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Optimizing the Operation of a Multiple Reservoir System in the Eastern Nile Basin Considering Water and Sediment Fluxes
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Proceedings of the First International Conference, New Delhi, India, 13-15th October 1999
Silting Problems in Hydro Power Plants
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Seminar on Renovation, Modernisation, and Life Extension of Hydro Power Plants, 7-9 February 2001, Cochin, Kerala
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Water Power Engineering, 2nd Edition

ANTON CHAPMAN

Theory and Applications, ICHSA 2018 Springer
The book covers different aspects of real-world applications of optimization algorithms. It provides insights from the Fourth International Conference on Harmony Search, Soft Computing and Applications held at BML Munjal University, Gurgaon, India on February 7–9, 2018. It consists of research articles on novel and newly proposed optimization algorithms; the theoretical study of nature-inspired optimization algorithms; numerically established results of nature-inspired optimization algorithms; and real-world applications of optimization algorithms and synthetic benchmarking of optimization algorithms.

Proceedings CRC Press
Written by two of the world’s leading experts on sediment management, 'Extending the Life of Reservoirs' provides guidance on adopting sediment management practices for hydropower and water supply dam projects. It explains how ensuring long-term resilience of critical infrastructure requires early and constant attention to reservoir sedimentation processes, which can reduce the storage capacity of reservoirs and damage hydro mechanical equipment. The report provides concrete guidance on safeguarding against these effects and preserving the many important services of hydropower and dam projects, including water supply, irrigation, and renewable electricity. In particular, it stresses the importance of integrating sediment management into the early planning phases of projects. 'Extending the Life of

Reservoirs' is designed to assist those evaluating dam and hydropower proposals. While for the primary audience includes policy makers, lending agencies, and general practitioners, the level of detail provided in the report should appeal to a wide array of stakeholder groups. The content is neither overly technical nor overly simplistic, and aims to provide practical and useful information. Importantly, this report provides a new perspective on the importance of sediment management that is not found in prior work. It stresses the value of sediment management measures as a robust adaptation measure to support sustainable hydropower. The techniques described in the report make sense regardless of future climate changes, but in many cases have even more value when uncertainty over future hydrological patterns is taken into account.

Engineering Geology CRC Press

Hydroelectric projects, if not planned strategically can cause several environmental problems, even though they burn no fuel. Damming rivers may permanently alter river systems and wildlife habitats. Fish, may no longer be able to swim and breed in upstream. Hydropower plant operations may also affect water quality by churning up dissolved metals that may have been deposited by industry long ago. Hydropower operations may increase silting, change water temperatures, and lower the levels of dissolved oxygen. Landslides, rock fall, soil erosion, air pollution and water pollution, seismic activity, deforestation, submergence, displacement, health problems, solid waste problem, public agitation and change in micro-climatic condition, etc. are of especial significance.

An Encyclopedia of History, Uses, and Issues CRC Press

This book presents the selected peer-reviewed papers from the National Conference on Advances in Mechanical Engineering (NCAME 2019), held at the National Institute of Technology Delhi, India. The book covers different areas of mechanical engineering from design engineering to manufacturing engineering. A wide range of topics are discussed such as CAD/CAM, additive manufacturing, fluid dynamics, materials science and engineering, simulation and modeling, finite element analysis, applied mechanics to name a few. The contents provide an overview of the state-of-the-art in mechanical engineering research in the country. Given the scope of the topics covered, the book will be of interest for students, researchers and professionals working in mechanical engineering.

Harmony Search and Nature Inspired Optimization Algorithms S. Chand Publishing

Proceedings... International Conference, Silting Problems in Hydro Power PlantsSilting Problems in Hydro Power PlantsProceedings of the First International Conference, New Delhi, India, 13-15th October 1999CRC Press

Introduction to the Numerical Modeling of Groundwater and Geothermal Systems CRC Press

With reference to India.

Assessment and Environmental Controls Ramdevsinh Jadeja

Environment and Ecology is a major section for Civil Services in last decade. This book covers environment, ecology and bio-diversity quite thoroughly. It is quite contemporary with all the important issues like global warming, threat to

ecology, climate change, the Kyoto and other protocols and conventions covered in-depth.

