Dear Colleague,

Another year has flown by and the 2016 Book Catalogue is upon us. Unchanged is our product mix – Conference Proceedings, High Level Science and Technology Monographs, Architecture titles and Academic Journals. Our current list of five journals is now being increased to seven with the addition of:

*International Journal of Transport Development and Integration*

and

*International Journal of Heritage Architecture – Studies, Repairs and Maintenance*

Both these journals complement our book publishing programmes in architecture and transportation and our 2016 conference schedule (page 68) which includes two entirely new international conferences:

Islamic Heritage Architecture
May 2016, València, Spain

and

Big Data
May 2016, Alicante, Spain

From our forthcoming title list I have chosen to highlight two very different titles, both of which embody our on-going commitment to the natural sciences and architecture:

*Kelvin, Thermodynamics and the Natural World*

This volume looks afresh at the life and works of Lord Kelvin, the eminent 19th Century scientist and includes his standing and relationships with Charles Darwin and T.S. Huxley.

The second featured title is:

*Creative Design in Industry and Architecture*

The key argument in this book is that the discourse on design criteria for both architects and industrial designers shares many similarities and seeks to present a critical assessment of design processes.

As was the case in 2015, all the titles contained in the 2016 book catalogue are available both as print and as eBooks, bringing WIT Press’ number of eBooks to approximately 500.

WIT Press thanks you for your continuing support and wishes you well for 2016.

Yours Sincerely

David S. Anderson
CEO WIT Press
Air Pollution

Air Pollution XXIV
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK

In these proceedings of the 24th International Conference on Modelling, Monitoring and Management of Air Pollution, international academics and air pollution practitioners contribute to the evolving understanding of the science and policy contexts of air pollution.

All the books from the conference series have discussed important air pollution issues at an international, national and local level and by virtue of their truly international composition have brought to the discussion a unique suite of perspectives. The conference findings enjoy a wide and rapid dissemination amongst the air pollution science and policy communities.

The management of air pollution is one of the most challenging problems facing the international community. A particular strength of the series has been the attention given to regulatory and market solutions to air pollution management. The Air Pollution series of conferences has consistently acknowledged that science remains the key to identifying the nature and scale of air pollution impacts and reaffirmed that science is essential in the formulation of policy relevant information for regulatory decision making. The conference series also acknowledged, at a very early stage, that science alone will not improve a polluted atmosphere. The scientific knowledge derived from well-designed studies needs to be allied with further technical and economic studies in order to ensure cost effective and efficient mitigation. In turn, the science, technology and economic outcomes are necessary but not sufficient.

Topics covered include: Air Pollution Modelling; Air Pollution Mitigation and Management; Aerosols and Particles; Emission Studies; Health Effects; Indoor Air Pollution; Air Data Quality; Monitoring and Measuring; Case Studies; Air Pollution Control Technologies; Industrial Air Pollution; Air Pollution Science; Global and Regional Studies; Climate Change Effects; GIS & Remote Sensing Applications; Emerging Pollutants; Socio Economic Issues; Public Engagement; Policy and Legislation.

WIT Transactions on Ecology and the Environment, Vol 183
Published 2014 / 428pp / £181.00

Air Pollution XXII
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK and J.W.S. LONGHURST, University of the West of England, UK

Containing papers presented at the twenty-second in a successful series of conferences on the modelling, monitoring and management of air pollution, the book Air Pollution XXII covers what has become a widespread and growing challenge to the international community.

Air Pollution Modelling; Monitoring and Measuring; Aerosols and Particles; Exposure and Health Effects; Emission Studies; Air Quality Management; Indoor Air Pollution; Case Studies.

WIT Transactions on Ecology and the Environment, Vol 183
Published 2014 / 428pp / £181.00

Architecture

Islamic Heritage Architecture
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK

This book contains papers presented at the 1st International Conference on Islamic Heritage Architecture and Art. The papers deal with the design of many types of buildings in Islamic countries and the influence that these structural forms have had in non-Islamic countries. Coverage will also include construction materials.

There is much to learn from past experiences to arrive at solutions that are environmentally sound and sustainable in the long term. As conventional energy resources become scarce, Islamic design heritage can offer invaluable lessons on how to deal with difficult and extreme environments in an efficient manner. Traditional architecture and urban environment in most Islamic countries is now being eroded by overemphasis on global types of architecture and city planning. As a consequence, many regions are losing their identity. The Conference will aim to review these developments in the light of what the classical Islamic urban designs and architectures have to offer modern society. There will also be coverage of conservation techniques appropriate to the materials and structural forms used.

Topics covered include: Architectural Heritage; Archaeological Studies; Historical Aspects; The Islamic Urban Environment; Types of Buildings (e.g., Mosques and Minarets; Mausolea; Citadel and Fortifications, Baths and Caravanserais; Bridges and Dams; Cisterns and Quants; Earth-sheltered Architecture; Irrigation Systems; Wind Towers); Climate Adaptability; Arches and Vaults; Domes and Squinches; Double Shell Dome; Geometry and Orientation; The use of Light; Design and Nature; Vernacular Architecture; Construction Materials (e.g., Masonry and Mortars; Wood, Metals, Tiles, Adobe); Structural Analysis; Earthquake Resistant Structures; Calligraphy, Painting and Patterns; Architectural Conservation. The contents will be of interest to all researchers, practitioners and government employees actively involved with Islamic Heritage Architecture.

WIT Transactions on The Built Environment, Vol 159
Forthcoming 2016 / 456pp / £194.00

Eco-Architecture VI
Harmonisation between Architecture and Nature
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK

Comprising the proceedings of the Sixth International Conference on Harmonisation between Architecture and Nature, the papers deal with topics such as building technologies, design by passive systems, design
with nature, cultural sensitivity, life cycle assessment, resources and rehabilitation as well as many others. This book follows five successful meetings which started in the New Forest, UK in 2006, then followed in the Algarve (2008), A Coruña (2010), Kos (2012) and Siena, Italy (2014).

Eco-Architecture signifies a new approach to the design process intended to harmonise its products with nature. This involves concepts such as minimal use of energy at each stage of the building process, taking into account the amount required during the extraction and transportation of materials, their fabrication, assembly, building formation, maintenance and eventual future recycling. The adaptation of the architectural design to the natural environment, is another important issue.

The book will be of interest to architects, engineers, planners, physical scientists, sociologists and economists. They will find within these proceedings case studies from many different places around the world.

Topics covered consist of: Design with Nature; Energy Efficiency; Tall Buildings and Environment; Ecological Impacts of Materials; Bimaterials; Bioclimatic Design; Water Quality; Green Facades; Ecological, Education and Training; Adapted Reuse; Transformative Design; Sustainability Indices in Architecture; Bioclimatic Design and Passive Systems; Recycle, Reuse, Reduce and Recovery; Mixing it up and Building Flexibility; Architectural Visualisation and New Techniques; Building Information Modelling.

WIT Transactions on The Built Environment, Vol 161
Published 2016  /  apx 700pp  /  apx £298.00

NEW TITLE
Creative Design in Industry and Architecture
G. BERKIN and O. KUCUKERMAN, Hacettepe University Faculty of Architecture, Turkey

Covering the topics of architecture and industrial design Creative Design in Industry and Architecture argues that the discourse on design criteria for both professions share many similarities. It is not intended to be prescriptive, but is rather the outcome of a detailed design analysis of the works of a number of industrial and architectural designers. The authors sought to compare the cultural outcomes of vernacular design in an attempt to show that the design process does not need to be difficult or complicated. This book seeks to present a critical assessment of design processes which achieve innovation in the fields of both architectural and industrial disciplines. The book is therefore about creativity, design strategies and innovative understanding.

With decades of academic experience, the authors are keen on the idea that creativity can be taught. They wrote this book from an ongoing pedagogical need to show students that the creative palette has a wide range. Case studies and their related theory which support this view are included within the chapters. The book also unveils the design dilemma; how design can become complicated when surrounded with intricate problems although it is the sum of simple solutions.

Common theories and practices are exposed within the two disciplines through observation, analysis, experiment and reflection to discuss and gain insight. Both creative and practical approaches are analysed by making a historical study followed by the fundamentals reflecting the current situation and practical applications of the architectural and industrial design principles outlined in an extensive collection of examples. To educators this book is instructive, to the students deductive, to designers inspiring.

Published 2015  /  204pp  /  £98.00

NEW TITLE
Assessment of Daylight Performance in Buildings
Methods and Design Strategies
B. GHERRI, University of Parma, Italy

Recently a renewed emphasis on the benefits of proper use of natural light has focused attention on the need to define a new paradigm, to properly assess how much natural light can be used not only to outline expressively the indoor space, but also to reduce the demand for electricity and thermal energy consumption in buildings.

This title deals with the many advantages associated with the use of natural light, comparing architectural experiences, technological devices and calculation methods. It explores the spatial qualities of built environments through the use of natural light, involving energy-saving strategies and visual comfort definition, although in current architectural practice daylight is a deeply underexploited natural resource. A proper natural lighting system, tailored to the requirements of architectural form and customised to occupants’ functional desires, is an essential support to modern climate control policies, as well as to energy-saving measures and in reducing thermal loads. An in-depth investigation on the different methods of the assessment of natural light highlights deficiencies and inaccuracies, showing the need to define a new calculation procedure that merges purely qualitative assessment with the new dynamic approach, involving users’ preferences.

Primarily intended for architects and designers, this book provides an introduction to the types of problems encountered and current available solutions to enhance and to convey the right dose of daylight inside the buildings, with a deep attention to energy-saving strategies and to indoor visual comfort. Written for practitioners whose work is related to design and retrofit actions, the book will also be of interest to postgraduate students and lecturers dealing with indoor design optimisation and energy-saving issues.

Published 2015  /  214pp  /  £92.00
**NEW TITLE**

**Eco-Towers**

*Sustainable Cities in the Sky*

K. AL-KODMANY, University of Illinois at Chicago, USA

Eco-Towers introduces readers to groundbreaking designs, progressive projects, and innovative ways of thinking about a new generation of green skyscrapers that could provide solutions to crises the world faces today, including climate change, depleting resources, deteriorating ecology, population increase, decreasing food supply, urban heat island effect, pollution, deforestation, and more. The book suggests that the eco-tower culminates the cultural and technological evolutions of the 21st century by building and improving on the experiences of earlier designs of skyscrapers and philosophies, particularly green, sustainable, and ecological. It argues that the true green skyscraper is the one that engages successfully with its larger urban context by establishing symbiotic relationships with the social, economic, and environmental aspects. Since tall buildings are becoming larger and taller, serving greater numbers of people, and exerting higher demand on the environment and existing infrastructure, any improvements in their design and construction will significantly enhance urban conditions.

The book elucidates how green skyscrapers better serve tenants, mitigate environmental impacts, and improve integration with the city infrastructure. It explains how skyscrapers’ long life cycle offers the greatest justifications for recycling precious resources, and makes it worthwhile to employ green features in constructing new skyscrapers and retrofitting existing ones. Subsequently, the book explores new designs that are employing cutting-edge green technologies at a grand scale, including water-saving technologies, solar panels, helical wind turbines, sunlight-sensing LED lights, rainwater catchment systems, graywater and blackwater recycling systems, seawater-powered air conditioning, and the like. In the future, new building materials and smart technologies will continue to offer innovative design approaches to sustainable tall buildings with new aesthetics, referred to as “eco-iconic” skyscrapers.


