

Lc 107 Lcd 107 Grundfos

All the experience of the research team from one of the world's foremost pump manufacturers - Sulzer, featuring the latest in pump design and construction.

This textbook covers the fundamentals of fouling and scaling in reverse osmosis systems. It includes theory and practice of pre-treatment, fouling and scaling in reverse osmosis applied for drinking and industrial water production. The impact of the water source – seawater, river water, brackish groundwater and (treated domestic) waste water – will be discussed in depth. The book presents the knowledge and experience gained at IHE Delft over the last 25 years during the implementation of the master programme in Water Supply Engineering and during the implementation of state-of-the-art research in understanding and solving operational problems in full scale desalination plants. It presents the expert knowledge of IHE Delft in the areas of pre-treatment for reverse osmosis systems, assessment of water quality with respect to fouling potential, development of methods for quality assessment, modified fouling index ultrafiltration at constant flux, transparent exopolymer particles, antiscalant dose optimization, biological growth potential), algal blooms, scaling control. The book will be used in the annual master programme at IHE Delft and it will be of interest for students, academics, engineers and managers in drinking water facilities all over the world.

X-ray computed tomography has been used for several decades as a tool for measuring the three-dimensional geometry of the internal organs in medicine. However, in recent years, we have seen a move in manufacturing industries for the use of X-ray computed tomography; first to give qualitative information about the internal geometry and defects in a component, and more recently, as a fully-quantitative technique for dimensional and materials analysis. This trend is primarily due to the ability of X-ray computed tomography to give a high-density and multi-scale representation of both the external and internal geometry of a component, in a non-destructive, non-contact and relatively fast way. But, due to the complexity of X-ray computed tomography, there are remaining metrological issues to solve and the specification standards are still under development. This book will act as a one-stop-shop resource for students and users of X-ray computed tomography in both academia and industry. It presents the fundamental principles of the technique, detailed descriptions of the various components (hardware and software), current developments in calibration and performance verification and a wealth of example applications. The book will also highlight where there is still work to do, in the perspective that X-ray computed tomography will be an essential part of Industry 4.0.

The book covers the subject of membrane bioreactors (MBR) for wastewater treatment, dealing with municipal as well as industrial wastewaters. The book details the 3 types of MBR available and discusses the science behind the technology, their design features, operation, applications, advantages, limitations, performance, current research activities and cost. As the demand for wastewater treatment, recycling and re-use technologies increases, it is envisaged that the membrane separation bioreactor will corner the market. Contents Membrane Fundamentals Biological Fundamentals Biomass Separation Membrane Bioreactors Membrane Aeration and Extractive Bioreactors Commercial Membrane Bioreactor Systems Membrane Bioreactor Applications Case Studies

Principles and Applications of Membrane Bioreactors in Water and Wastewater Treatment

Proceedings of the International Conference on Environmental Forensics 2013

From Sources to Solution

National Water Information System (NWIS).

Bioaugmentation for Groundwater Remediation

EANN 2021

Recent Advances in Water Management: Saving, Treatment and Reuse.

This book gathers the proceedings of the 21st Engineering Applications of Neural Networks Conference, which is supported by the International Neural Networks Society (INNS). Artificial Intelligence (AI) has been following a unique course, characterized by alternating growth spurts and “AI winters.” Today, AI is an essential component of the fourth industrial revolution and enjoying its heyday. Further, in specific areas, AI is catching up with or even outperforming human beings. This book offers a comprehensive guide to AI in a variety of areas, concentrating on new or hybrid AI algorithmic approaches with robust applications in diverse sectors. One of the advantages of this book is that it includes robust algorithmic approaches and applications in a broad spectrum of scientific fields, namely the use of convolutional neural networks (CNNs), deep learning and LSTM in robotics/machine vision/engineering/image processing/medical systems/the environment; machine learning and meta learning applied to neurobiological modeling/optimization; state-of-the-art hybrid systems; and the algorithmic foundations of artificial neural networks.

Forward osmosis (FO) is an emerging membrane technology with a range of possible water treatment applications (desalination and wastewater treatment and recovery). Recent Developments in Forward Osmosis Processes provides an overview of applications, advantages, challenges, costs and current knowledge gaps. Commercial technology, hybrid FO systems for both desalination and water recovery applications have shown to have higher capital cost compared to conventional technologies. Nevertheless, due to the demonstrated lower operational costs of hybrid FO systems, the unit cost for each m3 of fresh water produced with the FO system are lower than conventional desalination/water recovery technologies (i.e. ultrafiltration/RO systems). There are key benefits of using FO hybrid systems compared to RO: • chemical storage and feed systems may be reduced for capital, operational and maintenance cost savings, • reduced process piping costs, • more flexible treatment units, • higher overall sustainability of the desalination process, while producing high quality water.

