

Download Ebook Introduction To Environmental Engineering Vesilind Morgan Read Pdf Free

Introduction to Environmental Engineering Introduction to Environmental Engineering Outlines and Highlights for Introduction to Environmental Engineering by P Aarne Vesilind, Susan M Morgan Ism-Introduction to Environmental Engineering Education for Engineers, by Arthur E. Morgan Public Speaking and Technical Writing Skills for Engineering Students Engineering Peace and Justice Introduction to Engineering, Custom Engineering Environmental Pollution and Control Ecological Engineering Engineering and Social Justice Introduction to Civil Engineering Systems Environmental Engineering Civil and Environmental Engineering: Concepts, Methodologies, Tools, and Applications The Universe of Engineering Basic Environmental Engineering Rethinking Technology and Engineering Sustainable Energy - without the hot air Water and Wastewater Engineering Control and Treatment of Landfill Leachate for Sanitary Waste Disposal Engineering in Context Introduction to Environmental Engineering with Unit Conversion Booklet Tragedy in the Gulf A-B processes: Towards Energy Self-sufficient Municipal Wastewater Treatment Computer Modeling Applications for Environmental Engineers Water-Quality Engineering in Natural Systems Engineering and War The Necessity of Co-operation by American Engineers Introduction to Environmental Engineering and Science Water and Wastewater Engineering: Design Principles and Practice, Second Edition Design of Biomedical Devices and Systems, 4th edition Material And Energy Balances For Engineers And Environmentalists (Second Edition) Sludge Engineering Engineers Year-book Green Stormwater Infrastructure Fundamentals and Design Ethics, Politics, and Whistleblowing in Engineering Advances in Bioremediation and Phytoremediation Air Pollution Global Engineering

The recent tragedy in the Gulf of Mexico and resultant ethical consequences for the engineering profession are introduced and discussed. The need for a new engineering ethic is identified and introduced based upon advancements in science, complex systems and eco-philosophy. Motivations for introducing a new ethic rather than modifying existing ethics are also discussed. Table of Contents: Tragedy in the Gulf / Tragedy Unfolding / Engineering Ethics / Complex Systems / Quantum Mechanics / Evolving Principles of the Universe / A New Engineering Ethic / Epilogue This fourth edition is a substantial revision of a highly regarded text, intended for senior design capstone courses within departments of biomedical engineering, bioengineering, biological engineering and medical engineering, worldwide. Each chapter has been thoroughly updated and revised to reflect the latest developments. New material has been added on entrepreneurship, bioengineering design, clinical trials and CRISPR. Based upon feedback from prior users and reviews, additional and new examples and applications, such as 3D printing have been added to the text. Additional clinical applications were added to enhance the overall relevance of the material presented. Relevant FDA regulations and how they impact the designer's work have been updated. Features Provides updated material as needed to each chapter Incorporates new examples and applications within each chapter Discusses new material related to entrepreneurship, clinical trials and CRISPR Relates critical new information pertaining to FDA regulations. Presents new material on "discovery" of projects "worth pursuing" and design for health care for low-resource environments Presents multiple case examples of entrepreneurship in this field Addresses multiple safety and ethical concerns for the design of medical devices and processes This text has two unifying themes: materials balances and environmental ethics. The authors demonstrate that environmental problems need to be solved using a holistic approach and incorporate ethical decision-making into the discussions and problems. Environmental Pollution and Control, Third Edition focuses on the aspects of environmental engineering science and technology, including water pollution, wastewater, sludge treatment, and water pollution legislation. The book first elaborates on environmental and water pollution and measurement of water quality. Discussions focus on chemical oxygen demand, bacteriological measurements, heavy metals, effect of pollution on streams, lakes, and oceans, biodegradation, population responses, and exposure and latency. The publication also takes a look at water supply and water treatment, including disinfection, filtration, settling, coagulation and