**NEW TITLE**

**Building Information Modelling (BIM) in Design, Construction and Operations**

Edited by: L. MAHDIJOURI, University of the West of England, UK; C.A. BREBBIA, Wessex Institute of Technology, UK and R. LAING, Robert Gordon University, UK

Building Information Modelling (BIM) in Design, Construction, and Operations contains the proceedings of the first in a planned series of conferences dealing with design coordination, construction, maintenance, operation and decommissioning. The book gives details of how BIM tools and techniques have fundamentally altered the manner in which modern construction teams operate, the processes through which designs are evolved, and the relationships between conceptual, detail, construction and life cycle stages.

The papers, contributed by experts from industry, practice and academia, debate key topics, develop innovative solutions, and predict future trends. The interdisciplinary nature of the contents and the collaborative practices discussed, so important within the built environment, will appeal to those engaged in design, surveying, visualisation, infrastructure, real estate, construction law, insurance, and facilities management.

Topics covered include: BIM in Design Coordination; BIM in Construction Operations; BIM and Life Cycle Project Management; BIM and Collaborative Working and Practices; BIM-facilities Management Integration; Interoperability Issues and BIM; BIM-GIS Integration; BIM in Building Operation and Maintenance; BIM and Automation in Construction; BIM Standards; BIM and Sustainability; BIM and Cultural Heritage.

WIT Transactions on The Built Environment, Vol 149


**NEW TITLE**

**Structural Studies, Repairs and Maintenance of Heritage Architecture XIV**

Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK and S. HERNÁNDEZ, University of A Coruña, Spain

Structural Studies, Repairs and Maintenance of Heritage Architecture (STREMAH 2015) book provides the necessary scientific knowledge required to formulate regulatory policies and to ensure effective ways of preserving the architectural heritage.

First held in 1989, the STREMAH conference attracts an extensive range of quality contributions from scientists, architects, engineers and restoration experts from all over the world dealing with various aspects of heritage buildings. The conference proceedings cover a wide range of topics related to the historical aspects and the reuse of heritage buildings, as well as technical issues on the structural integrity of different types of buildings, such as those constructed with materials as varied as iron and steel, concrete, masonry, wood or earth.

Topics include: Heritage Architecture and Historical Aspects; Assessment and Re-use of Heritage Buildings; Industrial Heritage; Learning from the Past; Material Characterisation; Heritage Masonry Buildings; Stone Masonry Walls; The Masonry Construction of Val d’Aran; Modern (19th/20th Century) Heritage; Cultural Heritage: Characterisation, Recovery and Conservation; Surveying and Monitoring; Simulation and Modelling; Seismic Vulnerability; Wooden Structures; Transportation Heritage; Social and Economic Aspects in Heritage.

WIT Transactions on The Built Environment, Vol 153


**Call for Papers from WIT**

**Islamic Heritage Architecture 2016**

International Conference on Islamic Heritage Architecture and Art

17–19 May 2016, Valencia, Spain

The Conference aims to highlight the importance of Islamic Heritage Architecture to the world and its influence across different regions.

Submit an abstract or register online: www.wessex.ac.uk/islamicheritage2016
Heritage Masonry
Materials and Structures

Edited by: S. SYNGELLAKIS, Wessex Institute of Technology, UK

Masonry is a traditional, highly durable mode of construction; many heritage masonry structures, built at various historical periods, have survived, to a lesser or greater extent, adverse environmental conditions that have reduced, sometimes considerably, their integrity, strength and durability. Due to the cultural significance of heritage architecture, resources are today allocated towards their restoration and conservation.

Topics covered include: Understanding of constituent materials, modes of construction and overall mechanical behaviour; Dynamic behaviour; Sonic pulse velocity tests; Micro-vibration measurements; Failure mechanisms; Structural strength assessment; Binding material mixtures; Composition and properties of ancient mortars; Contemporary repair material; Infra-red thermography measurements; Mortars, plasters, renders and grouts.

The various issues mentioned above are addressed by the present collection of scientific papers with considerable insight and thoroughness. It is thus hoped that this volume will fill a gap in the literature as a valuable source of information and guidance to researchers and engineers working in the area of restoration and conservation of heritage masonry structures.

Published 2013 / 192pp / £79.00

The Future of the City
Tall Buildings and Urban Design

K. AL-KODMANY, University of Illinois–Chicago, USA and M.M. ALI, University of Illinois at Urbana-Champaign, USA

"...this useful volume brings together a plethora of reliable information and analysis on both tall buildings and urban design."

CHOICE

Major cities of the world are facing a crisis of housing, shortage of workplace, polluted environment, and inadequate and deteriorating infrastructure. Existing cities have the challenge of how to introduce new tall buildings into the urban fabric whereas expanding cities are exploring new schemes about how to select the most appropriate sites and fashion the contextual setting of new tall buildings. Through a large number of wide-ranging visuals, sketches, and photographs as well as provocative textual narrative, The Future of the City: Tall Buildings and Urban Design enlightens its readers about integrating tall buildings into the cities of the future.

Drawing on the experiences of several cities from different parts of the world, the book provides a global perspective on the urbanisation phenomenon and tall building development and examines their underlying logic, design drivers, contextual relationships, and pitfalls. All graphic illustrations are accompanied by explanatory captions to illuminate further the related concepts. The book discusses spatial planning and sustainable strategies as well as offers pragmatic architectural and urban design guidelines to better design tall buildings for future cities.

Published 2013 / 460pp / £187.00
Architecture

Design & Intuition: Structures, Interiors & the Mind
C. LEWIS KAUSEL, Mount Ida College, USA

The important products of creativity have outlasted their creators. Society holds fast to favourite architecture – the attraction of ancient aesthetics is still active today. Images from the past connect with the contemporary psyche, reflecting architecture as an instrument of expression to which people respond. Because the cultivation of design involves both created outcomes and the cognitive behaviour of people, the input of the public is vital, and an important piece in the picture of creativity that has been missing from the existing literature.

Among the book’s conclusions is that the mind has its own built-in program (important in pre-human history) that prompts individuals to find or construct shelter. The author also recognises a phenomenon observed in philosophy, namely that in developing knowledge the mind sometimes arrives at solutions that parallel those of nature. The workings of the mind that arrive at human outlines could be a natural theme, or a way to function and comprehend a sheltering form, a phenomenon that is intimately a part of the larger picture.

Published 2012 / 276pp / £119.00

Heritage and Sustainability in the Islamic Built Environment
BASHIR A. KAZIMEE, Washington State University, USA

The essays in Heritage and Sustainability in the Islamic Built Environment provide up-to-date research and investigation into the various aspects of heritage and sustainability in the Islamic built environment, with an analysis of the problems that cities face as they confront the forces of globalisation and new development. The book embraces a wide array of principles, strategies and precedents that are instrumental to the design of cities and communities in Islamic regions in order to sustain their cultural and environmental vitality. The book’s contributors also provide the background on Islamic societies that is necessary in order to comprehend their rich architectural heritage and urban form.

The richly illustrated book is an important addition to the literature and will be of interest not only to design professionals and students of architecture, but also could appeal across several disciplines, such as urban geography, social sciences, literary studies and more.

CONTENTS: Place and meaning in urban Isfahan; Urban recovery: the architecture, but also could appeal across several disciplines, such as urban geography, social sciences, literary studies and more. Heritage and Sustainability in the Islamic Built Environment

Published 2012 / 276pp / £119.00

Light in Engineering, Architecture and the Environment
Edited by: K. DOMKE, Poznan University of Technology, Poland and C.A. BREBBIA, Wessex Institute of Technology, UK

This book contains papers presented at the first International Conference on Lighting in Engineering, Architecture and the Environment, held in Poznan, Poland, 2011. The Papers cover various aspects of the use of light for all kinds of technological purposes, art, medicine and environment. The subject areas discussed include: Architectural Lighting Design and Applications; Illumination of Architectural Objects; Outdoor Lighting; Indoor Lighting Design and Applications; Light and Human Health. The book will be of interest to architects, scientists who deal with lighting technologies, and experts in other fields of science and art related to the use of light.

WIT Transactions on The Built Environment, Vol 121
Published 2011 / 272pp / £117.00

A History of Ottoman Architecture
J. FREELY, Bosphorus University, Turkey

This book, intended for audiences with an interest in architecture, particularly that of the Ottoman Turks, is focused on the history of the extant buildings in the Republic of Turkey. The book begins with a brief history of the Ottoman Empire. It proceeds by outlining the main features of Ottoman architecture and includes a biography of the great Ottoman architect Sinan.

Successive chapters follow the development of Ottoman architecture, first in Iznik (Nicaea), then in Bursa and Edirne, the first and second capitals, and finally in Istanbul, the capital from 1453 until 1923. The first of the several chapters on Istanbul describes the rebuilding of the city. Greek Constantinople, after its conquest in 1454 by Sultan Mehmet II, who began the construction program that created a new Muslim capital. The remaining chapters follow the development of Ottoman architecture in Istanbul during the reigns of Mehmet’s successors, particularly Süleyman the Magnificent, who with his chief architect Sinan erected the most splendid mosque complexes that still adorn the old city.

Published 2011 / 464pp / £97.00

Traditional Architecture of the Arabian Gulf
Building on Desert Tides
R. HAWKER, Zayed University, Dubai

“This volume, which fills a void in the study of traditional Arabian Gulf architecture, will be a crucial reference for further study of particular buildings, regions, and domestic or public structures.”

CHOICE

This book chronicles the florescence of architecture in the Arabian Gulf after the expulsion of the Portuguese in the early 1600s. It demonstrates how the power vacuum created by the collapse of Portuguese control over the trade routes in the Indian Ocean encouraged a growth in fortified architecture, especially in Oman, that radiated out to the surrounding region. It also shows how that architecture was slowly replaced by new patterns in domestic and public architecture and town planning throughout the Gulf as trade lines were secured and individual states moved towards new forms of governance.

The book documents the building and crafts of this era and analyses them within the framework of the political, economic, and social information available through primary sources from the period in a way that is both intelligent and accessible. It considers the settlements as part of a larger-connected network of cities, towns and villages and focuses both on how the buildings provided innovative solutions to the demands of climate and yet incorporated new decorative and functional ideas.

Topics are illustrated with photographs of the buildings as they are now, historic photographs from archival and museum collections, line drawings and computer-generated constructions. The book is therefore attractive to
Architecture

The Conservation and Structural Restoration of Architectural Heritage

G. CROCI, University of Rome ‘La Sapienza’, Italy

“The book should be seen and known about by all engineers and architects who are developing their work in the field.”

THE STRUCTURAL ENGINEER

“...instructive and fascinating... The excitement and challenges of preserving and stabilizing historic buildings is captured by this very readable book.”

JOURNAL OF ARCHITECTURAL CONSERVATION

Bioengineering

Biotechnology

An Introduction

M. PELE and C. CIMPEANU, University of Agronomic Sciences and Veterinary Medicine, Romania

Comprised of 7 chapters, Biotechnology: An Introduction comprehensively covers all topics of biotechnology. A unique, concise and up-to-date resource, it offers readers, whether researchers, students, or interested members of the public, an innovative and valuable presentation of the subject. It has been carefully prepared to present the concepts with the help of diagrams, figures and tables. It covers the fundamental aspects and applications of biotechnology for the production of valuable products and services.

Each chapter is presented in a simple and systematic way to provide a thorough understanding of the core principles of science, the interrelationships between biotechnology and other disciplines and how biotechnology affects our everyday lives. The basic concepts of each step to be followed in developing a biotechnology process are clearly explained and their functions are highlighted.

A few recent developments in other fields have also been included to provide a contemporary understanding of the subject and the large domain of biotechnology applications. The last chapter contains some of the most recent examples of biotechnology applications such as green chemistry or environmental biotechnology. Finally, the book presents an annex which contains some of the most important discoveries that led to the development of biotechnology.