Remediation of groundwater is complex and often challenging. But the cost of pump and treat technology, coupled with the dismal results achieved, has paved the way for newer, better technologies to be developed. Among these techniques is permeable reactive barrier (PRB) technology, which allows groundwater to pass through a buried porous barrier that either captures the contaminants or breaks them down. And although this approach is gaining popularity, there are few references available on the subject. Until now. Permeable Reactive Barrier: Sustainable Groundwater Remediation brings together the information required to plan, design/model, and apply a successful, cost-effective, and sustainable PRB technology. With contributions from pioneers in this area, the book covers state-of-the-art information on PRB technology. It details design criteria, predictive modeling, and application to contaminants beyond petroleum hydrocarbons, including inorganics and radionuclides. The text also examines implementation stages such as the initial feasibility assessment, laboratory treatability studies (including column studies), estimation of PRB design parameters, and development of a long-term monitoring network for the performance evaluation of the barrier. It also outlines the predictive tools required for life cycle analysis and cost/performance assessment. A review of current PRB technology and its applications, this book includes case studies that exemplify the concepts discussed. It helps you determine when to recommend PRB, what information is needed from the site investigation to design it, and what regulatory validation is required.

Flow Equalization

Characteristics, Management, Treatment and Environmental Risks

Assessment & Pre-treatment of Fouling and Scaling

Recent Advances in Water Management: Saving, Treatment and Reuse

Principles and Basic Treatment

Rethinking Smart Urbanism

Rely on the #1 Guide to Pump Design and Application-- Now Updated with the Latest Technological Breakthroughs Long-established as the leading guide to pump design and application, the Pump Handbook has been fully revised and updated with the latest developments in pump technology. Packed with 1,150 detailed illustrations and written by a team of over 100 internationally renowned pump experts, this vital tool shows you how to select, purchase, install, operate, maintain, and troubleshoot cutting-edge pumps for all types of uses. The Fourth Edition of the Pump Handbook features: State-of-the-art guidance on every aspect of pump theory, design, application, and technology Over 100 internationally renowned contributors SI units used throughout the book New sections on centrifugal pump mechanical performance, flow analysis, bearings, adjustable-speed drives, and application to cryogenic LNG services; completely revised sections on pump theory, mechanical seals, intakes and suction piping, gears, and waterhammer; application to pulp and paper mills Inside This Updated Guide to Pump Technology • Classification and Selection of Pumps • Centrifugal Pumps • Displacement Pumps • Solids Pumping • Pump Sealing • Pump Bearings • Jet Pumps • Materials of Construction • Pump Drivers and Power Transmission • Pump Noise • Pump Systems • Pump Services • Intakes and Suction Piping • Selecting and Purchasing Pumps • Installation, Operation, and Maintenance • Pump Testing • Technical Data

This volume addresses hospital effluents in terms of their composition and the management and treatment strategies currently (being) adopted around the globe. In this context, one major focus is on pharmaceutical compounds: their observed concentration range, ecotoxicological effects, and the removal efficiency achieved by the different technologies. Another focus is on management strategies (dedicated hospital wastewater treatment, or a combined approach also involving urban wastewater) and currently adopted treatments to reduce the released pollutant load. Innovative and promising technologies under investigation at the lab and pilot scale are presented. A discussion of remaining knowledge gaps and future research requirements rounds out the coverage. The respective chapters, written by experts in the different fields, provide useful information for a broad audience: scientists involved in the management and treatment of hospital effluents and wastewater containing micropollutants, administrators and decision-makers, legislators involved in the authorization and management of healthcare structure effluents, and environmental engineers involved in the design of wastewater treatment plants, as well as newcomers and students interested in these issues.