Fundamentals of Mass, Energy and Solute Transport in Poroelastic Rocks Vikas Publishing House

First authored book to address materials' role in the quest for the next generation of energy materials Energy balance, efficiency, sustainability, and so on, are some of many facets of energy challenges covered in current research. However, there has not been a monograph that directly covers a spectrum of materials issues in the context of energy conversion, harvesting and storage. Addressing one of the most pressing problems of our time, Materials in Energy Conversion, Harvesting, and Storage illuminates the roles and performance requirements of materials in energy and demonstrates why energy materials are as critical and far-reaching as energy itself. Each chapter starts out by explaining the role of a specific energy process in today’s energy landscape, followed by explanation of the fundamental energy conversion, harvesting, and storage processes. Well-researched and coherently written, Materials in Energy Conversion, Harvesting, and Storage covers: The availability, accessibility, and affordability of different energy sources Energy production processes involving material uses and performance requirements in fossil, nuclear, solar, bio, wind, hydrothermal, geothermal, and ocean energy systems Issues of materials science in energy conversion systems Issues of energy harvesting and storage (including hydrogen storage) and materials needs Throughout the book, illustrations and images clarify and simplify core concepts, techniques, and processes. References at the end of each chapter serve as a gateway to the primary literature in the field. All chapters are self-contained units, enabling instructors to easily adapt this book for coursework. This book is suitable for students and professors in science and engineering who look to obtain comprehensive understanding of different energy processes and materials issues. In setting forth the latest advances and new frontiers of research, experienced materials researchers and engineers can utilize it as a comprehensive energy material reference book.

WCPU-Green Power 2 Elsevier

The book provides a comprehensive account of an important sector of engineering—the hydro-power—that is renewable and potentially sustainable. It covers the entire scope of the subject in a lucid manner starting from the fundamentals of hydrology, to various hydraulic and civil structures to electrical and mechanical equipment as required for hydro-power projects. Many new issues and challenges voiced in the energy sector in general and water power in particular during the last decade have been addressed in the book. Recent innovations and developments in some areas like wave power, and new technologies in hydraulic structures, like the P-K weirs, fuse gates, stepped spillways, CFRD, RCC, etc., find place suitably in the book. The book is meant for undergraduate and postgraduate students of civil and electrical engineering and for the professionals interested in the subject. NEW IN THE SECOND EDITION ♦ Thoroughly rewritten text; takes account of the new and growing technology, including • New types of dams,

sedimentation of reservoirs, rehabilitation of dams • Spillway design floods, new types of spillways • Mathematical models for rainfall-runoff analysis, including contribution of snowfall • Structural components of tidal plants, and new types of turbines • Wave power exploitation ♦ Detailed study on Sardar Sarovar and Tehri projects ♦ Fully updated with the latest data, up to 2013 ♦ Two new chapters on 'small-scale hydro, and 'environmental impact of hydro and multi-purpose projects'

China's Economy Looks Toward the Year 2000: Economic openness in modernizing China CRC Press

This publication lays out a strategy which identifies and presents a broad framework for integrated water resources planning and management, to increase the level of resilience to climate change in Himachal Pradesh. It is based on an assessment of the status of water resources in the state, including the present and planned water utilization examined within a framework of environment, conservation and sustainability. The strategy also examines the present institutional arrangements for water resources management and assesses the requirements for institutional development, strengthening and necessary reform measures to support the development of robust and sustainable water resources management.

Materials in Energy Conversion, Harvesting, and Storage Proceedings... International Conference, Silting Problems in Hydro Power PlantsSilting Problems in Hydro Power PlantsProceedings of the First International Conference, New Delhi, India, 13-15th October 1999

Reservoir Sedimentation: Assessment and Environmental Controls appraises the issues of sedimentation in reservoirs and discusses measures that can be employed for the effective management of sediment to prolong the operational life of reservoirs. It provides information for professional consultants and policymakers to enable them to manage dams in the best possible way, in order to ensure their sustainability as well as the sustainability of water resources in general. It examines the effects of anthropogenic intervention and management of sediment in dams and reservoirs, as water resources become more sensitive and the demand for clean water continues to increase. Features: Examines the issue of sedimentation in dams and reservoirs and presents water management strategies to alleviate environmental issues Presents methods to help ensure the environmental sustainability of dams and reservoirs, as well as the sustainability of water resources- with consideration of climate change and increased demand Illustrates the spatial distribution of sedimentation characteristics for several dams using geographic information systems (GIS) Explains the relationships between loss in capacity and catchment characteristics Examines regional variation in sediment yield, defines geomorphic regions on the basis of similar hydrometeorology, physiography, geology, and vegetation affecting reservoirs