flocculation, water transmission, and groundwater and surface water supplies. The manuscript examines the collection and treatment of wastewater, sludge treatment and disposal, and nonpoint source water pollution. Topics include control technologies applicable to nonpoint source pollution, sources of sludge, ultimate disposal, onsite wastewater disposal, central wastewater treatment, and tertiary treatment. The text also elaborates on water pollution law, solid wastes, resource recovery, and hazardous wastes. The publication is a valuable reference for environmental pollution experts and readers interested in environmental pollution and control. Intended for advanced students and practitioners of wastewater engineering, this text explains the theory and quantitative rationale for treating wastewater and industrial sludges, with public safety and efficiency in mind. It offers important information on various practices for safe and legal sludge disposal. Never HIGHLIGHT a Book Again! Virtually all of the testable terms, concepts, persons, places, and events from the textbook are included. Cram101 Just the FACTS101 studyguides give all of the outlines, highlights, notes, and quizzes for your textbook with optional online comprehensive practice tests. Only Cram101 is Textbook Specific. Accompanys: 9780534378127 . Publisher's Note: Products purchased from Third Party sellers are not guaranteed by the publisher for quality, authenticity, or access to any online entitlements included with the product. A Fully Updated, In-Depth Guide to Water and Wastewater Engineering Thoroughly revised to reflect the latest advances, procedures, and regulations, this authoritative resource contains comprehensive coverage of the design and construction of municipal water and wastewater facilities. Written by an environmental engineering expert and seasoned academic, *Water and Wastewater Engineering: Design Principles and Practice, Second Edition*, offers detailed explanations, practical strategies, and design techniques as well as hands-on safety protocols and operation and maintenance procedures. You will get cutting-edge information on water quality standards, corrosion control, piping materials, energy efficiency, direct and indirect potable reuse, and more. Coverage includes:

- The design and construction processes
- General water supply design considerations
- Intake structures and wells
- Chemical handling and storage
- Coagulation and flocculation
- Lime-soda and ion exchange softening
- Reverse osmosis and nanofiltration
- Sedimentation
- Granular and membrane filtration
- Disinfection and fluoridation
- Removal of specific constituents
- Water plant residuals management, process selection, and integration
- Storage and distribution systems
- Wastewater

collection and treatment design considerations • Sanitary sewer design • Headworks and preliminary treatment • Primary treatment • Wastewater microbiology • Secondary treatment by suspended growth biological processes • Secondary treatment by attached growth and hybrid biological processes • Tertiary treatment • Advanced oxidation processes • Direct and indirect potable reuse

This comprehensive new edition tackles the multiple aspects of environmental engineering, from solid waste disposal to air and noise pollution. It places a much-needed emphasis on fundamental concepts, definitions, and problem-solving while providing updated problems and discussion questions in each chapter. Introduction to Environmental Engineering also includes a discussion of environmental legislation along with environmental ethics case studies and problems to present the legal framework that governs environmental engineering design. The pollution of soil and groundwater by harmful chemical compounds and heavy metals is becoming very serious in many countries. Although remediation is necessary as soon as possible, the performance of conventional bioremediation processes is not sufficient. This book deals with advances in bioremediation and phytoremediation processes by using excellent strains and a combination of processes. In the chapters of this book, the researchers have introduced the overall status of contamination; the characteristics of bioremediation using halobacteria, Candida yeast, and autochthonous bacteria; and phytoremediation using macrophytes. Moreover, other researchers introduced a process using biochar and electric currents, and this combination of processes and phytoremediation enhances the overall process. Environmental Engineering: Principles and Practice is written for advanced undergraduate and first-semester graduate courses in the subject. The text provides a clear and concise understanding of the major topic areas facing environmental professionals. For each topic, the theoretical principles are introduced, followed by numerous examples illustrating the process design approach. Practical, methodical and functional, this exciting new text provides knowledge and background, as well as opportunities for application, through problems and examples that facilitate understanding. Students pursuing the civil and environmental engineering curriculum will find this book accessible and will benefit from the emphasis on practical application. The text will also be of interest to students of chemical and mechanical engineering, where several environmental concepts are of interest, especially those on water and wastewater treatment, air pollution, and sustainability. Practicing engineers will find this book a valuable resource,