Presently there is no single publication available which covers the topics related to photovoltaic (PV) or photovoltaic thermal (PV/T) technologies, thermal modelling, CO2 mitigation and carbon trading. This book disseminates the current knowledge in the fundamentals of solar energy, photovoltaic (PV) or photovoltaic thermal (PV/T) technologies, energy security and climate change and is aimed at undergraduate and postgraduate students and professionals. The main emphasis of the book is on the design, construction, performance and application of PV and PV/T from the electricity and thermal standpoint. Hot topics covered in the book include: energy security of a nation, climate change, CO2 mitigation and carbon credit earned by using PV or PV/T technologies (Carbon Trading). This information will prove helpful in filling the gap between the researchers and professionals working on the application of photovoltaic and global climate change. It also covers economic, cost effective and sustainable aspects of photovoltaic technologies. The book gives a detailed history of the new technological developments in PV/T systems worldwide with system photographs and references and elaborates on the fundamentals of hybrid systems and their performances with thermal modelling. Energy and exergy analysis, techno-economic analysis and carbon trading are key chapters for research professionals. The book also includes important case studies to aid understanding of the subject for all readers.

Featuring the theme, From Sources to Solution, this book is based on the research papers presented during the International Conference on Environmental Forensics 2013. It covers multi-disciplinary areas of environmental forensics featuring major themes: characterization, assessment, and monitoring; new approach, rapid assessment, and analytical techniques; pollution control technology; environmental health risk assessment; and policy, governance and management. It present information for researchers from the science and social sciences disciplines and contribute to the advancement of Environmental Forensics. It also aims at evaluating the environmental damages as the result of indiscriminating discharge of toxic environmental pollutants.

Proceedings of the 21st EANN (Engineering Applications of Neural Networks) 2020 Conference

Sulzer Centrifugal Pump Handbook

Recent Developments in Forward Osmosis Processes

Modular Systems for Energy Usage Management

Hospital Wastewaters

Evaluation of Sampling and Field-filtration Methods for the Analysis of Trace Metals in Ground Water

Rethinking Smart Urbanism is an empirical exploration of the multiple ways in which cities and infrastructures are constructed and reconstructed through ICT innovation and appropriation. Drawing on the case of Kenya's capital, Nairobi, the study explains existing infrastructure countervailing processes and rationalities in the context of splintered urbanism. In doing so, the study examines the relationship between urban plans and digital infrastructure development, place-based contexts that shape digital infrastructures, and the extent to which these in companies' ambitions of extending centralized networks to new territories. It draws on the theoretical and empirical base of urban and infrastructure studies, particularly in the fields of smart urbanism, postcolonial urbanism, and Science and Technology Studies. Methodologically, qualitative research design and presents in-depth case studies that combine ethnographic methods with a thorough investigation of written sources. Ultimately, it is hoped to enhance our understanding of urban and digital possibilities, and add new insights to debates on techn

?This volume provides a review of the past 10 to 15 years of intensive research, development and demonstrations that have been on the forefront of developing bioaugmentation into a viable remedial technology. This volume provides both a primer on the basic microbial processes as well as a thorough summary of the methodology for implementing the technology. This reference volume will serve as a valuable resource for environmental remediation professionals who seek to understand, evaluate, and implement bioaugmentation.

This book is a printed edition of the Special Issue "Environmental Tracers" that was published in Water

This book is a printed edition of the Special Issue The Challenges of Water Management and Governance in Cities that was published in Water

Solar Pumping for Water Supply

Industrial X-Ray Computed Tomography

The MBR Book

Advances in Wastewater Treatment

Wastewater Treatment and Reuse, Theory and Design Examples, Volume 1

Telephone Directory, Boston and Its Vicinity

A best-seller in its field. Complete hands-on approach to the repair and control of AC and DC motors. This latest edition features a new chapter on solid state control and undated technology on microprocessor controls. This book will present the theory involved in wastewater treatment processes, define the important design parameters involved, and provide typical values of these parameters for ready reference; and also provide numerical applications and step-by-step calculation procedures in solved examples. These examples and solutions will help enhance the readers' comprehension and deeper understanding of the basic concepts, and can be applied by plant designers to design various components of the treatment facilities. It will also examine the actual calculation steps in numerical examples, focusing on practical application of theory and principles into process and water treatment facility design.

This book contains the proceedings of the 22nd EANN “Engineering Applications of Neural Networks” 2021 that comprise of research papers on both theoretical foundations and cutting-edge applications of artificial intelligence. Based on the discussed research areas, emphasis is given in advances of machine learning (ML) focusing on the following algorithms-approaches: Augmented ML, autoencoders, adversarial neural networks, blockchain-adaptive methods, convolutional neural networks, deep learning, ensemble methods, learning-federated learning, neural networks, recurrent – long short-term memory. The application domains are related to: Anomaly detection, bio-medical AI, cyber-security, data fusion, e-learning, emotion recognition, environment, hyperspectral imaging, fraud detection, image analysis, inverse kinematics, machine vision, natural language, recommendation systems, robotics, sentiment analysis, simulation, stock market prediction.

