for functional applications. "Characterization, Testing, Measurement and Metrology" covered the application of new and advanced characterization techniques to investigate and analysis the processed materials.*

*Metallography, Principles and Practice*

*Proceedings of Innovative Research and Industrial Dialogue 2016*

*Recent Innovations in Manufacturing*

*Proceedings of AIMTDR 2018*

*Additive, Subtractive, and Hybrid Technologies*

Selected articles from ICMMPPE 2019

"Written by engineers for engineers (with over 150 International Editorial Advisory Board members), this highly lauded resource provides up-to-the-minute information on the chemical processes, methods, practices, products, and standards in the chemical, and related, industries. "

8th ICMST 2017 Selected, peer reviewed papers from the 8th International Conference on Manufacturing Science and Technology (ICMST 2017), June 23-25, 2017, Hong Kong

This book presents selected papers from the 1st International Conference on Industry 4.0 and Advanced Manufacturing held at the Indian Institute of Science, Bangalore and includes deliberations from stakeholders in manufacturing and Industry 4.0 on the nature, needs, challenges, opportunities, problems, and solutions in these transformational areas. Special emphasis is placed on exploring avenues for creating a vision of, and enablers for, sustainable, affordable, and human-centric Industry 4.0. The book showcases cutting edge practice, research, and educational innovation in this crucial and rapidly evolving area. This book will be useful to researchers in academia and industry, and will also be useful to policymakers involved in creating ecosystems for implementation of Industry 4.0.

Nontraditional machining utilizes thermal, chemical, electrical, mechanical and optimal sources of energy to bind, form and cut materials. Advanced Analysis of Nontraditional Machining explains in-depth how each of these advanced machining processes work, their machining system components, and process variables and industrial applications, thereby offering advanced knowledge and scientific insight. This book also documents the latest and frequently cited research results of a few key nonconventional machining processes for the most concerned topics in industrial applications, such as laser machining, electrical discharge machining, electropolishing of die and mold, and wafer processing for integrated circuit manufacturing.

(formerly NSF Grantees' Conference) : November 3-5, 1981, Ann Arbor, Michigan

Advances in Materials and Processing Technologies

Analysis of Material Removal Rate and Recast Layer in Micro-EDM of Non-conductive Zirconia

Functional Materials and Advanced Manufacturing

Revised Texts for the Substantial Provisions of a Protocol on Strategic Environmental Assessment

Encyclopedia of Chemical Processing and Design

Advanced Machining and Finishing explains the background theory, working principles, technical specifications, and latest developments in a wide range of advanced machining and finishing techniques.

The book includes valuable technical information, tables of data, and diagrams to assist machinists. Drawing on the work of experts in both academia and industry, coverage addresses theoretical developments as well as practical improvements from R&D. With over 25 important processes, from electro-chemical machining to nano-machining and magnetic field assisted finishing, this is the most complete guide to this subject available. This unique guide will allow readers to compare the characteristics of different processes, understand how they work, and provide parameters for their effective implementation. This is part of a 4 volume set entitled Handbooks in Advanced Manufacturing, with the other 3 addressing Advanced Welding and Deforming, Additive Manufacturing and Surface Treatment, and Sustainable Manufacturing Processes. Provides the theory, operational parameters, and latest developments in over 25 different machining and finishing processes Addresses both traditional and non-traditional machining methods Introduces basic concepts in an introductory chapter, helping readers from a range of backgrounds to engage with the subject matter

Machining of Metal Matrix Composites provides the fundamentals and recent advances in the study of machining of metal matrix composites (MMCs). Each chapter is written by an international expert in this important field of research. Machining of Metal Matrix Composites gives the reader information on machining of MMCs with a special emphasis on aluminium matrix composites. Chapter 1 provides the mechanics and modelling of chip formation for traditional machining processes. Chapter 2 is dedicated to surface integrity when machining MMCs. Chapter 3 describes the machinability aspects of MMCs. Chapter 4 contains information on traditional machining processes and Chapter 5 is dedicated to the grinding of MMCs. Chapter 6 describes the dry cutting of MMCs with SiC particulate reinforcement. Finally, Chapter 7 is dedicated to computational methods and optimization in the machining of MMCs. Machining of Metal Matrix Composites can serve as a useful reference for academics, manufacturing and materials researchers, manufacturing and mechanical engineers, and professionals involved with MMC applications. It can also be used to teach modern manufacturing engineering or as a textbook for advanced undergraduate and postgraduate engineering courses in machining, manufacturing or materials.