Published 2012 / 332pp / £143.00

The Great Structures in Architecture

From Antiquity to Baroque

F. ESCRIG PALLARES, Universidad de Sevilla, Spain

Starting in antiquity and finishing in the Baroque period, this book provides a complete analysis of significant works of architecture from a structural viewpoint. A distinguished architect and academic, the author’s highly illustrated exploration will allow readers to better understand the signs of continuous damage in heavy structures and in dealing with it.

Published 1998 / 272pp / £190.00

Learning from Failure

Long-Term Behaviour of Heavy Masonry Structures

Edited by: L. BINDA, Politecnico di Milano, Italy

On March 17 1989, the Civic Tower of Pavia collapsed without any apparent warning sign, killing four people. After an experimental and analytical investigation lasting nine months, the collapse cause was found in progressive damage dating back many years and due mainly to the heavy dead load put on top of the existing medieval tower when adding a massive bell-tower in granite. Other case histories have been collected: the 1902 St. Marco bell-tower collapse in Venice and the damages to the Monza Cathedral; bell-towerand to the Torrazzo in Cremona. Later on the 1996 Noto Cathedral collapse showed that similar progressive damage can take place in pillars of churches and cathedrals. Experimental research to demonstrate the reliability of this interpretation has been ongoing since 1989 and is described in the book. After a careful interpretation of the experimental results, also based on experiences from rock mechanics and concrete, the modelling of the phenomenon for massive structures as creep behaviour of masonry was implemented. Architects and engineers will find the book helpful to understanding the signs of continuous damage in heavy structures and in dealing with it.

Published 2008 / 252pp / £98.00

Bioengineering
The New Alchemists
The Risks of Genetic Modification

M. BIZZARRI, Roma University La Sapienza, Italy

"Recommended. All students, researchers/faculty, and general readers."

CHOICE

In The New Alchemists: The Risks of Genetic Modification the author presents GMOs, without any ideological bias, as viewed by biologists, physicists and other scientists, not just as understood by the small group of biologists who are involved in studies of (agricultural) transgenesis. He discusses the issue of plant biotechnology in the light of advances in complexity theory and nonlinear science. This more rigorous point of view has never previously been attempted. The text is sustained by more than 900 up-to-date references.

Fifteen years after the first genetically modified seeds and food, only four genetically modified plants have achieved significant market positions: corn, cotton, rapeseed and soybeans. Most of the other new constructs have caused unsolved problems or are only at the project stage, demonstrating the complexity of the task facing biotech companies. Doubts are also emerging about the real economic and agronomic benefits of genetically modified organisms. Little is known about their environmental impact and its potential to upset environmental biodiversity in an irreversible way. Warnings about their impact on human health have not been dispelled but have increased with the evident incapacity of current international standards to ensure controls and enforcement.

Discussion needs to be brought to a level of scientific proof that leaves no room for ambiguity or alibis. Governments, companies and scientists must be called to respond to the specific questions raised by the vast scientific literature. The author seeks a fair debate with all sides on an equal footing.

CONTENTS: Io sono il prologo; Once upon a time, there were...
Boundary Elements and other Mesh Reduction Methods XXXVIII
Edited by: A.H-D. CHENG, University of Mississippi, USA
and C.A. BREBBIA, Wessex Institute of Technology, UK

Containing the latest in a long line of conferences covering the most recent advances in Boundary Elements and Mesh Reduction Methods (BEM/MMR), this book contains an important chapter in the history of this important method used in science and engineering.

The BEM/MMR conference has long been recognised as THE international forum on the technique. The proceedings of the conference therefore constitute a record of the development of the method, running from the initial successful development of boundary integral techniques into the BEM, a method that eliminates the need for an internal mesh, to the recent and most sophisticated Mesh Reduction and even Meshless Methods. Since the boundary elements, mesh reduction, and meshless methods are used in many engineering and scientific fields, the book will be of great interest to all engineers and scientists working within the areas of numerical analysis, boundary elements and meshless methods.

Topics covered include: Advanced Formulations; Advanced Meshless and Mesh Reduction Methods; Structural Mechanics Applications; Solid Mechanics; Heat and Mass Transfer; Electrical Engineering and Electromagnetics; Computational Methods; Fluid Flow Modelling; Damage Mechanics and Fracture; Dynamics and Vibrations; Engineering Applications. WIT Transactions on Modelling and Simulation, Vol 61
Published 2015 / apx 640pp / apx £275.00

Boundary Elements and other Mesh Reduction Methods XXXVII
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK and A.H-D. CHENG, University of Mississippi, USA

Since 1978 the conference on Boundary Elements and Mesh Reduction Methods has produced a successful series of volumes in which all major developments in the field have been presented. The 37th volume in the series continues this success by bringing together the latest advanced research carried out by different groups around the world.

The included papers cover topics such as: Advanced Formulations; Advanced Meshless and Mesh Reduction Methods; Structural Mechanics Applications; Solid Mechanics; Dynamics and Vibrations; Fluid Flow Modelling; Electrical Engineering and Electromagnetics; Heat and Mass Transfer. WIT Transactions on Modelling and Simulation, Vol 57
Published 2014 / 324pp / £139.00

Boundary Elements and other Mesh Reduction Methods XXXVI
Edited by: X.W. GAO, Dalian University of Technology, China; A.H-D. CHENG, University of Mississippi, USA and C.A. BREBBIA, Wessex Institute of Technology, UK

Papers presented at the 36th Conference, contained in this volume, cover topics such as: Integration Techniques; Advanced Numerical Solvers; Hybrid Methods; Advanced Meshless Methods; Dual Boundary Element Techniques; Free Surface Techniques; Fracture and Crack Propagation; Acoustic Problems; Boundary Knot Method; Fundamental Solution Method; Heat Transfer; Multipole BEM; Structural Problems; Transient Response Methods. WIT Transactions on Modelling and Simulation, Vol 56
Published 2014 / 588pp / £244.00

Boundary Elements and other Mesh Reduction Methods XXXV
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK and A.H-D. CHENG, University of Mississippi, USA

The papers presented at the 35th conference cover topics such as Advanced Meshless and Mesh Reduction Methods; Advanced Formulations; Computational Methods; Stochastic Modelling; Emerging Applications; Solid Mechanics Applications; Dynamics and Vibrations; Damage Mechanics and Fracture; Material Characterisation; Fluid Flow Modelling; Electrical Engineering and Electromagnetics; Heat and Mass Transfer. WIT Transactions on Modelling and Simulation, Vol 54
Published 2013 / 252pp / £108.00

Modelling the Human Body Exposure to ELF Electric Fields
C. PERAitta and A. PERAitta, Wessex Institute of Technology, UK

This book presents numerical modelling techniques for investigating the behaviour of electric fields and induced currents in the human body exposed to various scenarios of extremely low frequency (ELF) high-voltage-low current electromagnetic fields.

A novel improved BEM approach is introduced in order to solve this type of problem more accurately and efficiently. The mathematical formulations for the case of human exposure to ELF electromagnetic fields departing from Maxwell equations and for the electrical properties of biological issue are provided. A variety of three-dimensional anatomically shaped human body models under different exposure conditions are presented and solved. The developed methodology is applied to three different cases: (i) overhead power transmission lines, (ii) power substation rooms, and (iii) pregnant women including fetus and evolving scenarios. In all the cases, a sensitivity analysis investigating the influence of varying geometrical and electrical properties of the tissues has been conducted. The results obtained from this research allow us to identify situations of high and low exposure in the different parts of the body and to compare them with existing exposure guidelines.

Series: Topics in Engineering, Vol 47
Published 2010 / 160pp / £59.00

Failure Assessment of Thin-walled Structures with Particular Reference to Pipelines
L. ZHANG, Wessex Institute of Technology, UK

This book describes integrity management procedures for thin-walled structures such as gas pipelines. It covers various methods for the analysis of crack growth in thin-walled structures and the probability of failure of pipelines using the Monte-Carlo simulation.

The focus of the book is on the practical applications of the boundary element method, finite element method and probabilistic fracture mechanics. Popular methods for SIF calculation and crack growth are presented and the evaluation of failure probabilities based on BS7910 is also explained in detail. The procedures described in the book can be used to optimise the maintenance of pipelines, thereby reducing the operating costs. Pipeline engineers, postgraduate students and university researchers will find this book useful.

Published 2010 / 160pp / £59.00
Trefftz and Collocation Methods
Z.-C. LI and T.-T. LU, National Sun Yat-sen University, Taiwan; H.Y. HU, Tunghai University, Taiwan and A.H.D. CHENG, University of Mississippi, USA

This book covers a class of numerical methods that are generally referred to as “Collocation Methods”. In contrast to the Finite Element and the Finite Difference Methods, the discretisation and approximation of the collocation method is based on a set of unstructured points in space. This “meshless” feature is attractive because it eliminates the bookkeeping requirements of the “element” based methods. This text discusses several types of collocation methods, including the radial basis function method, the Trefftz method, the Schwarz alternating method, and the coupled collocation and finite element method. Governing equations investigated include Laplace, Poisson, Helmholtz and bi-harmonic equations. Regular boundary value problems, boundary value problems with singularity, and eigenvalue problems are also examined. Rigorous mathematical proofs are contained in these chapters, and many numerical experiments are also provided to support the algorithms and to verify the theory.

Published 2008  /  432pp / £163.00

Modelling of Cathodic Protection Systems
Edited by: R.A. ADEY, BEASY and Wessex Institute of Technology, UK

“Th e industry practitioner will find parts of the selection of articles in this collection extremely relevant. Th e researcher will th ind advanced articles to be highly specific and relevant to those areas where the editor has been a prolific contributor. Th e collection is highly unique in this regard – as a unique area of applied mathematics, the articles treat th e optimization problem viz. th e BEM method, in a straightforward manner, without taking away from the significant aspects of corrosion.”

JOM

Bringing together the latest developments in the numerical simulation of galvanic processes, this up-to-date book covers design and optimization of cathodic protection systems, predicting corrosion-related electric and magnetic fields and galvanic coating processes. Th e chapters are by leading engineers and scientists in th e field.

Series: Advances in Boundary Elements, Vol 12
Published 2006  /  272pp / £109.00

Boundary Elements
An Introductory Course Second Edition
C.A. BREBBIA, Wessex Institute of Technology, UK and J. DOMÍNGUEZ, University of Seville, Spain

This book gives a simple introduction to the Boundary Element Method. Th e text is accessible to undergraduate and graduate students and to practising engineers. A CD with a complete listing of FORTRAN program codes is included.

Reprinted 2007 / 320pp+CD / £171.00

Damage & Fracture Mechanics

Projectile Impact
Modelling Techniques and Target Performance Assessment
Edited by: S. SYNGELLAKIS, Wessex Institute of Technology, UK

High energy impact phenomena have been investigated by engineers of various backgrounds and disciplines. Structures often need to be designed against impact or potential attack and on the other hand the removal of decommissioned structures may be achieved by shaped charge impact, alternatively known as explosive cutting.

Th e topic of ballistic impact is wide-ranging and encompasses various levels of kinetic energy input as well as a multitude of projectile-target materials and geometries. It has thus become the object of many experimental and analytical investigations resulting in numerous sparsely-spread articles in periodicals and conference proceedings as well as monographs narrowly focusing on specific types and ranges of impact scenarios.

Th is volume describes a broad spectrum of analytical and experimental work in this area, thus providing considerable insight into the complexity and diversity of impact phenomena. By addressing a significant number of important issues it combines, rather uniquely, subject breadth and density with in-depth study of impact events of great engineering interest.