The International Journal on Hydropower & Dams CRC Press

Underground facilities, such as tunnels, sewer, water and gas networks form the backbone of the economic life of the modern city. In densely populated areas where the demands for transportation and services are rapidly increasing and the construction of new roads and railways are prohibited, the construction of a tunnel

might be the only alternative. Brief and readable, this reference is based on a combined 75 years of field experience and places emphasis is on simple practical rules for designing and planning, underground infrastructures. The books' begins with a clear and rigorous exposition of the classification of underground space, important considerations such as geological and engineering and underground planning. This is followed by self-contained chapters concerning applications for underground water storage, underground car parks, underground metros & road tunnels and underground storage of crude oil, lpg and natural gas. The book has 15 chapters covering various usage of underground space. There are about 135 figures and tables. The book contains about 20 case histories/examples. One of the first book to address all of the major areas in which this technology is used, this book deals with major topics such as: hydroelectric projects with modern planning of complex underground structures; underground storages of food items, crude oil and explosives and highly cautious underground nuclear waste repositories. Rail and road tunnels and TBM are described briefly. Risk management in underground infrastructures is of vital importance. Civil Engineers, Mining Engineers, and Geotechnical Engineers will find this book a valuable guide to designing and planning underground infrastructures both in terms of its applications. Risk management method for underground infrastructures Vital tips for the underground storage of food, water, crude oil, natural gas and munitions Provides design tips for Underground Parking Facilities Instruction for the designing planning and construction for underground Metros and road tunnels Planning and design of underground nuclear waste repositories Clearly explains the benefits and drawbacks of underground facilities Quick guide to the various modern mechanical underground parking options Explanation of construction planning and Risk management Places expert advice for planning and constructing projects at the finger tips

Butterworth-Heinemann

Corrosion and erosion processes often occur synergistically to cause serious damage to metal alloys. Laser surface modification techniques such as laser surface melting or alloying are being increasingly used to treat surfaces to prevent corrosion or repair corroded or damaged components. Laser surface modification of alloys for corrosion and erosion resistance reviews the wealth of recent research on these important techniques and their applications. After an introductory overview, part one reviews the use of laser surface melting and other techniques to improve the corrosion resistance of stainless and other steels as well as nickel-titanium and a range of other alloys. Part two covers the use of laser surface modification to prevent different types of erosion, including liquid impingement, slurry (solid particle) and electrical erosion as well as laser remanufacturing of damaged components. With its distinguished editor and international team of contributors, Laser surface modification of alloys for corrosion and erosion resistance is a standard reference for all those concerned with preventing corrosion and erosion damage in metallic components in sectors as diverse as energy production and

electrical engineering. Reviews recent research on the use of laser surface modification techniques, including the prevention of corrosion and repair of corroded or damaged components Discusses the techniques for improving the corrosion resistance of steels, nickel-titanium and a range of alloys Analyses the use of laser surface modification to prevent different types of erosion, including liquid impingement and laser remanufacturing of damaged components

Underground Infrastructures Elsevier

Water resources stored by dams and reservoirs play an essential role in water resource management, hydropower and flood control. Where there is an extensive network of dam infrastructures, dams have made a major contribution to economic and social development, providing considerable storage capacity per capita. However, dams and reservoirs may

Reservoir Sedimentation CRC Press

The Eastern Nile riparian countries Egypt, Ethiopia and Sudan are currently developing several reservoir projects to contribute to the needs for energy and food production in the region. The Nile Basin, particularly the Eastern Nile Sub-basin, is considered one of a few international river systems with potential conflicts between riparian countries. In the absence of formal mechanisms for collaboration, the transboundary nature of this basin makes sound water resources development challenging. The large seasonal and inter-annual variability of the river flow exacerbates those challenges. A further complication is the high sediment load in the Eastern Nile rivers during the high flow season. This study contributes to fill relevant knowledge gaps through a better understanding of the methods needed for a complex system of multipurpose reservoirs, considering both water quantity and sediment load. The study quantifies the impacts of water resources development in the Eastern Nile basin and identifies system management options at both regional and country level. Developing a collaborative and unified perspective of the countries towards new projects can be beneficial for all. New operation rules are proposed for improving operation of the current system when new infrastructures are developed and operated either unilaterally or, ideally, cooperatively.

Environment and Ecology Elsevier

This book provides the latest information about the research being conducted and established solutions available in the field of thermal spray coatings for various engineering applications. The readers of this book will be mainly the graduates, engineers and researchers who are pursuing their carrier in the field of thermal spraying. This book will cover the studies and research works of reputed scientists and engineers who have developed thermal spray coatings for thermal protection, bio-implants, renewal energy, wear and corrosion in hydraulic turbines and jet engines, hydrophobic surfaces etc. Hence, the book serves as a valuable resource of latest advancement in thermal spray technology and consolidated references for aspirants and professionals of surface engineering community. The book covers following topics for different industrial applications: Introduction: Historical developments, Science and Engineering aspects of thermal spray coating technology and different thermal spray coatings techniques and its comparison with other

fabrication processes. Recent advancements and applications of thermal spray coatings Cold spray technology for additive manufacturing. High-temperature corrosion and erosion resistant coatings and thermal barrier coatings for power plants, automotive sector, and jet engines. Erosion and corrosion-resistant coatings for hydro-power plants, offshore, chemical and oil industries. Bio-coatings for human body implants. Thermal spray coating for super-hydrophobic surface. 3. Case study of boiler tubes failure and prevention by thermal spray coatings.