Energy systems worldwide are undergoing major transformation as a consequence of the transition towards the widespread use of clean and sustainable energy sources. Basically, this involves massive changes in technical and organizational levels together with tremendous technological upgrades in different sectors ranging from energy generation and transmission systems down to distribution systems. These actions generate huge science and engineering challenges and demands for expert knowledge in the field to create solutions for a sustainable energy system that is economically, environmentally, and socially viable while meeting high security requirements. This book covers these promising and dynamic areas of research and development, and presents contributions in sustainable energy systems planning, integration, and management. Moreover, the book elaborates on a variety of topics, ranging from design and planning of small- to large-scale energy systems to the operation and control of energy networks in different sectors, namely electricity, heat, and transport.

Proceedings of the EANN 2020

Problems, Causes, Control and Research Needs

Proceedings of the 22nd Engineering Applications of Neural Networks Conference

Post-Treatment, Reuse, and Disposal

NFPA 20 Standard for the Installation of Stationary Pumps for Fire Protection

Promoting Regional Cooperation and Integration in the Bay of Bengal Region

This hands-on reference offers a practical introduction to pumps and provides the tools necessary to select, size, operate, and maintain pumps properly. It highlights the interrelatedness of pump engineering from system and piping design to installation and startup. This updated second edition expands on many subjects introduced in the first edition and also provides new in-depth discussion of pump couplings, o-rings, motors, variable frequency drives, pump life-cycle cost, corrosion, and pump minimum flow. Written by an acclaimed expert in the field, Pump Characteristics and Applications, Second Edition is an invaluable day-to-day reference for mechanical, civil, chemical, industrial, design, plant, project, and systems engineers; engineering supervisors; maintenance technicians; and plant operators. It is also an excellent text for upper-level undergraduate and graduate students in departments of mechanical engineering, mechanical engineering technology, or engineering technology. About the Author Michael W. Volk, P.E., is President of Volk & Associates, Inc., Oakland, California (www.volkassociates.com), a consulting company specializing in pumps and pump systems. Volk's services include pump training seminars; pump equipment evaluation, troubleshooting, and field testing; expert witness for pump litigation; witnessing of pump shop tests; pump market research; and acquisition and divestiture consultation and brokerage. A member of the American Society of Mechanical Engineers (ASME), and a registered professional engineer, Volk received the B.S. degree (1973) in mechanical engineering from the University of Illinois, Urbana, and the M.S. degree (1976) in mechanical engineering and the M.S. degree (1980) in management science from the University of Southern California, Los Angeles.

The use of membranes is increasing throughout industry, and particularly the water industry.The municipal water industry, which is concerned with the provision of clean drinking water to the population, is a big user and developer of membrane technology which helps it to provide water free of pathogens, chemicals, odours and unwanted tastes. Municipal authorities also have to process sewage and waste water, and membranes are used extensively in these processes. The MBR Book covers all important aspects of Membrane BioReactors in water and waste water treatment, from the fundamentals of the processes via design principles to MBR technologies. Industrial case studies help interpret actual results and give pointers for best practice. Useful appendices provide data on commercial membranes and international membrane organisations. * Major growth area in the water industries * Internationally-known author * Principles and practice, backed by case studies

Discusses equalization of wastewater flows at municipal wastewater treatment plants. Focuses on equalization of dry weather flows. Includes performance and case histories.

Advances in Wastewater Treatment presents a compendium of the key topics surrounding wastewater treatment, assembled by looking at the future technologies, and provides future perspectives in wastewater treatment and modelling. It covers the fundamentals and innovative wastewater treatment processes (such as membrane bioreactors and granular process). Furthermore, it focuses attention on mathematical modelling aspects in the field of wastewater treatments by highlighting the key role of models in process design, operation and control. Other topics include: • Anaerobic digestion • Biological nutrient removal • Instrumentation, control and automation • Computational fluid dynamics in wastewater • IFAS systems • New frontiers in wastewater treatment • Greenhouse gas emissions from wastewater treatment Each topic is addressed by discussing past, present and future trends.

Advances in Wastewater Treatment is a valid support for researchers, practitioners and also students to have a frame of the frontiers in wastewater treatment and modelling.

