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Next-Generation Actuators Leading Breakthroughs Toshiro Higuchi

2009-12-04 Next-Generation Actuators Leading Breakthroughs is the proceedings of the final symposium of MEXT Grant-in-Aid for Scientific Research on Priority Areas: Next-Generation Actuators Leading Breakthroughs, held in January 2010. Since the realization of next-generation actuators requires an interdisciplinary approach, the research has been organized according to a broad technological perspective that consists of: actuators for small motion of nano-meters, small-size actuators of micro-meters structures, intelligent actuators for functional motions, power actuators for large force/torque and actuators for special environments. Next-Generation Actuators Leading Breakthroughs also deals with common fundamental technologies for these actuators, such as intelligent materials, machining processes, control technologies, evaluation methods, and system integration. It provides cutting-edge research for researchers, postgraduates, and practitioners in mechanical, electrical, and materials industries.

Popular Science 1950-08 Popular Science gives our readers the information and tools to improve their technology and their world. The core belief that Popular Science and our readers share: The future is going to be better, and science and technology are the driving forces that will help make it better.

Walker's Manual of Western Corporations & Securities 1974

Mechatronics and Manufacturing Engineering J Paulo Davim 2012-01-10 This book, the first in the Woodhead Publishing Reviews: Mechanical Engineering Series, is a collection of high quality articles (full research articles, review articles and cases studies) with a special emphasis on research and development in mechatronics and manufacturing engineering.

Mechatronics is the blending of mechanical, electronic, and computer engineering into an integrated design. Today, mechatronics has a significant and increasing impact on engineering with emphasis on the design, development and operation of manufacturing engineering systems. The main objective of this interdisciplinary engineering field is the study of automata from an engineering perspective, thinking on the design of products and manufacturing processes and systems. Mechatronics and manufacturing systems are well established and executed within a great number of industries including aircraft, automotive and aerospace industries; machine tools, moulds and dies product manufacturing, computers, electronics, semiconductor and communications, and biomedical. A collection of high quality articles with a special emphasis on research and development in mechatronics and manufacturing engineering Presents a range of views based on international expertise Written by a highly knowledgeable and well-respected expert in the field

Electric Versus Hydraulic Drives Institution of Mechanical Engineers (Great Britain). Engineering Manufacturing Industries Division 1983

Piezoelectric Actuators and Ultrasonic Motors Kenji Uchino 1996-11-30 Remarkable developments have taken place in the field of mechatronics in recent years. As symbolized by the "Janglish (Japanese English)" word, mechatronics, the technology and the social adaptation for introducing electronics into mechanics has been readily accepted in Japan. Currently robots are producing many products under computer control in Japanese

factories, and supermarkets are utilizing automation systems for sample displays and sales. Further, the fast paced change in semiconductor chip technology has given rise to the need for micro-displacement positioning techniques. Actuators utilizing piezoelectridelectrostrictive effects are expected to meet these needs in mechanical components in the next micro mechatronic age. This book, in English, builds on my earlier publications concerned with ceramic actuators. The first edition titled "Essentials for Development and Applications of Piezoelectric Actuators" was published in 1984 through the Japan Industrial Technology Center. The second edition "Piezoelectric/Electrostrictive Actuators" published in Japanese through Morikita Pub. Co. (Tokyo) became one of the best sellers in that company in 1986, and was then translated into Korean. The problem solving edition "Piezoelectric Actuators -Problem Solving" was also published through Morikita, which was sold in conjunction with a 60 minute video tape to provide easy understanding.