since it covers the major environmental topics and provides numerous step-by-step examples to facilitate learning and problem-solving. Environmental Engineering: Principles and Practice offers all the major topics, with a focus upon: • a robust problem-solving scheme introducing statistical analysis; • example problems with both US and SI units; • water and wastewater design; • sustainability; • public health. There is also a companion website with illustrations, problems and solutions. Municipal solid waste (MSW) disposal is an ever-increasing problem in many parts of the world, especially in developing countries. To date, landfilling is still the preferred option for the disposal and management of MSW due to its low-cost operation. While this solution is advantageous from a cost perspective, it introduces a high level of potential pollutants which can be detrimental to the local environment. Control and Treatment of Landfill Leachate for Sanitary Waste Disposal presents research-based insights and solutions for the proper management and treatment of landfill leachate. Highlighting relevant topics on emerging technologies and treatment innovations for minimizing the environmental hazards of waste disposal, this innovative publication contributes to filling in many of the gaps that exist in the current literature available on leachate treatment. Waste authorities, solid waste management companies, landfill operators, legislators, environmentalists, graduate students, and researchers will find this publication beneficial to their professional and academic interests in the area of waste treatment and management. Some years ago when I was chair of the department of civil and environmental engineering, a colleague introduced me to a visitor from Sandia Laboratories, perhaps the largest developer of armaments and weapons systems in the world. We had a nice visit, and as we chatted, the talk naturally centered on the visitor's engineering work. It turned out that his job in recent years had been to develop a new acoustic triggering device for bombs. As he explained it, the problem with bombs was that the plunger triggering mechanism could fail if the bomb hit at an angle, and thus the explosives would not detonate. To get around this, he developed an acoustic trigger that would detonate the explosives as soon as the bomb hit any solid surface, even at an angle. As he talked, I watched his face. His enthusiasm for his work was clearly evident, and his animated explanations of what they had developed at Sandia exuded pride and excitement. I thought about asking him what it felt like to have spent his engineering career designing better ways to kill people or to destroy property – the sole purpose of a bomb. I wondered how many people had been killed because this man had developed a clever acoustic triggering

device. But good sense and decorum prevailed and I did not ask him such questions. We parted as friends and in good spirits. The enlightening, best-selling book on understanding sustainable energy and how we can make energy plans that add up. If you've ever wondered how much energy we use, and where it comes from – and where it could come from – but are fed up with all the hot air and 'greenwash', this is the book for you. Renewable resources are 'huge', but our energy consumption is also 'huge'. To compare 'huge' things with each other, we need numbers, not adjectives. Sustainable Energy – without the hot air addresses the energy crisis objectively, cutting through all the contradictory statements from the media, government, and lobbies of all sides. It gives you the numbers and the facts you need, in bite-sized chunks, so you can understand the issues yourself and organises a plan for change on both a personal level and an international scale – for Europe, the United States, and the world. In case study format, this informative book also answers questions surrounding nuclear energy, the potential of sustainable fossil fuels, and the possibilities of sharing renewable power with foreign countries. Written by David MacKay, who was an esteemed Professor of Engineering at the University of Cambridge and Chief Scientific Advisor to the UK Department of Climate Change, this is an uplifting, jargon-free and informative read for all. In it, David debunks misinformation and clearly explains the calculations of expenditure per person to encourage people to make individual changes that will benefit the world at large. If you've thrown your hands up in despair thinking no solution is possible, then read this book - it's an honest, realistic, and humorous discussion of all our energy options. This book presents an integrated systems approach to the evaluation, analysis, design, and maintenance of civil engineering systems. Addressing recent concerns about the world's aging civil infrastructure and its environmental impact, the author makes the case for why any civil infrastructure should be seen as part of a larger whole. He walks readers through all phases of a civil project, from feasibility assessment to construction to operations, explaining how to evaluate tasks and challenges at each phase using a holistic approach. Unique coverage of ethics, legal issues, and management is also included. Computer Modeling Applications for Environmental Engineers in its second edition incorporates changes and introduces new concepts using Visual Basic.NET, a programming language chosen for its ease of comprehensive usage. This book offers a complete understanding of the basic principles of environmental engineering and integrates new sections that address Noise Pollution and Abatement and municipal solid-waste problem solving,

financing of waste facilities, and the engineering of treatment methods that address sanitary landfill, biochemical processes, and combustion and energy recovery. Its practical approach serves to aid in the teaching of environmental engineering unit operations and processes design and demonstrates effective problem-solving practices that facilitate self-teaching. A vital reference for students and professional sanitary and environmental engineers this work also serves as a stand-alone problem-solving text with well-defined, real-work examples and explanations. As the world becomes increasingly globalized, today's companies expect to hire engineers who are effective in a global business environment. Although you can find many books covering globalization, most of them are aimed at business, management, or social sciences. Developed with engineers in mind, *Global Engineering: Design, Decision Making, and C Material and energy (M&E) balances* are fundamental to biological, chemical, electrochemical, photochemical and environmental engineering disciplines and important in many fields related to sustainable development. This comprehensive compendium presents the basic M&E balance concepts and calculations in a format easily digested by students, engineering professionals and those concerned with related environmental issues. The useful reference text includes worked examples for each chapter and demonstrates process balances in the framework of M&E concerns of the 21st century. The additional problems and solutions in the Appendix embrace a wide range of subjects, from fossil fuels to fuel cells, solar energy, space stations, carbon dioxide capture and sodium-ion batteries. In this book we explore a sea change occurring in leadership for academic women in the sciences and engineering. Our approach is a two-pronged one: On the one hand, we outline the nature of the changes and their sources, both in various literatures and from program research results. On the other hand, we specify and provide detail about the persistent problems and obstacles that remain as barriers to women's full participation in academic science and engineering, their career advancement and success, and, most important, their role as leaders in making change. At the heart of this book is our goal to give some shape to the research, practice, and programs developed by women academic leaders making institutional change in the sciences and engineering.