WIT Transactions on State-of-the-art in Science and Engineering, Vol 75
Published 2014 / 244pp / £105.00

Design Against Blast
Load Definition and Structural Response
Edited by: S. SYNGELLAKIS, Wessex Institute of Technology, UK

Terrorist attacks and other destructive incidents caused by explosives have, in recent years, prompted considerable research and development into the protection of structures against blast loads. Experiments have been performed and theoretical studies carried out to improve our assessments of the intensity as well as the space-time distribution of the resulting blast pressure on the one hand and the consequences of an explosion to the exposed environment on the other.

Th is book enhances awareness and understanding of these topical issues through a collection of relevant articles from th e Transactions of th e Wessex Institute of Technology written by experts in th e field. Th e book starts with an overview of key physics-based algorithms for blast and fragment environment characterisation, structural response analyses and structural assessments with reference to a terrorist attack in an urban environment and th e management of its inherent uncertainties.

A subsequent group of articles is concerned with alternative methods for the determination of blast pressure, based on experimental measurements or neural networks. A final group of articles reports investigations on predicting the response of specific structural entities and their contents.

Th e book concludes with studies on th e effectiveness of steel-reinforced polymer in improving th e performance of reinforced concrete columns and th e failure mechanisms of seamless steel pipes used in th e nuclear industry.

WIT Transactions on State-of-the-art in Science and Engineering, Vol 60
Published 2013 / 224pp / £93.00
Nonlinear Analyses of Laminated Plates and Shells with Damage

YI-MING FU, Hunan University, China

In recent years, damage problems in fibre-reinforced composite laminated structures have attracted considerable interest and attention from researchers in both academic and engineering fields. This book summarises the results of research in the area of nonlinear problems of laminated plates and shells conducted by the author and his graduate students over the past decades. The main content comes from research papers published in leading international and national academic journals.

Published 2013 / 796pp / £359.00

FORTHCOMING

Eco-Architecture VI
Harmonisation between Architecture and Nature

Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK

Comprising the proceedings of the Sixth International Conference on Harmonisation between Architecture and Nature, the papers deal with topics such as building technologies, design by passive systems, design with nature, cultural sensitivity, life cycle assessment, resources and rehabilitation as well as many others. This book follows five successful meetings which started in the New Forest, UK in 2006, then followed in the Algarve (2008), A Coruna (2010), Kos (2012) and Siena, Italy (2014).

Eco-Architecture signifies a new approach to the design process intended to harmonise its products with nature. This involves concepts such as minimum use of energy at each stage of the building process, taking into account the amount required during the extraction and transportation of materials, their fabrication, assembly, building formation, maintenance and eventual future recycling. The adaptation of the architectural design to the natural environment, is a further important issue.

The book will be of interest to architects, engineers, planners, physical scientists, sociologists and economists. They will find within these proceedings case studies from many different places around the world.

Topics covered consist of: Design with Nature; Energy Efficiency; Tall Buildings and Environment; Ecological Impacts of Materials; Biomaterials; Bioclimatic Design; Water Quality; Green Facades; Ecological; Education and Training; Adapted Reuse; Transformative Design; Sustainability Indecies in Architecture; Bioclimatic Design and Passive Systems; Recycle, Reuse, Reduce and Recovery; Mixing it up and Building Flexibility; Architectural Visualisation and New Techniques: Building Information Modelling.

WIT Transactions on The Built Environment, Vol 161
Forthcoming 2016 / apx 700pp / apx £298.00

BEST SELLER

Eco-Architecture V
Harmonisation between Architecture and Nature

Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK and R. PULSELLI, University of Siena, Italy


Eco-Architecture by definition is a highly multi-disciplinary subject. This book will therefore be of interest not only to architects but also to many other professionals, including engineers, planners, physical scientists, sociologists and economists.

Topics covered include: Design with Nature; Energy Efficiency; Tall Buildings and Environment; Ecological Impacts of Materials; Bioclimatic Design; Ecological and Cultural Sensitivity; Education and Training; Case Studies; Design by Passive Systems; Adapted Reuse; Life Cycle Assessment and Durability; Sustainability Indecies in Architecture; Heat and Mass Transfer

WIT Transactions on The Built Environment, Vol 142
Published 2014 / 648pp / £279.00
Design and Information in Biology
From Molecules to Systems
Edited by: J.A. BRYANT, University of Exeter, UK; M.A. ATHERTON and M.W. COLLINS, Brunel University West London, UK
Highlighted with individual contributions from eminent specialists, this is one of two multi-authored volumes that combine authority, inspiration and state-of-the-art knowledge. Both informative and inspiring, they are designed to appeal to scientists and interested laypeople alike.
This volume complements and extends the scope of the first volume in the series, Nature and Design, with the biological viewpoint being stressed. Following an introductory chapter on design as understood in biology, the various aspects of the biological information revolution are addressed. Areas discussed include molecular structure, the genome, development, and neural networks. A section on information theory provides a link with engineering, and the scope is also broadened to include the implications of motion in nature and engineering.
Series: Design and Nature, Vol 2
Published 2007 / 512pp / £190.00

Flow Phenomena in Nature
Volume 1 – A Challenge to Engineering Design
Volume 2 – Inspiration, Learning and Application
Edited by: R. LIEBRE, SIEMENS Power Generation, Germany
Do we have an adequate understanding of fluid dynamics phenomena in nature and evolution, and what physical models do we need? What can we learn from nature to stimulate innovations in thinking as well as in engineering applications?
Concentrating on flight and propulsion, this unique and accessible book compares fluid dynamics solutions in nature with those in engineering. The respected international contributors present up-to-date research in an easy to understand manner, giving common viewpoints from fields such as zoology, engineering, biology, fluid mechanics and physics. This transdisciplinary approach eliminates barriers and opens wider perspectives to both of the challenging questions above.
Volume 1 – A Challenge to Engineering Design
Series: Design and Nature, Vol 7
Published 2007 / 416pp / £150.000

Volume 2 – Inspiration, Learning and Applications
Applications in Engineering and Medicine: Inspirations from Nature; Steady and Unsteady Fluid Dynamics: Specific Numerical and Experimental Methods.
Series: Design and Nature, Vol 8
Published 2007 / 432pp / £150.00

SET ISBN: 978-1-84564-099-6 / £269.00 (10% saving when you buy two volumes together)

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Repair and Redesign of Physiological Systems
Edited by: M. ATHERTON and M.W. COLLINS, Brunel University West London, UK and M. J. DAYER, Taunton & Somerset Hospital, UK
Topics covered include vascular surgery planning, cardiac and vascular device design, immunotherapeutics and nasal and dental repair. Some chapters address patient-specific issues, while others, more generically, relate to preserving the integrity of the human surface-structure and the challenges of computer modelling of the complexities and multiscale nature of human physiome.
Series: Design and Nature, Vol 9
Published 2008 / 304pp / £109.00

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Design and Nature VI
Comparing Design in Nature with Science and Engineering
Edited by: S. HERNÁNDEZ, University of A Coruña, Spain and C.A. BREBBIA, Wessex Institute of Technology, UK
Throughout history, many leading thinkers have been inspired by the parallels between nature and human design, in mathematics, engineering and other areas. Today, the huge increase in biological knowledge and developments in design engineering systems, together with the growth in computer power and developments in simulation modelling, have all made possible more comprehensive studies of nature. These developments have been reviewed biennially in a series of conferences first held in 2002. This book contains the papers presented at the latest conference in the series.
Topics include the following: Mechanics in Nature; Nature and Architecture; Natural Materials and Processes; Solutions from Nature; Biomimetics and Bio-inspiration; Biocapacity; Education in Design and Nature; Competition in Nature; Biological Engineering; Conceptual Theory; Locomotion in Nature; Gravitational Biology; Self-sustaining Environments.
The book will be of interest to researchers from around the world who work on studies involving nature and its significance for modern scientific thought and design.
WIT Transactions on Ecology and the Environment, Vol 160
Published 2012 / 332pp / £143.00

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Eco-Architecture IV
Harmonisation between Architecture and Nature
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK
Containing the proceedings of the fourth in a series of conferences on the emerging topic of eco-architecture, this book presents recent research in the field.
Papers presented cover topics such as: Ecological and Cultural Sensitivity; Building Technologies; Ecological Impact of Materials; Education and Training; Design with Nature; Energy Efficiency, Biosclimatic Design; Vertical Greenery Systems; Case Studies.
WIT Transactions on Ecology and the Environment, Vol 165
Published 2013 / 464pp / £199.00

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All Books in this Catalogue are Available Both as Print and eBook
Earthquake Engineering

NEW TITLE

Damage-based Earthquake Engineering

P. GHISBAIN, Massachusetts Institute of Technology, USA

Over the life of a structure, the smaller but more frequent earthquakes contribute more to the cumulative damage than the larger earthquakes on which structural design is traditionally based. This is a quantitative argument in favour of designing structures beyond what the codes require for life-safety.

This book presents a computational method to evaluate the damage sustained by a building over its lifetime in a seismic environment. The ability to estimate future damage is relevant to a pair of current trends in earthquake engineering: a growing interest for preventing damage on top of protecting the public, and development of performance-based design. The proposed method combines probabilistic principles with traditional structural analysis, which makes it readily applicable to the evaluation of planned structures in an engineering office. The analytical models, computational steps and supporting data used to produce an estimate of damage are discussed, and variants of the method with different run time and accuracy are considered.

As an example of application to structural design, the book proposes a method to optimise placement of viscous dampers in buildings by minimising a life-cycle cost that includes the investment in damping and the losses due to future damage. Along with the results obtained in the course of other examples, the optimal solutions support a shift toward more resilient structures designed to mitigate structural and nonstructural damage beyond the traditional life-safety requirements.

Published 2015 / 224pp / £96.00

BEST SELLER

Earthquake Ground Motion

Input Definition for Aseismic Design

Edited by: S. SYNGELLAKIS, Wessex Institute of Technology, UK

The best way to minimize damage from earthquakes is to predict their location and effects and reinforce against those possible effects. Toward that end, this book presents prediction methods useful for the design of earthquake-resistant structures.

In the first of two parts, the book deals with issues relating to the characterisation and the rational definition of seismic input. It begins with a study of earthquake records that leads to the identification of their damage potential parameters, such as the peak-ground acceleration and the strong motion duration.

Subsequent chapters concern themselves with the deterministic and probabilistic methodologies for producing seismic inputs. Further chapters are dedicated to the generation of artificial seismic input on the basis of stochastic or probabilistic approaches.

The second part of this volume deals with the effects of ground motion on foundation elements and structural integrity. Particular emphasis is given to the interaction of foundation piles with vibrating soils, homogeneous or heterogeneous. The final two chapters are concerned with the possible connection between soil structure interaction (SSI) and structural damage. In both instances records of actual earthquake induced motion are used for such assessments.

Published 2015 / 216pp / £88.00

Earthquake–Soil Interaction

Edited by: S. SYNGELLAKIS, Wessex Institute of Technology, UK

Comprises a selection of articles on interactions between earthquakes and the soil in which they propagate. The book is concerned with soil composition and geomechanical features, which affect earthquake propagation and intensity; it also addresses detrimental effects of seismic shaking on soil properties and stability.

Modelling is applied to investigate the effects of cracks and various types of soil damping on seismic waves. Elastic, poroelastic, elastoplastic, constitutive models are adopted in conjunction with rigorous mathematical techniques or approximate methods such as boundary elements or finite differences.

A substantial part of this volume is dedicated to soil liquefaction, an important consequent of seismic shaking that results in substantial loss of soil strength and stiffness. Criteria are proposed for assessing the liquefaction potential of a site. Data collected from soil samples, either in the laboratory or in-situ, are analysed to provide values for the critical parameters on which liquefaction depends.