Modeling and Control of Precision Actuators Tan Kok Kiong 2018-10-08

Modeling and Control of Precision Actuators explores new technologies that can ultimately be applied in a myriad of industries. It covers dynamical analysis of precise actuators and strategies of design for various control applications. The book addresses four main schemes: modeling and control of precise actuators; nonlinear control of precise actuators, including sliding mode control and neural network feedback control; fault detection and fault-tolerant control; and advanced air bearing control. It covers application issues in the modeling and control of precise actuators, providing several interesting case studies for more application-oriented readers. Introduces the driving forces behind precise actuators Describes nonlinear dynamics of precise actuators and their mathematical forms, including hysteresis, creep, friction, and force ripples Presents the control strategies for precise actuators based on Preisach model as well as creep dynamics Develops relay feedback techniques for identifying nonlinearities such as friction and force ripples Discusses a MPC approach based on piecewise affine models which emulate the frictional effects in the precise actuator Covers the concepts of air bearing stages with the corresponding control method Provides a set of schemes suitable for fault detection and accommodation control of mechanical systems Emphasizing design theory and control strategies, the book includes simulation and practical examples for each chapter; covers precise actuators such as piezo motors, coil motors, air bearing motors, and linear motors; discusses integration among different technologies; and includes three case studies in real projects. The book concludes by linking design methods and their applications, emphasizing the key issues involved and how to implement the precision motion control tasks in a practical system. It provides a concise and comprehensive source of the state-of-the-art developments and results for modeling and control of precise actuators.

Commerce Business Daily 1998-05

Thomas Register of American Manufacturers 2002 This basic source for identification of U.S. manufacturers is arranged by product in a large multi-volume set. Includes: Products & services, Company profiles and Catalog file. Modifying the Aerodynamics of Your Road Car Julian Edgar 2022-01-06 This unique handbook assumes no starting knowledge of vehicle aerodynamics. It

begins with simple ideas and finishes with sophisticated and effective aerodynamic modifications that work. Three major chapters cover on-road testing techniques that give you all the information you need to decide what modifications you should make – and, after you've made them, how well they work. Low-cost techniques allow you to visualise the patterns of airflow over your car so that you can actually see the problem areas that need improvement. Uniquely, you're also shown how to measure aerodynamic pressures, so you can determine which body surfaces are creating lift, drag and downforce. Want to work out where a wing should be placed? On-road testing to find that out is covered as well. The book also shows you how to measure downforce to see if that wing is actually working! If you wish to reduce drag, more than ten different areas are covered. Reducing frontal area, lowering cooling system drag, optimising vehicle ride height and rake, reducing the strength of the wake, achieving clean airflow separation and optimising wheel designs – they're all covered using the latest research findings. And if you're a performance driver, there's a major chapter devoted to reducing lift and improving stability. This chapter includes the design and development of undertrays and diffusers, wings and spoilers. The example car developed measurable downforce when fitted with an undertray and rear diffuser, something that transformed its on-road handling. The author has been writing about the aerodynamics of road cars for more than 25 years. He is also an experienced and proficient car modifier who has performed numerous aerodynamic modifications and upgrades to his own cars. The book's technical consultant, RH Barnard, is an acknowledged world leading automotive aerodynamicist. If you want a practical, hands-on guide that demystifies and explains car aerodynamics, and shows you how to make effective aerodynamic modifications to your car, this book is for you.

Arduino Robotics John-David Warren 2011-10-08 This book will show you how to use your Arduino to control a variety of different robots, while providing step-by-step instructions on the entire robot building process. You'll learn Arduino basics as well as the characteristics of different types of motors used in robotics. You also discover controller methods and failsafe methods, and learn how to apply them to your project. The book starts with basic robots and moves into more complex projects, including a GPS-enabled robot, a robotic lawn mower, a fighting bot, and even a DIY Segway-clone. Introduction to the Arduino and other components needed for robotics Learn how to build motor controllers Build bots from simple line-following and bump-sensor bots to more complex robots that can mow your lawn, do battle, or even take you for a ride Please note: the print version of this title is black & white; the eBook is full color.

Control Engineering 1991 Instrumentation and automatic control systems. *Directory of Manufacturers' Sales Agencies* Manufacturers' Agents National Association (U.S.) 2000

Electromechanical Sensors and Actuators Ilene J. Busch-Vishniac 1998-12-30 Unlike other treatments of sensors or actuators, this book approaches the devices from the point of view of the fundamental coupling mechanism between the electrical and mechanical behaviour. The principles of operation of the solenoid are the same in both cases, and this book thus treats them together. It begins with a discussion of systems analysis as a tool for modelling transducers, before turning to a detailed discussion of transduction mechanisms. The whole is rounded off by an input/output analysis of transducers.

CorpTech Directory of Technology Companies 1997 This multi-volume directory which lists more than 40,000 companies is indexed by company name, geographic area, non-U.S. parent companies, technology, product code, CorpTech code, and SIC code. Profiles are provided for each company listed, and company rankings given under each industry.