Sustainable Strategies for Water Resources Springer Nature

This is the first comprehensive encyclopedia on the history of the vast and varied ways human beings have used the world's waterways for business, protection, and recreation. * 134 entries, organized alphabetically within 3 sections * Approximately 50 contributors—experts in the study and practice of water-based commerce * A chronology of important events in nautical history * A rich selection of photographs, illustrations, and maps

Optimizing the Operation of a Multiple Reservoir System in the Eastern Nile Basin Considering Water and Sediment Fluxes John Wiley & Sons

Finish Manufacturing Processes are those final stage processing techniques which are deployed to bring a product to readiness for marketing and putting in service. Over recent decades a number of finish manufacturing processes have been newly developed by researchers and technologists. Many of these developments have been reported and illustrated in existing literature in a piecemeal manner or in relation only to specific applications. For the first time, Comprehensive Materials Finishing integrates a wide body of this knowledge and understanding into a single, comprehensive work. Containing a mixture of review articles, case studies and research findings resulting from R & D activities in industrial and academic domains, this reference work focuses on how some finish manufacturing processes are advantageous for a broad range of technologies. These include applicability, energy and technological costs as well as practicability of implementation. The work covers a wide range of materials such as ferrous, non-ferrous and polymeric materials. There are three main distinct types of finishing processes: Surface Treatment by which the properties of the material are modified without generally changing the physical dimensions of the surface; Finish Machining Processes by which a small layer of material is removed from the surface by various machining processes to render improved surface characteristics; and Surface Coating Processes by which the surface properties are improved by adding fine layer(s) of materials with superior surface characteristics. Each of these primary finishing processes is presented in its own volume for ease of use, making Comprehensive Materials Finishing an essential reference source for researchers and professionals at all career stages in academia and industry. Provides an interdisciplinary focus, allowing readers to become familiar with the broad range of uses for materials finishing Brings together all known research in materials finishing in a single reference for the first time Includes case studies that illustrate theory and show how it is applied in practice

Environmental Impacts of Hydropower Projects in the Himalayan Region World

Bank Publications
An examination of how silt has a major impact on the operation of hydropower projects in terms of the silting of reservoirs, with particular reference to India where one-third of the Earth's silt material originates. An effort is made to raise awareness of silt issues in the minds of hydropower engineers, considering silting problems in hydropower projects on the Indian sub-continent. Also under discussion are environmental and economic aspects of silt management; reduction of silt by implementing ISO 1400 for hilly projects; technical treatments of reservoir sedimentation, desilting and its economic optimization, damage mechanisms and their analysis, and design criteria. Although this book considers the problem of silting from several viewpoints, it focuses on the design of hydropower plants in India.
Silting Problems in Hydropower Projects

CRC Press
Research on reservoir sedimentation in recent years has been aimed mainly at water resources projects in developing countries. These countries, especially in Africa, often have to cope with long droughts, flash floods and severe erosion problems. Large reservoir capacities are required to capture water provided by flash floods so as to ensure the supply of water in periods of drought. The problem arising however is that these floods, due to their tremendous stream power, carry enormous volumes of sediment which, due to the size of reservoirs, are virtually deposited in toto in the reservoir basin, leading to fast deterioration of a costly investment. Accurate forecasting of reservoir behaviour is therefore of the utmost importance. This book fills a gap in current literature by providing in one volume comprehensive coverage of techniques required to practically investigate the effects sediment deposition in reservoirs has on the viability of water resources projects. Current techniques for practically estimating sediment yield from catchments, estimating the volume of sediment expected to deposit in reservoirs, predicting sediment distribution and calculating scour downstream of reservoirs are evaluated and presented. The liberal use of diagrams and graphs to explain the various techniques enhances understanding and makes practical application simple. A major feature of the book is the application of stream power theory to explain the process of reservoir sedimentation and to develop four new methods for predicting sediment distribution in reservoirs. The book is primarily directed at practising engineers involved in the planning and design of water resources projects and at post-graduate students interested in this field of study.

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