The occurrence of landslides is addressed by assessing slope stability through a systematic geophysical and geotechnical characterisation of the soil mass followed by finite element modelling. The bearing capacity of the soil is directly obtained by laboratory testing of soil samples, as well as from reliable empirical relations generated by combining such test data with in-situ measurements of soil dynamic properties.

Published 2015 / 264pp / £110.00

Retrofitting of Heritage Structures

Design and evaluation of strengthening techniques

Edited by: S. SYNGELLAKIS, Wessex Institute of Technology, UK

The preservation of heritage architecture is a cultural objective rigorously pursued by communities and nations wishing to promote their history, civilisation and aesthetic achievements. Structures built in the remote past by traditional methods have suffered the consequences of extreme loading events, such as earthquakes, over long time periods. Retrofitting is an approach based on recent technological developments and scientific knowledge, whereby modern construction methods and materials are applied to the repair and strengthening of historical structures. This book aims to inform on current retrofitting techniques, their application to various types of historical architecture and their effectiveness to fulfil their purpose.

Retrofitted structural forms covered in the book vary widely, from age old places of worship such as churches, mosques and temples, as well as castles and palaces, to more modern, distinguished private residences or public buildings, some of them designed by well known architects. Their methods of construction range from traditional, such as stone or brick masonry, to more recent textile block systems and even reinforced concrete frameworks. Reference is made to detailed visual inspections of damaged structures providing valuable insight into possible causes of failure, such inspections are usually combined with material characterisation, which is an essential input to numerical modelling for assessing the behaviour of the structure before and after retrofitting.

Retrofitting of Heritage Structures: Design and evaluation of strengthening techniques will be of interest to members of academic institutions, government or private cultural preservation establishments and specialist consultant engineers.

The book contains very practical, technical advice on many issues; this would be of considerable interest to construction companies specialising in repair and maintenance of historical structures.

Published 2013 / 200pp / £93.00
Earthquake Engineering

Seismic Control Systems
Design and Performance Assessment
Edited by: S. SYNGELLAKIS, Wessex Institute of Technology, UK

Earthquakes remain largely unpredictable and potentially catastrophic, a matter of continuous concern to communities in affected zones. Scientists and engineers have made a considerable effort to mitigate their consequences through the design of effective protective devices. New concepts have recently been developed to address the requirements for better structural performance and a more effective use of new materials at a lower cost.

The first four papers, contained in the book, provide a very comprehensive review of existing seismic control designs highlighting their variety and the effectiveness of their performance, as well as the extent of their use for the protection of various types of structures world wide. Most articles deal with anti-seismic devices implementing passive control of structural response through seismic isolation and energy dissipation. Testing and modelling energy-dissipating systems are also extensively covered in the book.

It is also important to understand how existing structures fitted with seismic control devices perform against earthquakes. Two such case studies are included in the book; a roof isolated from the top of an existing structure and a bridge supported on both isolating and damping systems. Finally, new analytical approaches for optimising the performance of tuned mass dampers are detailed in two companion papers.

Published 2013 / 208pp / £93.00

Earthquake Resistant Engineering Structures IX
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK and S. HERNÁNDEZ, University of A Coruña, Spain

The book contains papers presented at the 9th International Conference, They cover: Seismic Hazard Evaluation and Micro Zoning for Structural Design; Building Performance During Earthquakes; Performance Based Design; Seismic Isolation and Energy Dissipation; The Upgrade of Buildings to Mitigate Seismic Hazard; Case Studies.

WIT Transactions on The Built Environment, Vol 152
Published 2015 / 464pp / £199.00

The Chilean Earthquake and Tsunami 2010
A multidisciplinary study of Mw 8.8, Maule
Edited by: L.A. CÁRDENAS-JIRÓN, Universidad de Chile, Chile

The Chilean Earthquake and tsunami 2010: A multidisciplinary study of Mw8.8, Maule discusses the Chilean earthquake that occurred on 27 February 2010. It reached a magnitude of 8.8 Mw and had its epicentre in Coquimbo, in the Bio-Bio region. The phenomenon mainly affected central Chile, which comprises the regions of Araucanía, Bio-Bio, Maule, General O’Higgins, Valparaíso and Metropolitan. As of February 2010 it was the fifth largest earthquake on a worldwide scale ever to have occurred.

The book presents a comprehensive view of the occurrence, being organised in six chapters written by remarkable authors from different disciplines. The contributions come from the fields of geophysics, hydro-mechanical engineering, telecommunication, geographic information systems, urban and design planning, building engineering, architecture and urbanism. Authors from academia and the public and private sectors give an idea of complementary approaches that range from theoretical descriptions to practice and emergency solutions.

CONTENTS: Introduction; The Maule Mw 8.8 earthquake: a seismological view, Tsunami generation and propagation; Lessons to be learnt from Architectural damage on urban settlements in Chile; The reconstruction process of coastal cities in the north of the Bio-Bio region; The Chilean Internet: did it survive the earthquake?, Using remote sensing and GIS to contribution in earthquake disaster management.

Published 2013 / 172pp / £74.00

Earthquake Resistant Engineering Structures X
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK

Containing the latest research on preparation for and mitigation of future earthquakes, this book addresses an area of increasing importance to many areas around the world. It contains research presented at the tenth and latest in a series of biennial conferences on the topic organised by the Wessex Institute.

As world population has concentrated in urban areas, we have seen the consequences of natural disasters take an ever higher toll in human life and property. Adding to this trend, earthquake activity is being registered in areas that were not previously very active. Thus there is a need for research into the application of technological advances to the specific area of earthquake engineering. This volume presents those advances.

The papers cover such topics as: Building Performance during Earthquakes; Performance Based Design; Vulnerability; Seismic Isolation and Energy Dissipation; The Upgrade of Buildings to Mitigate Seismic Hazard; Case Studies.

WIT Transactions on The Built Environment, Vol 132
Published 2015 / 344pp / £148.00

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Ecology

Ecological Dimensions for Sustainable Socio Economic Development

Edited by: A. YAÑEZ-ARANCHIA and R. DÁVALOS-SOTELO, Instituto de Ecología A. C., México; J. W. DAY, Louisiana State University, USA and E. REYES, East Carolina University, USA

This book fills a gap in the literature on environmental sustainability by addressing the topic from the perspective of social and economic development. Progress in understanding and achieving sustainability requires the integration of scientific, social, economic, and legal issues. Yet progress in understanding and achieving will only be achieved through integration of scientific, social, economic, and legal aspects. A treatise on environmental sustainability should raise the current state of knowledge by proposing and recommending decision-making efforts and breaking new ground with agendas aimed for the younger generation. These younger scientists will be confronted with future uncertainty related to the set of crises that characterize the 21st Century (e.g. ecological, social, food, energy, environmental, climatic, financial, etc.).

Currently, there are a number of indicators that demonstrate that ecological conditions are being compromised globally. These include reduced primary productivity, reduction in biological complexity, spreading pollution such as eutrophication, ecological degradation in any continental/basin/coastal/sea ecosystem, reduction in biodiversity, lowered resilience and slow recovery of damaged ecosystems, and reduced ecological integrity. All of these problems are related to social and economic pressure. The challenge for most ecological systems is not only to establish the baseline for current ecosystem conditions, but also to explore options for recovery and sustainability. The latter involves ecological restoration where ecosystem and environmental services are maintained and enhanced. These services are essential to social integration and economic development.

This book not only introduces a theoretical and conceptual framework for the topic, but also analyses the uncertainty for sustainability because of dwindling natural resources. It includes contributions providing a basis for public policies, case studies integrating concepts and tools for solutions, and a set of position papers addressing new agenda topics that will shape the 21st century. The book will be useful for researchers, professors and students alike, as well as for all stakeholders from social, economic and academic sectors.

Published 2013 / 628pp / £273.00

Lake Sustainability

Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK and S.E. JØRGENSEN, University of Copenhagen, Denmark

This book contains extended versions of papers presented at the 1st International Conference on Lake Sustainability held at the Wessex Institute of Technology (WIT) campus in the New Forest. The meeting is a natural link in the chain of sustainability conferences that formed the 21st century. The book was useful for researchers, professors and students alike, as well as for all stakeholders from social, economic and academic sectors.

A wide spectrum of contributions focusing on lake sustainability and many up-to-date aspects of lake management and limnology are covered by the fifteen papers selected for publication.

The papers draw an excellent picture of the recent developments in lake modelling, limnology of lakes and lake management. Readers will find useful the sustainability image of lakes presented in this volume.

WIT Transactions on State-of-the-art in Science and Engineering, Vol 57

Published 2013 / 212pp / £98.00

Ecological Modelling: An Introduction

S.E. JØRGENSEN, University of Copenhagen, Denmark

This textbook is ideal to be used alongside the Handbook of Ecological Modelling and Informatics for third-year students to answer the question: how to go modelling? Jørgensen clearly details the basic knowledge for ecological modelling, with useful illustrations and examples. These give the user an excellent tool to understand what the various model types/network calculations can do and when to use which type as a tool to solve a specific problem.

Published 2009 / 208pp / £79.00

Handbook of Ecological Modelling and Informatics

Edited by: S.E. JØRGENSEN, University of Copenhagen, Denmark; T.-S. CHON, Pusan National University, Korea and F.A. RECKNAGEL, University of Adelaide, Australia

Gives an overview of all modelling types and network calculations that are in use today. The CD included with the book shows 12 different models/network calculations to illustrate the various types and also three softwares that make it possible to develop your own models. With the book in hand, the user has an excellent tool to understand what the various model types/network calculations can do and when to use which type as a tool to solve a specific problem. The CD with diagrams makes the tool unique and particularly illustrative.

Published 2009 / 480pp +CD / £207.00

Ecosystems and Sustainable Development X

Edited by: J.L. MIRALLES I GARCIA, Universitat Politècnica de València, Spain and C.A. BREBBIA, Wessex Institute of Technology, UK

The Tenth International Conference on Ecosystems and Sustainable Development is the latest in a well established series that originated from the work of the late Nobel laureate, Ilya Prigogine, who challenged us to develop the science of “ecodynamics,” integrating thermodynamics, ecology and economics. The papers presented at the conference, contained in this book, cover not only new research from all over the world related to ecological problems, but also new ideas and emerging concepts resulting from interdisciplinary efforts of scientists, engineers and economists.

Papers cover topics such as: Ecosystem Modelling; Natural Resources Management; Natural Resources in Periurban Spaces; Environmental Management; Sustainable Development and Planning; Sustainable Development Studies; Energy Issues; Sustainable Indicators, Monitoring and Assessment; Ecosystem Restoration; Policies; Water Management.

WIT Transactions on Ecology and the Environment, Vol 192

Published 2015 / 502pp / £216.00

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WIT Transactions on Ecology and the Environment, Vol 192

Published 2015 / 502pp / £216.00
Ecosystems and Sustainable Development IX

Edited by: A.M. MARINOV, University Politehnica of Bucharest, Romania and C.A. BREBBIA, Wessex Institute of Technology, UK

Containing papers presented at the Ninth International Conference in the well-established conference series on Ecosystems and Sustainable Development, this book originates from the work of the late Nobel laureate, Ilya Prigogine, and challenges us to develop the new science of “ecodynamics,” integrating thermodynamics, ecology and economics. It covers not only novel research related to ecological problems from all over the world, but also new emergent ideas arising from the cross fertilisation of different disciplines, including evolutionary thermodynamics and biodiversity, structures in ecosystems modelling and landscapes, mathematical models and eco-informatics, to mention but a few.

The papers in the book cover such topics as: Modelling; Sustainable Development and Planning; Energy and the Environment; Water Resources Issues; Ecosystems and Change; Environmental Economics; Biomemetics.