Design News 2003

Official Gazette of the United States Patent and Trademark Office 2002

Electromagnetic Fields in Mechatronics, Electrical and Electronic

Engineering Andrzej Krawczyk 2006 More and more researchers engage into investigation of electromagnetic applications, especially these connected with mechatronics, information technologies, medicine, biology and material sciences. It is readily seen when looking at the content of the book that

computational techniques, which were under development during the last three decades and are still being developed, serve as good tools for discovering new electromagnetic phenomena. It means that the field of computational electromagnetics belongs to an application area rather than to a research area. This publication aims at joining theory and practice, thus the majority of papers are deeply rooted in engineering problems, being simultaneously of high theoretical level. The editors hope to touch the heart of the matter in electromagnetism. The book focuses on the following issues: Computational Electromagnetics; Electromagnetic Engineering; Coupled Field and Special Applications; Micro- and Special Devices; Bioelectromagnetics and Electromagnetic Hazard; and Magnetic Material Modelling. Abstracted in Inspec

Soft Actuators Kinji Asaka 2019-08-28 This book is the second edition of *Soft Actuators*, originally published in 2014, with 12 chapters added to the first edition. The subject of this new edition is current comprehensive research and development of soft actuators, covering interdisciplinary study of materials science, mechanics, electronics, robotics, and bioscience. The book includes contemporary research of actuators based on biomaterials for their potential in future artificial muscle technology. Readers will find detailed and useful information about materials, methods of synthesis, fabrication, and measurements to study soft actuators. Additionally, the topics of materials, modeling, and applications not only promote the further research and development of soft actuators, but bring benefits for utilization and industrialization. This volume makes generous use of color figures, diagrams, and photographs that provide easy-to-understand descriptions of the mechanisms, apparatus, and motions of soft actuators. Also, in this second edition the chapters on modeling, materials design, and device design have been given a wider scope and made easier to comprehend, which will be helpful in practical applications of soft actuators. Readers of this work can acquire the newest technology and information about basic science and practical applications of flexible, lightweight, and noiseless soft actuators, which differ from conventional mechanical engines and electric motors. This new edition of *Soft Actuators* will inspire readers with fresh ideas and encourage their research and development, thus opening up a new field of applications for the utilization and industrialization of soft actuators.

Hard Disk Drive Servo Systems Ben M. Chen 2006-06-09 The series *Advances in Industrial Control* aims to report and encourage technology transfer in control engineering. The rapid development of control technology has an impact on all areas of the control discipline. New theory, new controllers, actuators, sensors, new industrial processes, computer methods, new applications, new philosophies, new challenges. Much of this development work resides in industrial reports, feasibility study papers and the reports of advanced collaborative projects. The series offers an opportunity for researchers to present an extended exposition of such new work in all aspects of industrial control for wider and rapid dissemination. Hard disk drive systems are ubiquitous in today's computer systems and the technology is still evolving. There is a review of hard disk drive technology and construction in the early pages of this monograph that looks at the characteristics of the disks and there it can be read that: "bit density... continues to increase at an amazing rate", "spindle speed... the move to faster and faster spindle speeds continue", "form factors... the trend... is downward... to smaller and smaller drives", "performance... factors are improving", "redundant arrays of inexpensive disks... becoming increasingly common, and is now seen in consumer desktop machines", "reliability... is improving slowly... it is very hard to improve the reliability of a product when it is changing rapidly" and finally "interfaces... continue to create new and improved standards... to match the increase in performance of the hard disks themselves".

Mini-micro Systems 1987

RoboCup 2014: Robot World Cup XVIII Reinaldo A. C. Bianchi 2015-05-11 This book includes the thoroughly refereed proceedings of the 18th Annual RoboCup International Symposium, held in Joao Pessoa, Brazil, in July 2014. The 36 revised papers were carefully reviewed and selected from 66 submissions and include 11 champion-team papers, three special-track papers on open-source hardware and software, nine papers on the advancement of

the RoboCup leagues track, and three best papers. The contributions present current research and educational activities in the field of robotics and artificial intelligence with a special focus on the interaction between robots and humans.

Popular Science 1955-07 Popular Science gives our readers the information and tools to improve their technology and their world. The core belief that Popular Science and our readers share: The future is going to be better, and science and technology are the driving forces that will help make it better.