Table of Contents: Women in a New Era of Academic Leadership / Background: Academic Leadership for Women in Science and Engineering / Gender and Leadership: Theories and Applications / Women in Engineering Leadership Institute: Critical Issues for Women Academic Engineers as Leaders / From Success Stories to Success Strategies: Leadership for

Promoting Diversity in Academic Science and Engineering / Conclusion This textbook describes in detail the fundamental equations that govern the fate and transport of contaminants in the environment, and covers the application of these equations to engineering design and environmental impact analysis relating to contaminant discharges into rivers, lakes, wetlands, groundwater, and oceans. The third edition provides numerous end-of-chapter problems and an expanded solutions manual. Also introduced in this edition are PowerPoint slides for all chapters so that instructors have a ready-made course. Key distinguishing features of this book include: detailed coverage of the science behind water-quality regulations, state-of-the-art methods for calculating total maximum daily loads (TMDLs) for the remediation of impaired waters, modeling and control of nutrient levels in lakes and reservoirs, design of constructed treatment wetlands, design of groundwater remediation systems, design of ocean outfalls, control of oil spills in the ocean, and the design of systems to control the quality of surface runoff from watersheds into their receiving waters. In addition, the entire book is updated to provide the latest advances in the field of water-quality control. For example, concepts such as mixing zones are expanded to include physical nature and regulatory importance of mixing zones, practical aspects of outfall and diffuser design are also included, specific details of water-quality modeling are updated to reflect the latest developments on this topic, and new findings relating to priority and emerging pollutants are added. The aim of this book is to generate a strong operational ethic in the work of engineers from all disciplines. It provides numerous examples of engineers who sought to meet the highest ethical standards, risking both professional and personal retaliations. In short, it presents the fields of engineering ethics in the context of actual conflict situations on the job, and points to an urgent need for a strong ethical framework for the profession. This book is about engineering students and practitioners truly understanding, valuing, and championing their wider critical role. Ralph Nader, the consumer advocate and champion of engineers, wrote the preface. Presents various viewpoints which hail from a wide variety of disciplines in the engineering, science, and technology communities. Includes a mix of historical and contemporary examples, a list of relevant television series and documentaries for engineers, as well as links to informative websites for practicing engineers and engineering students. Examines engineering professionalism as related to the imperative of sustainable development. Provides numerous examples of corporate whistleblowing and ethical dilemmas in engineering. Includes a foreword

written by consumer advocate Ralph Nader. This book gives insight into the ongoing work of the forum on Philosophy, Engineering and Technology (fPET), which brings together philosophers and engineers from all over the world to discuss philosophical issues of engineering across disciplinary boundaries. Drawing on presentations and conversations at the fPET 2020 online conference hosted by the Universidad Técnica Federico Santa María in Chile, the chapters establish connections and describe discoveries that have so far been neglected in the discussions held within the young discipline of philosophy of engineering. This volume appeals to students and researchers in the field, through twenty-four proposals brought forward by leading scholars and emerging voices. Pertinent themes covered are: the broader engagement of engineers in problem-solving beyond the scope of their own profession the exploration of new goals for technology development and the implementation of strategies to reach these goals the need for philosophical content and unique pedagogical approaches to engineering education, digital transformations, artificial intelligence and the ethics of online collaboration in social media critical revisions of fundamental terminology and theoretical modelling of key concepts in engineering design, ethics, innovation and the anthropology of technology