WIT Transactions on Ecology and the Environment, Vol 175
Published 2013 / 348pp / £150.00

Ecological Indicators for Coastal and Estuarine Environmental Assessment
A User Guide

J.C. MARQUES, University of Coimbra, Portugal; F. SALAS, University of Murcia, Spain; J. PATRÍCIO, H. TEIXEIRA and J. NETO, University of Coimbra, Portugal

Experience demonstrates that none of the available measures for biological and ecological effects of pollution can be considered ideal. The use of a single approach does not seem appropriate due to the complexity inherent in assessing the environmental quality of a system. Rather, this should be evaluated by combination of indicators providing complementary information.

A decision key has been built with the aim of helping managers and authorities of coastal areas to select the most suitable ecological indicators, taking into account the type of disturbance and the data available. It includes numerous indicators based on benthic invertebrate fauna information. This allows the monitoring of long-term responses and site-specific impacts in coastal and transitional water ecosystems, because benthic communities integrate environmental conditions and changes in a very effective way. The decision system is based not only on theoretical approaches, but also on results from its application using databases corresponding to various geographical areas.

Published 2009 / 208pp / £91.00

Eco-Exergy as Sustainability

S.E. JØRGENSEN, The University of Pharmaceutical Science, Denmark

In recent years, the economy has determined the agenda when cost/benefit analyses are applied to environmental issues. This inevitably leads to wrong decisions because the uncertainties of the cost/benefit analyses are often magnitudes higher than those estimated by the economists. Therefore, these analyses should be replaced or supplemented by the concept of sustainability and the decision-making process. This book represents the first attempt to apply eco-exergy, a thermodynamic concept used to describe the development of ecosystems, to express sustainability and use it in a non-ecological context.

Partial Contents: Introduction; You Cannot Escape the Thermodynamic Laws; Exergy; Application of Eco-Exergy in Human Activities and Ecosystems; Eco-Exergy as an Ecosystem Health Indicator; Eco-Exergy as an Ecosystem Health Indicator for Lakes; Eco-Exergy as an Ecosystem Health Indicator for Coastal Areas; Eco-Exergy as an Ecosystem Health Indicator for Agricultural Systems; Eco-Exergy Losses and Gains in the Society; Properties of Ecosystems; Ecological and Sustainable Management of Agricultural Systems; Ecological and Sustainable Management of Industrial Systems; A Society Based on Ecological Principles; Conclusions and Summary; Index.

Series: The Sustainable World, Vol 16
Published 2006 / 224pp / £91.00

Electrical Engineering & Electromagnetics

Electromagnetics Engineering Handbook
Analysis and Design of Electrical and Electronic Devices and Systems
P.R. HOOLE, University of Malaya, Malaysia; K. PIRAPAHARAN, Taylor’s University, Malaysia and S.R.H. HOOLE, Michigan State University, USA

Electromagnetic fields, both static and dynamic, form the foundational basis of all electrical and electronic engineering devices and systems. Aimed at undergraduate students, university teachers, design and consultant engineers and researchers this book presents an in-depth, simple and comprehensive reference source on electromagnetics engineering.

In much of electrical and electronics engineering (including: analogue and digital telecommunications engineering; biomedical monitoring and diagnostic equipment; power systems engineering and sensor technology) getting back to the fundamental principles that govern the technologies, namely electromagnetic fields and waves, has become crucial for future customer friendly technology and systems.

Electromagnetics Engineering Handbook has been written to enable undergraduate students studying electromagnetics engineering for the first time to gain an understanding of the essentials of the largely invisible, but powerful, electromagnetic fields governed by the four elegant Maxwell’s equations. Moreover, the book helps to apply that knowledge through analytical and computational solutions of these frequency and material dependent electric and magnetic fields. As electrical and electronic engineering grows and subdivides into many specialties this book aims to inform the reader of the basic principles that govern all of these specialised systems and of how to apply that knowledge to understand and design devices and systems that may operate at vastly different frequencies and in various media (e.g. semiconductor materials, magnetic materials, biological tissues, outer space and sea water).

It also deals with a range of different functions dependant on the area of application. For example at very low power frequencies electromagnetic fields perform vastly different functions from device to device, such as in power transformers; current transformers; infrared sensors; synchronous generators; superconducting devices; electric motors and electric powered transport systems. This handbook will be of great help to students, engineers, innovators and researchers working in a wide variety of disciplines.

Published 2013 / 432pp / £186.00

All Books in this Catalogue are Available Both as Print and eBook
Electromagnetic Field Interaction with Transmission Lines
From Classical Theory to HF Radiation Effects

Edited by: F. RACHIDI, Swiss Federal Institute of Technology, Switzerland and S.V. TKACHENKO, Otto-von-Guericke University Magdeburg, Germany

The evaluation of electromagnetic field coupling to transmission lines is an important problem in electromagnetic compatibility. Traditionally, use is made of the TL approximation which applies to uniform transmission lines with electrically small cross-sectional dimensions, where the dominant mode of propagation is TEM. Antenna-mode currents and higher-order modes appearing at higher frequencies are neglected in TL theory. The use of the TL approximation has permitted the solution of a large range of problems (e.g. lightning and EMP interaction with power lines). However, the continual increase in operating frequency of products and higher frequency sources of disturbances (such as UWB systems) means that the TL basic assumptions are no longer acceptable for a certain number of applications. In the last decade or so, the generalisation of classical TL theory to take into account “high frequency” effects has emerged as an important topic of study in electromagnetic compatibility. This effort resulted in the elaboration of the so-called “generalised” or “full-wave” TL theory, which incorporates “high frequency” radiation effects, while keeping the relative simplicity of TL equations.

This book is organised in two main parts. Part I presents consolidated knowledge of classical transmission line theory and different field-to-transmission line coupling models. Part II presents different approaches developed to generalise TL Theory.

Series: Advances in Electrical Engineering and Electromagnetics, Vol 5
Published 2008 / 288pp / £109.00

Boundary Element Methods for Electrical Engineers

D. POLJAK, University of Split, Croatia and C.A. BREBBIA, Wessex Institute of Technology, UK

This book presents BEM in a simple fashion in order to help the beginner to understand the very basic principles of the method. It initially derives BEM for the simplest potential problems and subsequently builds on these to formulate BEM for a wide range of applications in electromagnetics.

The book introduces both undergraduate and graduate students to the BEM fundamentals in a way that enables the reader to solve more complex problems on their own. In addition, it will serve as a useful text to enable professional engineers and research students to make full use of BEM in electrical engineering.

Series: Advances in Electrical Engineering and Electromagnetics Vol 4
Published 2005 / 208pp / £102.00

Energy

FORTHCOMING

Energy Production and Management in the 21st Century II
The Quest for Sustainable Energy

Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK

Discussing the future of energy production and management in a changing world, this book presents the proceedings of the 2nd International Conference on Energy Production and Management in the 21st Century: The Quest for Sustainable Energy. The intention of the conference is to examine the future of energy production and management in a changing world and follows on from the first and very successful meeting held in Ekaterinburg, Russia in 2014.

Developed societies require an ever increasing amount of energy resources, which creates complex technological challenges. The challenge in many cases is the conversion of new sources of energy into useful forms such as electricity, heat and fuel while finding efficient ways of storing and distributing energy. Equal challenges lie with the production of such renewable energy at an acceptable cost, including damage to the environment, as well as with integration of those resources into the existing infrastructure.

The book deliberates the energy use of industrial processes, including the imbedded energy contents of materials, such as those in the built environment. Energy production, distribution and usage, result in environmental risks which need to be better understood. They are part of the energy economics and relate to human environmental health as well as ecosystems behaviour.

A number of topics are covered including: Energy and the City; Energy Security; Energy Distribution; Energy Networks; Processing of Oil and Gas Emissions; Pipelines Renewable Energies; Energy use in Building; Industry and Transport; Safety Management; Tight Energy Fields; Energy and Climate Change and Biomass and Biofuels.

WIT Transactions on Ecology and the Environment, Vol 205
Forthcoming 2016 / apx 1000pp / £430.00

Call for Papers from WIT

Energy Quest 2016
2nd International Conference on Energy Production and Management in the 21st Century

6–8 September 2016, Ancona, Italy

The 2nd International Conference on Energy Production and Management in the 21st Century: The Quest for Sustainable Energy follows the very successful meeting held in Ekaterinburg in 2014. The aim of the meeting is to discuss the future of energy production and management in a changing world.

The objective is to compare conventional energy sources, particularly hydrocarbons, with a number of other ways of producing energy, emphasising new technological developments, based on renewable resources such as solar, hydro, wind and geothermal. A key issue is the conversion of new sustainable sources of energy into useful forms (electricity, heat, fuel), while finding efficient ways of storage and distribution.

Submit an abstract or register online:
www.wessex.ac.uk/energyquest2016
Energy Production and Management in the 21st Century
The Quest for Sustainable Energy

(2 Volume Set)

Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK; E.R. MAGARIL and M.Y. KHODOROVSKY, Ural Federal University, Russia

Discussing the future of energy production and management in a changing world, these books contain the proceedings of the first international conference on Energy Production and Management in the 21st Century – The Quest for Sustainable Energy.

Developed societies require an ever increasing amount of energy resources, which creates complex technological challenges. Energy policies and management are of primary importance to achieving sustainability, and need to be consistent with recent advances made in energy production and distribution.

The idea is to compare conventional energy sources, particularly hydrocarbons, with a number of other ways of producing energy, emphasising new technological developments. The challenge in many cases is the conversion of new sources of energy into useful forms, while finding efficient ways of storing and distributing energy. Energy production, distribution and usage result in environmental risks that need to be better understood. They are part of the energy economics and relate to human environmental health as well as ecosystems behaviour.

The books will discuss all these points. The book will also discuss the energy used by industrial processes, including the imbedded energy contents of materials, particularly those in the built environment.

Topics covered include: Energy Production; Energy Management; Energy Policies; Energy and Economic Growth; Energy Efficiency; Nuclear Energy; Biomass and Biofuels; Hydrocarbons; Processing of Oil and Gas; Energy Conversion; Energy in the Built Environment; Energy Networks; Pipelines; Energy Economics; Environmental Risk; Emissions; Energy and Transport; Energy Transmission and Distribution; Energy Security; Training in Energy and Sustainability; New Energy Sources; Computational and Experimental Studies.

WIT Transactions on Ecology and the Environment, Vol 190
Published 2014 / 1399pp / £602.00

This book guides the reader through the entire biomass-to-energy process, emphasising important aspects and how the quality of the biofuel can be identified. It acts as a starting point for professionals and researchers interested in working with biomass and a guide for those people interested in the implementation of the technologies described.

Published 2015 / 194pp / £86.00

NEW TITLE

Waste to Energy

Edited by: S. SYNGELLAKIS, Wessex Institute of Technology, UK

Waste to Energy deals with the very topical subject of converting the calorific content of waste material into useful forms of energy. It complements and, to a certain degree, overlaps with its companion volume, “Biomass to Biofuels”, since a significant proportion of biomass converted to energy nowadays originates from various types of waste.

The material in the first, more substantial part of the volume has been arranged according to the type of process for energy conversion. Biochemical processes are described in six articles. These relate to the production of methane by anaerobic digestion; rector conversion of lignocellulosic biomass to ethanol; investigations on ethanol production from biodegradable municipal solid waste through hydrolysis and fermentation; hydrogen production from glucose through a hybrid anaerobic and photosynthetic process; biodiesel production from used cooking oil through base-catalyzed transesterification.

Conversions by thermochemical processes are discussed in the subsequent eleven articles of the volume. These cover combustion, the direct use of heat energy; using the heat produced in thermal power stations for steam and, ultimately, electricity generation; municipal solid waste and refuse-derived fuel. In another article, computational fluid dynamics modelling is applied to assess the influence of process parameters and to perform optimization studies.