Micro Electro-fabrication outlines three major nanoscale electro-fabrication techniques, including electro-discharge machining, electrochemical machining and electrochemical deposition. Applications covered include the fabrication of nozzles for automobiles, miniature hole machining for aerospace turbine blade cooling, biomedical device fabrication, such as stents, the fabrication of microchannels for microfluidic application, the production of various MEMS devices, rapid prototyping of micro components, and nanoelectrode fabrication for scanning electron microscopy. This comprehensive book discusses the fundamental nature of the various electro-fabrication processes as well as mathematical modelling and applications. It is an important reference for materials scientists and engineers working at the nanoscale. Provides state-of-the-art research investigations on various topics of micro/nano EDM, micro LECD, micro/nano ECM and ECDM techniques Compares a variety of electro-fabrication techniques, outlining which is best in different situations Outlines a variety of modeling and optimization techniques relating to micro/nano EDM, micro LECD, micro/nano ECM and ECDM

Artificial neural networks (ANNs) present many benefits in analyzing complex data in a proficient manner. As an effective and efficient problem-solving method, ANNs are incredibly useful in many different fields. From education to medicine and banking to engineering, artificial neural networks are a growing phenomenon as more realize the plethora of uses and benefits they provide. Due to their complexity, it is vital for researchers to understand ANN capabilities in various fields. The Research Anthology on Artificial Neural Network Applications covers critical topics related to artificial neural networks and their multitude of applications in a number of diverse areas including medicine, finance, operations research, business, social media, security, and more. Covering everything from the applications and uses of artificial neural networks to deep learning and non-linear problems, this book is ideal for computer scientists, IT specialists, data scientists, technologists, business owners, engineers,

*government agencies, researchers, academicians, and students, as well as anyone who is interested in learning more about how artificial neural networks can be used across a wide range of fields.*

*Progress in Engineering Technology*

*Welding and Cutting Case Studies with Supervised Machine Learning*

*Advanced Machining and Finishing*

*Manufacturing Sciences and Technologies VIII*

*Experimental Study of Nonpolar Surfactant Mixed with Dielectric Fluid on Die-Sinking EDM of Ti-6Al-4V Alloy*

"In writing this book, the author focused on EDM fundamentals. These are the items common to all EDM machines, such as the spark, how the spark is controlled, what causes overcut, and the importance of the dielectric fluid. With regard to the workplace, covered are the affect the spark has on the metallurgy and how the surface finish is produced and controlled. The book also describes the development of Electrical Discharge Machining (EDM), the EDM system and process, the EDM sparking systems, the power supply (generator), spark voltage, electrode servo systems, di-electric systems, ionization and electrode wear, chips, the EDM surface, DC arcing, different kinds of EDM, autormatic servo systems operation, and electromagnetic radiation. It is the author's intent that this text will serve as the primer on the EDM process, allowing the people using EDM to become more efficient and the machines more productive."--Back cover.

This book presents machine learning as a set of pre-requisites, co-requisites, and post-requisites, focusing on mathematical concepts and engineering applications in advanced welding and cutting processes. It describes a number of advanced welding and cutting processes and then assesses the parametrical interdependencies of two entities, namely the data analysis and data visualization techniques, which form the core of machine learning. Subsequently, it discusses supervised learning, highlighting Python libraries such as NumPy, Pandas and Scikit Learn programming. It also includes case studies that employ machine learning for manufacturing processes in the engineering domain. The book not only provides beginners with an introduction to machine learning for applied sciences, enabling them to address global competitiveness and work on real-time technical challenges, it is also a valuable resource for scholars with domain knowledge.

The Innovative Research and Industrial Dialogue 2016 (IRID'16) organized by Advanced Manufacturing Centre (AMC) of the Faculty of Manufacturing Engineering of UTeM which is held in Main Campus, Universiti Teknikal Malaysia Melaka on 20 December 2016. The open access e-proceeding contains a compilation of 96 selected manuscripts from this Research event.

Electrical Discharge Machining Using Powder-Mixed Dielectric

Proceedings of I-4AM 2019

Select Proceedings of RDMPMC 2020

Technologies and Applications

Volume 10 - Coking to Computer

Principles and Case Studies