An In-Depth Guide to Water and Wastewater Engineering This authoritative volume offers comprehensive coverage of the design and construction of municipal water and wastewater facilities. The book addresses water treatment in detail, following the flow of water through the unit processes and coagulation, flocculation, softening, sedimentation, filtration, disinfection, and residuals management. Each stage of wastewater treatment--preliminary, secondary, and tertiary--is examined along with residuals management. **Water and Wastewater Engineering** contains more than 100 example problems, 500 end-of-chapter problems, and 300 illustrations. Safety issues and operation and maintenance procedures are also discussed in this definitive resource. Coverage includes: Intake structures and wells Chemical handling and storage Coagulation and flocculation Lime-soda and ion exchange softening Reverse osmosis and nanofiltration Sedimentation Granular and membrane filtration Disinfection and fluoridation Removal of specific constituents Drinking water plant residuals management, process selection, and integration Storage and distribution systems Wastewater collection and treatment design considerations Sanitary sewer design Headworks and preliminary treatment Primary treatment Wastewater microbiology Secondary treatment by suspended and attached growth biological processes Secondary settling, disinfection, and postaeration

Tertiary treatment Wastewater plant residuals management Clean water plant process selection and integration Appropriate for undergraduate engineering and science courses in Environmental Engineering. Balanced coverage of all the major categories of environmental pollution, with coverage of current topics such as climate change and ozone depletion, risk assessment, indoor air quality, source-reduction and recycling, and groundwater contamination. This established textbook offers a one-stop, comprehensive coverage of air pollution, all in an easy-reading and accessible style. The fourth edition, broadly updated and developed throughout, includes a brand-new chapter providing a broader overview to the topic for general reading, and presents fresh materials on air pollution modelling, mitigation and control, tailored to the needs of both amateur and specialist users. Retaining a quantitative perspective, the covered topics include: gaseous and particulate air pollutants, measurement techniques, meteorology and modelling, area sources, mobile sources, indoor air, effects on plants, materials, humans and animals, impact on climate change and ozone profiles and air quality legislations. This edition also includes a final chapter covering a suite of sampling and laboratory practical experiments that can be used for either classroom teachings, or as part of research projects. As with previous editions, the book is aimed to serve as a useful reading resource for upper-level undergraduate and postgraduate courses specialising in air pollution, with dedicated case studies at the end of each chapter, as well as a list of revision questions provided at the end as a complementary section. This book is aimed at engineering academics worldwide, who are attempting to bring social justice into their work and practice, or who would like to but don't know where to start. This is the first book dedicated specifically to University professionals on Engineering and Social Justice, an emerging and exciting area of research and practice. An international team of multidisciplinary authors share their insights and invite and inspire us to reformulate the way we work. Each chapter is based on research and yet presents the outcomes of scholarly studies in a user oriented style. We look at all three areas of an engineering academic's professional role: research, teaching and community engagement. Some of our team have created classes which help students think through their role as engineering practitioners in society. Others are focusing their research on outcomes that are socially just and for client groups who are marginalized and powerless. Yet others are consciously engaging local community groups and exploring ways in which the University might 'serve' communities at home and globally from a post-development perspective. We

are additionally concerned with the student cohort and who has access to engineering studies. We take a broad social and ecological justice perspective to critique existing and explore alternative practices. This book is a handbook for any engineering academic, who wishes to develop engineering graduates as well as technologies and practices that are non-oppressive, equitable and engaged. It is also an essential reader for anyone studying in this interdisciplinary juncture of social science and engineering. Scholars using a critical theoretical lens on engineering practice and education, from Science and Technology Studies, History and Philosophy of Engineering, Engineering and Science Education will find this text invaluable. Green Stormwater Infrastructure Fundamentals and Design Discover novel stormwater control measures to make for a greener tomorrow! The protection of our aquatic resources is growing in importance as the effects of climate change and continued urbanization are felt throughout the world. While most rain that falls onto vegetated spaces infiltrates the soil, rain that falls onto impervious surfaces will not, increasing downstream flooding and erosion and causing impaired water quality. Impervious surfaces such as road infrastructure, rooftops, and parking areas all increase runoff and mobilize many pollutants that have deposited on these surfaces that are then carried into our waterways. Proper management of this stormwater through green infrastructure is essential to address these challenges and reduce the environmental and ecological impacts brought about by this runoff. This book brings into focus resilient stormwater control measures (SCMs) for the reduction of stormwater flows and associated pollutants that can detrimentally impact our local environmental and ecological systems. These interventions are green infrastructure based, utilizing natural hydrologic and environmental features using soil and vegetation to manage stormwater. These technologies include water harvesting, bioretention and bioinfiltration, vegetated swales and filter strips, permeable pavements, sand filters, green roofs, and stormwater wetlands, among others. The basic science and engineering of these technologies is discussed, including performance information and best maintenance practices. Green Stormwater Infrastructure readers will also find: Research-informed resilient SCM design fundamentals Diagrams developed by the authors to enhance understanding Case studies to illustrate the points elucidated in the book End-of-chapter problems with a separate solutions manual Green Stormwater Infrastructure is an ideal resource for environmental, civil, and biological engineers and environmental scientists in the consulting field. Landscape architects, managers and engineers of