Motors for Makers Matthew Scarpino 2015-11-26 The First Maker-Friendly Guide to Electric Motors! Makers can do amazing things with motors. Yes, they're more complicated than some other circuit elements, but with this book, you can completely master them. Once you do, incredible new projects become possible. Unlike other books, Motors for Makers is 100% focused on what you can do. Not theory. Making. First, Matthew Scarpino explains how electric motors work and what you need to know about each major type: stepper, servo, induction, and linear motors. Next, he presents detailed instructions and working code for interfacing with and controlling servomotors with Arduino Mega, Raspberry Pi, and BeagleBone Black. All source code and design files are available for you to download from motorsformakers.com. From start to finish, you'll learn through practical examples, crystal-clear explanations, and photos. If you've ever dreamed of what you could do with electric motors, stop dreaming...and start making! Understand why electric motors are so versatile and how they work Choose the right motor for any project Build the circuits needed to control each type of motor Program motor control with Arduino Mega, Raspberry Pi, or BeagleBone Black Use gearmotors to get the right amount of torque Use linear motors to improve speed and precision Design a fully functional electronic speed control (ESC) circuit Design your own quadcopter Discover how electric motors work in modern electric vehicles--with a fascinating inside look at Tesla's patents for motor design and control!

Linear Synchronous Motors Jacek F. Gieras 2016-04-19 Considered to be the first book devoted to the subject, Linear Synchronous Motors: Transportation and Automation Systems, Second Edition evaluates the state of the art, demonstrating the technological innovations that are improving the design, construction, and performance of modern control systems. This new edition not only illustrates the development of linear synchronous motor drives, but it also discusses useful techniques for selecting a motor that will meet the specific requirements of linear electrical drives. New Features for the Second Edition: Several updated and expanded sections, as well as two new chapters on FEM Even more numerical examples, calculations, and mathematical models Broadened target audience that includes researchers, scientists, students, and more Evaluating trends and practical techniques for achieving optimal system performance, the authors showcase ready-to-implement solutions for common roadblocks in this process. The book presents fundamental equations and calculations used to determine and evaluate system operation, efficiency, and reliability, with an exploration of modern computer-aided design of linear synchronous motors, including the finite element approach. It covers topics such as linear sensors and stepping motors, magnetic levitation systems, elevators, and factory automation systems. It also features case studies on flat PM, tubular PM, air-cored, and hybrid linear synchronous motors, as well as 3D finite element method analysis of tubular linear reluctance motors, and linear oscillatory actuators. With such an exceptional presentation of practical tools and conceptual illustrations, this volume is an especially powerful resource. It will benefit readers from all walks by providing numerical examples, models, guidelines, and diagrams to help develop a clear understanding of linear synchronous motor operations, characteristics, and much more.

DC Motors, Speed Controls, Servo Systems Yong Zhou 2013-10-22 DC Motors - Speed Controls - Servo Systems: An Engineering Handbook is a seven-chapter text that covers the basic concept, principles, and applications of DC and speed motors and servo systems. After providing the terminology, symbols, and systems of units, this book goes on dealing with the basic theory, motor comparison, and basic speed control methods of motors. The subsequent chapters describe the phase-locked servo systems and their optimization and

applications. These topics are followed by a discussion of the developments made by Electro-Craft in the field of DC Brushless Motors. The final chapter provides revised data sheets on Electro-Craft products and describes the models in the motomatic range of speed controls, servomotor controls, and digital positioning systems. This handbook is of great value to professional engineers and engineering students.

Advances in Mechanism and Machine Science Tadeusz Uhl 2019-06-13 This book gathers the proceedings of the 15th IFToMM World Congress, which was held in Krakow, Poland, from June 30 to July 4, 2019. Having been organized every four years since 1965, the Congress represents the world's largest scientific event on mechanism and machine science (MMS). The contributions cover an extremely diverse range of topics, including biomechanical engineering, computational kinematics, design methodologies, dynamics of machinery, multibody dynamics, gearing and transmissions, history of MMS, linkage and mechanical controls, robotics and mechatronics, micro-mechanisms, reliability of machines and mechanisms, rotor dynamics, standardization of terminology, sustainable energy systems, transportation machinery, tribology and vibration. Selected by means of a rigorous international peer-review process, they highlight numerous exciting advances and ideas that will spur novel research directions and foster new multidisciplinary collaborations.