A group of articles deals with more complex thermochemical processes involving combustion combined with pyrolysis and gasification. Two articles focus on biofuels as feed for fuel cells. In the last six articles, the emphasis is on management and policy rather than technical issues.

Published 2015 / 266pp / £114.00

NEW TITLE

Biomass Pelletization
Standards and Production

Edited by: A. GARCIA-MARAVER, University of Granada, Spain and J.A. PEREZ-JIMENEZ, Advanced Technology Centre for Renewable Energies, Spain

Environmental and energy dependency problems derived from high fossil fuels consumption have made necessary the development of new energy models to be renewable and sustainable, efficient, practical and economical, and cost effective, to meet the demand for a sustainable energy supply.

Among renewable resources, biomass is destined to play an important role in these new energy models since agricultural and forestry residues are an energy resource which is produced in relatively large amounts throughout the world and regarded as a renewable and environmentally safe way of providing energy.

Compiling information on the conversion of energy from biomass, the book focuses on the use of pellets as homogeneous solid biofuels. It describes all the changes that forestry and agricultural biomass undergo to be converted into thermal energy and analyses the inputs and outputs of the process.

It has to be noted that the standards used as guidelines and references in all the chapters of the book are there in order to not forget the thresholds and guidelines established and thus to ensure a proper use.

NEW TITLE

Biomass to Biofuels

Edited by: S. SYNGELLAKIS, Wessex Institute of Technology, UK

Biomass is a continuously renewed source of energy formed from or by a wide variety of living organisms. Through biochemical and thermochemical processes, it is converted into gaseous, liquid or solid biofuels, which already meet a significant share of the current world energy needs. Because of their contribution to the sustainability of energy supply, reduction of greenhouse gas emissions as well as local employment and energy self-reliance, research interest and activity in enhancing biofuel energy output, efficiency and performance remain strong.

The first part of this volume comprises five articles mainly concerned with biomass resource potential and management. More specifically, the reported investigations assess grass and lawn substrates, rapeseed straw and microalgae from Uplow Anaerobic Sludge Blanket (UASB) reactor effluents as possible sources of biogas, biethanol and biodiesel, respectively. The emphasis in the subsequent group of eleven articles is on biomass conversion processes, aiming at assessing performance as well as output quality and diversity. Biodiesel, a fluid biofuel produced from biomass with high lipids such as rapeseed oil, sunflowers and soy beans, is the focus of two articles: the first investigates the effect of biodiesel blending with diesel fuel on diesel engine performance and emissions; the second assesses the efficiency of catalytic reforming of biodiesel into a gas mixture used directly as Solid Oxide Fuel Cell (SOFC) fuel. The last three articles examine the prospects of biofuels as viable sources of energy within European contexts.
**Energy Design Strategies for Retrofitting**

**Methodology, Technologies and Applications**

**A. BOERI; E. ANTONINI; J. GASPARI and D. LONGO, University of Bologna, Italy**

Providing a coherent and realistic vision of the implications of the energy issue in the future development of our cities, the book emphasises the links between very specific and technical topics and the most challenging issues concerning energy savings and the transition to a low-carbon society. A great part of the built environment in most European cities consists of buildings dating from 60s to early 90s, for residential purposes; this stock clearly presents several problems related to its functional layout, as well as its energy/thermal behaviour. Applying sustainable and energy-saving principles to retrofitting interventions on such older stock is one of the most urgent challenges to be met in the very near future.

Giving some examples and case studies, this book investigates retrofitting interventions in terms of energy balance: from design strategies to choice of materials and components; from market trends analysis to economical assessment, from the targeted energy performance to the energy investments needed for achieving it.

The reader will benefit from the real life experiences and related results described in this book and acquire all the tools for a constructive evaluation of the different options available to him/her, when faced with retrofitting interventions, thanks to a global view of all the issues involved.

Published 2015 / 228pp / £96.00

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**Aerodynamics of Wind Turbines**

Emerging Topics

**Edited by: R.S. AMANO, University of Wisconsin-Milwaukee, USA and B. SUNDÉN, Lund University, Sweden**

Focusing on Aerodynamics of Wind Turbines with topics ranging from fundamentals to applications of horizontal axis wind turbines, this book presents advanced topics including: Basic Theory for Wind Turbine Blade Aerodynamics, Dynamics-Based Health Monitoring and Control of Wind Turbine Rotors, Experimental Testing of Wind Turbines using Wind Tunnels with an Emphasis on Small-Scale Wind Turbines under Low-Reynolds Numbers, Computational Methods, Ice Accretion for Wind Turbines and Influence of some Parameters, and Special Structural Reinforcement Technique for Wind Turbine Blades.

Many topics applicable to wind turbines are equally applicable to other types of turbines. Consequently, this book will attract readers not only from the wind energy community but also in the gas turbines, heat transfer and fluid mechanics community.

Published 2015 / 196pp / £93.00

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**Wind Power Generation and Wind Turbine Design**

**Edited by: W. TONG, Kollmorgen Corporation, USA**

This book provides the wind power industry and the energy research community with comprehensive up-to-date information on advanced design techniques and practical approaches for a form of energy that is becoming increasingly important. It addresses all the major concerns in wind power generation and wind turbine design and includes some of the more recent developments in the field. The book is a useful and timely contribution to the technical literature on wind power.

Along with the rising energy demand in the 21st century and the growing recognition of global warming and environmental pollution, energy supply has become an integral and cross-cutting element of every country’s economy. In recent years, more and more countries have prioritised sustainable, renewable, and clean energy sources such as wind, solar, hydropower, biomass, etc., as the replacements for fossil fuels.

Wind power is the fastest growing alternative energy segment, providing an attractive cost structure relative to other alternative energy. Wind energy has played a significant role in North American and European countries, and some developing countries such as China and India. In 2009, over 37 GW of new wind capacity were installed throughout the world. There is no doubt that wind power will play a major role as the world moves towards a sustainable energy future.

Published 2010 / 768pp / £298.00

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**Energy and Sustainability VI**

**Edited by: W.F. FLOREZ-ESCOBAR, Universidad Pontificia Bolivariana, Colombia; C.A. BREBBIA, Wessex Institute of Technology, UK; F. CHEJNE, National University, Colombia and F. MONDRAGON, Antioquia University, Colombia**

Diverse topics covered in this title containing the conference proceedings of the 6th International Conference on Energy and Sustainability involve interdisciplinary cooperation to arrive at optimum solutions, including materials, energy networks, new energy resources, storage solutions, waste to energy systems, smart grids and many others.

Energy and Sustainability VI focuses on energy matters and the need to respond to the modern world’s dependency on conventional fuels. The continuous use of fossil fuels has generated an increasing amount of interest in renewable energy sources and the search for sustainable energy policies. This book also presents the following topics: Renewable Energy Resources; Biomass and Biofuels; Waste to Energy; Energy Production; Energy Efficiency; Energy Management; Energy and Transportation; Energy in the Built Environment; Energy and the Environment; CO2 Capturing and Management; Sustainable Energy Production; Case Studies.

Published 2015 / 558pp / £240.00

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**Biomass to Biofuels**

**Edited by: Kollmorgen Corporation, USA**

This book addresses a significant number of important themes and thus combines subject breadth and density with in-depth study of biomass resource and processing as well as the issue of biotol and renewable energy sustainability.

Published 2015 / 256pp / £105.00
Energy and Sustainability V: Special Contributions
Edited by: H.H. Al-Kayiem, Universiti Teknologi Petronas, Malaysia; C.A. Brebha, Wessex Institute of Technology, UK and S.S. Zubir, Universiti Teknologi Mara, Malaysia

This volume contains special contributions presented at the 5th International Conference on Energy and Sustainability, held by the Wessex Institute of Technology. It is a companion to the Volume containing most of the contributions (Vol. 186 of WIT Transactions on Environment and the Environment) and comprises papers presented orally during the Conference.

The modern world is highly dependent on the exploitation of fossil fuels. More recently, resources depletion and severe environmental effects deriving from the continuous use of these fuels has resulted in an increasing amount of interest in renewable energy resources and the search for sustainable energy policies.

The changes required to progress from an economy mainly based on hydrocarbons to one taking advantage of sustainable energy resources are massive and require considerable scientific research as well as engineering systems. The effect also involves collaboration between different disciplines in order to arrive at optimum solutions, including buildings, energy networks, convenience systems, new energy storage solutions, waste storage technologies, and many others.

This book, along with its companion volume, covers topics related to sustainability in energy and power production, storage, distribution and management. These include: Energy Policies; Renewable Energy Resources; Sustainable Energy Production; Environmental Risk Management; Green Buildings; Energy Storage; Biofuels; Processing of Oil and Gas; Drilling and Well Design; CO₂ Capture and Storage; Energy Efficiency; Energy from Waste; Energy and Transportation.

WIT Transactions on Ecology and the Environment, Vol 206
Published 2015 / 380pp / £153.00

Energy and Sustainability IV
Edited by: C.A. Brebha, Wessex Institute of Technology, UK; A Marinov, University Politehnica of Bucharest, Romania and C.A. Safta, University Politehnica of Bucharest, Romania

The proceedings of the Fourth International Conference on Energy and Sustainability, held by the Wessex Institute of Technology conferences related to Energy

Energy and Sustainability IV
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WIT Transactions on Ecology and the Environment, Vol 206
Published 2015 / 380pp / £153.00

Related conferences
To request Call for Papers for forthcoming Wessex Institute of Technology conferences related to Energy contact: enquiries@wessex.ac.uk
Waste Management and the Environment VII
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK; G. PASSERINI, Università Politecnica delle Marche, Italy and H. ITOH. Nagoya University, Japan

This book contains the proceedings of the 7th International Conference on Waste Management and the Environment, the latest in a biennial series that began in 2002.

Waste Management is one of the key problems of modern society due to the ever expanding volume and complexity of discarded domestic and industrial waste. There is growing awareness of the detrimental effects of current waste disposal and a movement towards greater accountability for effective waste management. Better practices and safer solutions are required. This creates a need for more research on current disposal methods such as landfills, incineration, chemical and effluent treatment, as well as recycling, waste incineration, clean technologies, waste monitoring, public and corporate awareness, and general education.

Unfortunately many of the policies adopted in the past were aimed at short-term solutions without due regard to the long-term implications for health and the environment, leading in many cases to the need to take difficult and expensive remedial action.

The desired direction of waste management is towards sustainable strategies. The approach which has emerged as the most sustainable strategy has been called 3Rs, where reduction, reuse and recycling, in this order, are seen as the best actions. Recently recovery has been added as the fourth action (4Rs) applied in order, for example, recover energy from waste that cannot be classified under the 3Rs. This largely decreases the volume of the waste that needs final disposal.

Further steps are required towards improvement of current technologies, increased collaboration between the public, government and private sectors and increased involvement of all stakeholders.

Topics covered include: Environmental Impact; Reduce, Reuse, Recycle and Recovery (4Rs); Energy from Waste; Industrial Waste Management; Agricultural Waste; Wastewater; Remote Sensing; Waste Management; Direct and Indirect Pre-treatment of MSW; Disposal of High-level Radioactive Waste in a New Perspective.