watershed districts, and members of federal, state, and local governmental agencies—especially those in the departments of environmental protection and transportation—will find many uses for this guidebook. It will also be of interest to professors, upper-level undergraduates and graduate students in environmental, civil, and biological engineering programs. Civil and environmental engineers work together to develop, build, and maintain the man-made and natural environments that make up the infrastructures and ecosystems in which we live and thrive. Civil and Environmental Engineering: Concepts, Methodologies, Tools, and Applications is a comprehensive multi-volume publication showcasing the best research on topics pertaining to road design, building maintenance and construction, transportation, earthquake engineering, waste and pollution management, and water resources management and engineering. Through its broad and extensive coverage on a variety of crucial concepts in the field of civil engineering, and its subfield of environmental engineering, this multi-volume work is an essential addition to the library collections of academic and government institutions and appropriately meets the research needs of engineers, environmental specialists, researchers, and graduate-level students. Less expensive and more environmentally appropriate than conventional engineering approaches, constructed ecosystems are a promising technology for environmental problem solving. Undergraduates, graduate students, and working professionals need an introductory text that details the biology and ecology of this rapidly developing discipline, known as This text presents a balanced treatment of environmental engineering by combining engineering concepts with the importance of environmental ethics. This third edition highlights sustainable development and emphasizes the need for engineers to become even more environmentally responsible during this time of increasing awareness of environmental concerns. The authors challenge students with problems that require not only a technical solution but a thorough consideration of its ethical ramifications. The text also provides comprehensive exposure to all types of environmental problems, including ecosystem dynamics, wastewater treatment, and air pollution control. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version. This book investigates the close connections between engineering and war, broadly understood, and the conceptual and structural barriers that face those who would seek to loosen those connections. It shows how military institutions and interests have long influenced engineering education, research, and

practice and how they continue to shape the field in the present. The book also provides a generalized framework for responding to these influences useful to students and scholars of engineering, as well as reflective practitioners. The analysis draws on philosophy, history, critical theory, and technology studies to understand the connections between engineering and war and how they shape our very understandings of what engineering is and what it might be. After providing a review of diverse dimensions of engineering itself, the analysis shifts to different dimensions of the connections between engineering and war. First, it considers the ethics of war generally and then explores questions of integrity for engineering practitioners facing career decisions relating to war. Next, it considers the historical rise of the military-industrial-academic complex, especially from World War II to the present. Finally, it considers a range of responses to the militarization of engineering from those who seek to unsettle the status quo. Only by confronting the ethical, historical, and political consequences of engineering for warfare, this book argues, can engineering be sensibly reimagined. The principle of the conventional activated sludge (CAS) for municipal wastewater treatment is primarily based on biological oxidation by which organic matters are converted to biomass and carbon dioxide. After more than 100 years' successful application, the CAS process is receiving increasing critiques on its high energy consumption and excessive sludge generation. Currently, almost all municipal wastewater treatment plants with the CAS as a core process are being operated in an energy-negative fashion. To tackle such challenging situations, there is a need to re-examine the present wastewater treatment philosophy by developing and adopting novel process configurations and emerging technologies. The solutions going forward should rely on the ways to improve direct energy recovery from wastewater, while minimizing in-plant energy consumption. This book begins with a critical overview of the energy situation and challenges in current municipal wastewater treatment plants, showing the necessity of the paradigm shift from removal to recovery in terms of energy and resource. As such, the concept of A-B process is discussed in detail in the book. It appears that various A-B process configurations are able to provide possible engineering solutions in which A-stage is primarily designed for COD capture with the aim for direct anaerobic treatment without producing excessive biosludge, while B-stage is designated for nitrogen removal. Making the wastewater treatment energy self-sustainable is obviously of global significance and eventually may become a game changer for the global

market of the municipal wastewater reclamation technology. The principal audiences include practitioners, professionals, university researchers, undergraduate and postgraduate students who are interested and specialized in municipal wastewater treatment and process design, environmental engineering, and environmental biotechnology.

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