The Hard Disk Companion Robert Jourdain 1991 Features chapters on disk drive selection, purchase, and installation as well as providing a ready-made library of batch routines to facilitate file access and directory organization

On Motion Control of Linear Incremental Hydraulic Actuators Martin Hochwallner 2017-10-30 Linear Incremental Hydraulic Actuators combine one or more short-stroke cylinders, and two or more engaging/disengaging mechanisms into one actuator with long, medium, or even unlimited stroke length. The motion of each single short-stroke actuator concatenated by the engaging/disengaging mechanisms forms the motion of the linear incremental hydraulic actuator. The patterns of how these motions are concatenated form the gaits of a specific linear incremental hydraulic actuator. Linear incremental hydraulic actuators may have more than one gait. In an application, the gaits may be combined to achieve optimal performance at various operating points. The distinguishing characteristic of linear incremental hydraulic actuators is the incremental motion. The term incremental actuator is seen as analogous to the incremental versus absolute position sensor. Incremental actuators realize naturally relative positioning. Incremental motion means also that the behavior does not depend on an absolute position but only on the relative position within a cycle or step. Incremental actuators may realize discrete incremental or continuous incremental motion. Discrete incremental actuators can only approach discrete positions, whereby stepper drives are one prominent example. In contrast, continuous incremental actuators may approach any position. Linear electric motors are one example of continuous incremental actuators. The actuator has no inherent limitation in stroke length, as every step or cycle adds only to the state at the beginning of the step or cycle and does not depend on the absolute position. This led to the alternative working title Hydraulic Infinite Linear Actuator. Linear incremental hydraulic actuator provides long stroke, high force, and linear motion and has the potential to decrease the necessary resource usage, minimize environmental impact, e.g. from potential oil spillage, extend the range of feasible products: longer, stiffer, better, etc. This thesis presents an analysis of the characteristics and properties of linear incremental hydraulic actuators as well as the gaits and possible realizations of some gaits. The gait for continuous, smooth motion with two cylinders is comprehensively studied and a control concept for the tracking problem is proposed. The control concept encapsulates the complexity of the linear incremental hydraulic actuator so that an application does not have to deal with it. One other gait, the ballistic gait, which realizes fast, energy-efficient motion, enabling energy recuperation is studied.

Prevention of Actuator Emissions in the Oil and Gas Industry Karan Sotoodeh 2021-06-18 Prevention of Actuator Emissions in the Oil and Gas Industry delivers a critical reference for oil and gas engineers and managers to get up-to-speed on all the factors in actuator fugitive emissions. Packed with a

selection process, the benefits of switching to an electric system, and the technology around open and closed loop hydraulic systems helps today's engineer understand all their options. Rounding with a detailed explanation around High Integrity Pressure Protection Systems (HIPPS), this book gives provides the knowledge necessary to lower emissions on today's equipment. Gives readers all they need to understand all the sources and key factors contributing to fugitive emissions and leakage from oil and gas actuators Teaches how to select environmentally friendly actuators, particularly all electric systems Introduces the High Integrity Pressure Protection System (HIPPS) and the ways it reduces flaring

Thomas Register of American Manufacturers and Thomas Register Catalog

File 2003 Vols. for 1970-71 includes manufacturers' catalogs.

Thomas Register 2004

Linear Electric Machines, Drives, and MAGLEVs Handbook Ion Boldea

2017-12-19 Based on author Ion Boldea's 40 years of experience and the latest research, Linear Electric Machines, Drives, and Maglevs Handbook provides a practical and comprehensive resource on the steady improvement in this field. The book presents in-depth reviews of basic concepts and detailed explorations of complex subjects, including classifications and practical topologies, with sample results based on an up-to-date survey of the field. Packed with case studies, this state-of-the-art handbook covers topics such as modeling, steady state, and transients as well as control, design, and testing of linear machines and drives. It includes discussion of types and applications—from small compressors for refrigerators to MAGLEV transportation—of linear electric machines. Additional topics include low and high speed linear induction or synchronous motors, with and without PMs, with progressive or oscillatory linear motion, from topologies through modeling, design, dynamics, and control. With a breadth and depth of coverage not found in currently available references, this book includes formulas and methods that make it an authoritative and comprehensive resource for use in R&D and testing of innovative solutions to new industrial challenges in linear electric motion/energy automatic control.