Sustainable Energy Systems Planning, Integration and Management

Microbial Growth in Drinking Water Supplies

Permeable Reactive Barrier

Pump Characteristics and Applications, Second Edition

Electric Motor Repair

A review of opportunities and barriers

This book reviews the past and provides new strategies to help BIMSTEC achieving a new paradigm of integration. It primarily deals with the regional cooperation and integration issues, and assesses policy priorities, effectiveness, implementation imperatives and challenges. Each chapter in this book tries to capture essential features of the crosscutting issues and attempts to draw some policy implications. The subject of this book will be of special interests to policy planners, development organisations, academicians, researchers as well as potential investors. Please note: T&Fdoes not sell or distribute the Hardback in India, Pakistan, Nepal, Bhutan, Bangladesh and Sri Lanka.

Maintaining the microbial quality in distribution systems and connected installations remains a challenge for the water supply companies all over the world, despite many years of research. This book identifies the main concerns and knowledge gaps related to regrowth and stimulates cooperation in future research. Microbial Growth in Drinking Water Supplies provides an overview of the regrowth issue in different countries and the water quality problems related to regrowth. The book assesses the causes of regrowth in drinking water and the prevention of regrowth by water treatment and distribution.

Swimming is an integral part of the life history of many fish species as is intimately linked with their ability to express feeding and predator avoidance behaviors, habitat selection and environmental preferences, social and reproductive behaviors as well as migratory behaviors. Therefore, swimming is an important determinant factor of fitness in a true Darwinian sense and, not surprisingly, swimming performance has been often used as a measure of physiological fitness in fish. The main aim of this Research Topic is to showcase some of the current studies designed to improve our understanding of the physiological energetic and metabolic requirements of swimming and of the adaptive responses to swimming in fish.

"...[a] very unique book that integrates benefits of modular systems for enhanced sustainability to meet the global challenges of rapid and sometimes uncontrolled industrialization in the 21st century."--Pinakin Patel, T2M Global This book examines the role of the modular approach for the back end of the energy industry--energy usage management. It outlines the use of modular approaches for the processes used to improve energy conservation and efficiency, which are preludes to the prudent use of energy. Since energy consumption is conventionally broken down into four sectors--residential, transportation, industrial, and commercial--the discussions on energy usage management are also broken down into these four sectors in the book. The book examines the use of modular systems for five application areas that cover the sectors described above: buildings, vehicles, computers and electrical/electronic products, district heating, and wastewater treatment and desalination. This book also discusses the use of a modular approach for energy storage and transportation. Finally, it describes how the modular approach facilitates bottom-up, top-down, and hybrid simulation and modeling of the energy systems from various scientific and socioeconomic perspectives. Aimed at industry professionals and researchers involved in the energy industry, this book illustrates in detail, with the help of concrete industrial examples, how a modular approach can facilitate management of energy usage.

EPA-540/G.

Physiological Adaptations to Swimming in Fish

Membrane Bioreactors for Wastewater Treatment

Historic Birmingham & Jefferson County

City-Making and the Spread of Digital Infrastructures in Nairobi

An Illustrated History

The European Union has initiated a number of initiatives to improve resource efficiency in Europe. The Ecodesign Directive is one of the policy instruments that could aid the transition towards a more resource efficient economy. So far, the Directive has mainly been applied to set requirements related to energy efficiency, but there is potential for setting legal standards that increase product durability and promote the future re-use and recycling of components and materials.

This paper examines the potential benefits and disadvantages in applying the Directive for this purpose, and analyzes the potential to apply certain types of legal standards. There is a need for continuous development of indicators and methods in order to allow for a broader range of legal standards in the future. The study provides some short and long term recommendations on the way forward.

Pump HandbookMcGraw Hill Professional

This book reports the state of the art of energy-efficient electrical motor driven system technologies, which can be used now and in the near future to achieve significant and cost-effective energy savings. It includes the recent developments in advanced electrical motor end-use devices (pumps, fans and compressors) by some of the largest manufacturers. Policies and programs to promote the large scale penetration of energy-efficient technologies and the market transformation are featured in the book, describing the experiences carried out in different parts of the world. This extensive coverage includes contributions from relevant institutions in the Europe, North America, Latin America, Africa, Asia, Australia and New Zealand.

Solar power for pumping groundwater has a vast potential for improving the sustainability of water supply schemes. However a lack of knowledge is holding back their adoption. This book bridges this gap to equip engineers and technicians with the knowledge for design, implementation and operation of sustainable solar powered water schemes.

Environmental Tracers

Wastewater Treatment and Reuse Theory and Design Examples, Volume 2

Addressing resource efficiency through the Ecodesign Directive

Energy Efficiency in Motor Driven Systems

Fundamentals of Photovoltaic Modules and Their Applications

The Challenges of Water Management and Governance in Cities