ROMANSY 22 – Robot Design, Dynamics and Control Vigen Arakelian

2018-05-19 This proceedings volume contains papers that have been selected after review for oral presentation at ROMANSY 2018, the 22nd CISM-IFTToMM Symposium on Theory and Practice of Robots and Manipulators. These papers cover advances on several aspects of the wide field of Robotics as concerning Theory and Practice of Robots and Manipulators. ROMANSY 2018 is the 22nd event in a series that started in 1973 as one of the first conference activities in the world on Robotics. The first event was held at CISM (International Centre for Mechanical Science) in Udine, Italy on 5-8 September 1973. It was also the first topic conference of IFTToMM (International Federation for the Promotion of Mechanism and Machine Science) and it was directed not only to the IFTToMM community.

Eureka 2002

The Bravest of the Brave, or, with Peterborough in Spain George Alfred

Henty 1894 There are few great leaders whose lives and actions have so completely fallen into oblivion as those of the Earl of Peterborough. His career as a general was a brief one, extending only over little more than a year, and yet in that time he showed a genius for warfare which has never been surpassed, and performed feats of daring worthy of taking their place among those of the leaders of chivalry. The fact that they have made so slight a mark upon history is due to several reasons. In the first place, they were

overshadowed by the glory and successes of Marlborough; they were performed in a cause which could scarcely be said to be that of England, and in which the public had a comparatively feeble interest; the object, too, for which he fought was frustrated, and the war was an unsuccessful one, although from no fault on his part. But most of all, Lord Peterborough failed to attain that place in the list of British worthies to which his genius and his bravery should have raised him, because that genius was directed by no ~~Ready to Control Robots~~ Lord Peterborough is, indeed, one of the most striking instances in history of genius and talent wasted, and a life thrown away by want of fixed principle and by an inability or unwillingness to work with other men. He quarreled in turn with every party and with almost every individual with whom he came in contact; and while he himself was constantly changing his opinions, he was intolerant of all opinions differing from those which he at the moment held, and was always ready to express in the most open and offensive manner his contempt and dislike for those who differed from him. ~~His social Devices Sourcebook, How to Engage~~ and arrogant, hasty and passionate; he denied his God, quarreled with his king, and rendered himself utterly obnoxious to every party in the state.

Craig Sayers 1999 Increasingly, robots are being used in environments inhospitable to humans such as the deep ocean, inside nuclear reactors, and in deep space. The techniques used to control these robots are the subject of this book. The author begins with a basic introduction to robot control and covers topics such as teleprompting, operator interfaces, visual imagery, and command generation. Additionally, problematic issues are addressed, including noisy control lines, feedback and response information, and predictive displays.

Neil Sclater

2007-01-01 Over 2000 drawings make this sourcebook a gold mine of information for learning and innovating in mechanical design The fourth edition of this unique engineering reference book covers the past, present, and future of mechanisms and mechanical devices. Among the thousands of proven mechanisms illustrated and described are many suitable for recycling into new mechanical, electromechanical, or mechatronic products and systems. Overviews of robotics, rapid prototyping, MEMS, and nanotechnology will get you up-to-speed on these cutting-edge technologies. Easy-to-read tutorial chapters on the basics of mechanisms and motion control will introduce those subjects to you or refresh your knowledge of them. Comprehensive index to speed your search for topics of interest Glossaries of terms for gears, cams, mechanisms, and robotics New industrial robot specifications and applications ~~Mobile Robots for Applications~~, scientific research, and defense **INSIDE Mechanisms and Mechanical Devices Sourcebook, 4th Edition** Basics of Mechanisms • Motion Control Systems • Industrial Robots • Mobile Robots • Drives and Mechanisms That Include Linkages, Gears, Cams, Geneva, and Ratchets • Clutches and Brakes • Devices That Latch, Fasten, and Clamp • Chains, Belts, Springs, and Screws • Shaft Couplings and Connections • Machines That Perform Specific Motions or Package, Convey, Handle, or Assure Safety • Systems for Torque, Speed, Tension, and Limit Control • Pneumatic, Hydraulic, Electric, and Electronic Instruments and Controls • Computer-Aided Design Concepts • Rapid Prototyping • New Directions in Mechanical Engineering

1987

Listing Application American Stock Exchange 1962