WIT Transactions on Ecology and the Environment, Vol 180
Published 2014 / 524pp / £206.00

Waste Management and the Environment VI
Edited by: V. POPOV, Wessex Institute of Technology, UK; H. ITOH. Nagoya University, Japan and C.A. BREBBIA, Wessex Institute of Technology, UK

Featuring papers presented at the Sixth International Conference on Waste Management and the Environment, this book contains contributions on topics such as: Advanced Waste Treatment Technology, Wastewater Treatment; Resources Recovery; Waste Incineration and Gasification; Waste Pre-treatment; Separation and Transformation; Landfills; Soil and Groundwater Clean-up; Public Awareness; Air Pollution Control; Hazardous Waste; Waste Management; Construction and Demolition Waste Costs; Waste Reduction; Use and Recycling; Energy from Waste; Electrical Waste; Rare Metals; Computer Modelling; Methodologies and Practices; Risk Assessment; Nuclear Waste; Environmental Economics; Assessment, Laws and Regulations; Biological Treatments; Agricultural Wastes.

WIT Transactions on Ecology and the Environment, Vol 163
Published 2012 / 448pp / £193.00

High Level Radioactive Waste (HLW) Disposal: A Global Challenge
R. PUSCH, Luleå Technical University, Sweden; R. YONG, North Saanich, Canada and M. NAKANO, The University of Tokyo, Japan

High Level Radioactive Waste (HLW) Disposal: A Global Challenge presents the most recent information on proposed methods of disposal for the most dangerous radioactive waste and for assessing their function from short- and long-term perspectives. It discusses new aspects of the disposal of such waste, especially HLW.

The book is unique in the literature in making it clear that, due to tectonics and long-term changes in rock structure, rock can serve only as a “mechanical support to the chemical apparatus” and that effective containment of hazardous elements can only be managed by properly designed and manufactured containers (“canisters”). This contradicts the common belief that the rock itself is an effective barrier to the transport of contaminants like radionuclides. The importance of the longevity of the containers becomes clear and requires a consideration of all degrading physical/chemical processes, which occupies a considerable part of the book.

The book is thus an important contribution to the literature because it proposes design principles that can make repositories for HLW radioactive waste much safer.

Contents: Introduction; Geological basis; Host rock; Repository concepts; Repository construction; Engineered barriers; Performance of the integrated system of rock, engineered barriers and HLW; Time(temperature)/Hydraulic/Mechanical/Chemical/Biological/Environmental processes, modelling, instrumentation, monitoring and data collection; Safety issues; General comments and recommendations.


Risk Analysis VII & Brownfields V
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK and C.N. BROOKS, Greenfield Environmental Trust Group, USA

This book contains the proceedings of two International Conferences: Risk Analysis 2010 and Brownfields 2010. The papers from the Risk Analysis Conference encompass a wide range of topics such as: Risk Assessment; Risk Management; Hazard Prevention, Management and Control; Early Warning Systems; Natural Hazards; Simulation and Design in Road Evacuation; Vulnerability Issues; Health Risk; Debris Flow and Flood Hazards.

The Risk Analysis papers review advances in knowledge and computational methods that enable us to better understand the risks of natural disasters such as floods, earthquakes, landslides, fires, and others, and man-made disasters as well. Better understanding leads to better ability to predict and manage such disasters.

The Brownfields Conference papers are grouped into the following subject areas: Rehabilitation; Risk Assessment; Case Studies.

WIT Transactions on Information and Communication Technologies, Vol 43

All Books in this Catalogue are Available Both as Print and eBook
Environmental Health

Environmental Health Risk VII
Edited by: C. A. BREBBIA, Wessex Institute of Technology, UK and R. KISS, Budapest University of Technology and Economics, Hungary

Environmental Health Risk VII contains contributions presented at the Seventh International Conference on the Impact of Environmental Factors on Health. Important to the public health is Society’s ability to ensure good quality air, water, soil, and food and to eliminate or considerably reduce hazards from the human environment. That ability greatly depends on the development of techniques, both modelling and interpretive, that allow decision-makers to assess the risk posed by various factors and to propose improvements.

The book covers such topics as: Risk prevention and monitoring; Air pollution; Food safety; Occupational health; Environmental education and risk abatement; Social Economic and Planning Issues; Waste and Wastewater Issues.

WIT Transactions on Biomedicine and Health, Vol 16
Published 2013 / 280pp / £133.00

Environmental Health & Biomedicine
Edited by: C. A. BREBBIA, Wessex Institute of Technology, UK; M. EGLITE, Riga Stradius University, Latvia; I. KNETS, Riga Technical University, Latvia; R. MIFFTAHOF, Arabian Gulf University, Bahrain and V. POPOV, Wessex Institute of Technology, UK

Related topics included in the first part of the book deal with sessions on environmental problems such as air and water contamination, health effects associated with buildings, toxicology, and disease studies. Of special interest are the papers on food safety and occupational hazards. The contributions also include presentations of research on risk prevention and monitoring.

The second part of the book deals with the development of computational tools for the solution of medical and biological problems. The use of mathematical ideas, models and techniques throughout the biosciences is rapidly growing and is gaining prominence. Applied mathematicians and bioengineers working alongside bioscientists can provide a quantitative description of intricate processes at the subcellular, cellular and tissue levels and integrate them in "viable" models.

Studies are presented on the modelling of physiological processes and the very important case of the simulation of cardiovascular systems. One of the most successful areas of bioengineering has been biomechanics and orthopaedics, which are topics studied in several of the papers contained in the volume. The book ends with a section on data acquisition and analysis.

WIT Transactions on Biomedicine and Health, Vol 15
Published 2011 / 512pp / £220.00

Environment and Health
Protecting our Common Future
K. DUNCAN, University of Toronto, Canada

Environmental degradation and illness and disease prevent millions of people in many countries from surviving and achieving their potential. This book contains a comprehensive guide to key environmental and health issues confronting the planet, enumerates approaches and techniques to address these issues, and provides real-world examples of good corporate citizenship.

Specifically the book addresses a range of issues that will be invaluable to many specialists such as organisation leaders, practitioners in corporate social responsibility, managers involved in health and safety and business students working to enhance the well-being of humanity.

Published 2008 / 192pp / £72.00

Fluid Mechanics

Computational Methods in Multiphase Flow VIII
Edited by: P. VOROBIEFF, University of New Mexico, USA; C. A. BREBBIA, Wessex Institute of Technology, UK and J.L. MUNOZ-COBO, Polytechnic University of Valencia, Spain

This book presents the latest research in one of the most challenging, yet most universally applicable, areas of technology. Multiphase flows are found in all areas of technology, at all length scales and flow regimes, involving compressible or incompressible linear or nonlinear fluids. The range of related problems of interest is vast, including astrophysics, biology, geophysics, atmospheric process, and many areas of engineering.

The solution of the equations that describe such complex problems often requires a combination of advanced computational and experimental methods. For example, any models developed must be validated through the application of expensive and difficult experimental techniques. Numerous problems in the area thus remain as yet unsolved, including modelling nonlinear fluids, modelling and tracking interfaces, dealing with multiple length scales, characterising phase structures, and treating drop break-up and coalescence.

The papers contained in the book were presented at the eighth in a well-established series of biennial conferences that began in 2001. They represent close interaction between numerical modellers and other researchers working to gradually resolve the many outstanding issues in understanding of multiphase flow.

The papers in the book cover such topics as: Computational Modelling; Experimental Measurements; Multiphase Flow Simulation; Bubble and Drop Dynamics; Cavitation; Interface Behaviour; Flow in Porous Media.

WIT Transactions on Engineering Sciences, Vol 89
Published 2015 / 549pp / £235.00

Computational Methods in Multiphase Flow VII
Edited by: C. A. BREBBIA, Wessex Institute of Technology, UK and P. VOROBIEFF, University of New Mexico, USA

Multiphase flows, which can involve compressible or incompressible linear or nonlinear fluids, are found in all areas of technology, at all length scales and flow regimes. In spite of their ubiquity, multiphase flows continue to be one of the most challenging areas of computational mechanics and experimental methods, with numerous problems remaining unsolved to date.

Multiphase flow problems are so complex that advanced computational and experimental methods are often required to solve the equations that describe them. The many challenges include modelling nonlinear fluids, modelling and tracking interfaces, dealing with multiple length scales, characterising phase structures, and treating drop break-up and coalescence. Models must be validated, which requires the use of expensive and difficult experimental techniques.

Featured topics include: Multiphase Flow Simulation; Multiphase Flow Phenomena in Fire Suppression; Interface Behaviour; Bubble and Drop Dynamics; Flow in Porous Media; Computational Methods; Experimental Measurements; Oil and Gas Applications.

WIT Transactions on Engineering Sciences, Vol 79
Published 2013 / 556pp / £239.00
Advances in Fluid Mechanics X
Edited by: A. BREBBIA, Wessex Institute of Technology, UK; S. HERNÁNDEZ, University of A Coruña, Spain and M. RAHMAN, Dalhouse University, Canada

Containing the proceedings of the tenth International Conference on Advances in Fluid Mechanics this book continues coverage of a series of success conferences, the first of which took place in 1996. The field of fluid mechanics is vast and has numerous, diverse applications. This book covers a wide range of topics, including basic formulations and their computer modelling as well as the relationship between experimental and analytical results. The emphasis is on new applications and research currently in progress.

Topics covered include: Hydrodynamics; Fluid Structure Interaction; Multiphase Flow; Heat and Mass Transfer; Industrial Applications; Nano and Micro Fluids; Turbulent Flow; Bubble and Drop Dynamics; Computer Simulation and Experiments; Porous Media Flow.

WIT Transactions on Engineering Sciences, Vol 82
Published 2014 / 472pp / £203.00

Advances in Fluid Mechanics IX
Edited by: M. RAHMAN, Dalhouse University, Canada and A. BREBBIA, Wessex Institute of Technology, UK

Containing papers from the Ninth International Conference on Advances in Fluid Mechanics, this book discusses the basic formulations of fluid mechanics and their computer modelling, as well as the relationship between experimental and analytical results.

The book covers a wide range of topics, with emphasis on new applications and research currently in progress, including Fluid Structure Interaction; Computational Methods; Environmental Fluid Mechanics; Turbulent Flow; Bubble and Drop Dynamics; Heat and Mass Transfer; Hydrodynamics; Applications in Biology.

WIT Transactions on Engineering Sciences, Vol 74
Published 2012 / 608pp / £261.00

Monitoring, Simulation, Prevention and Remediation of Dense and Debris Flows IV
Edited by: D. DE WRACHIE, State University of Milan, Italy; A. BREBBIA, Wessex Institute of Technology, UK and S. MAMBRETTI, Politecnico di Milano, Italy

The papers presented at the conference deal with: Debris Flow Modelling; Monitoring and Measurement; Risk Assessment; Sediment Transport and Debris Flow; Protective Barriers; Landslide Phenomena. The book will be useful to engineers, scientists and managers from laboratories, industry, government and academia who deal with risk management, natural disasters, and the phenomenon itself.

WIT Transactions on Engineering Sciences, Vol 73
Published 2012 / 264pp / £114.00

Related conferences
To request Call for Papers for forthcoming Wessex Institute of Technology conferences related to Fluid Mechanics
contact: enquiries@wessex.ac.uk
Solitary Waves in Fluids
Edited by: R.H.J. GRIMSHAW, Loughborough University, UK

After the initial observation by John Scott Russell of a solitary wave in a canal, his insightful laboratory experiments and the subsequent theoretical work of Boussinesq, Rayleigh and Korteweg and de Vries, interest in solitary waves in fluids lapsed until the mid 1960s with the seminal paper of Zabusky and Kruskal describing the discovery of the soliton. This was followed by the rapid development of the theory of solitons and integrable systems. At the same time came the realisation that solitary waves occur naturally in many physical systems, and play a fundamental role in many circumstances.

This text describes the role that soliton theory plays in fluids in several contexts. After an historical introduction, the book is divided into five chapters covering: the basic theory of the Korteweg-de Vries equation, and the subsequent application to free-surface solitary waves in water, internal solitary waves in coastal ocean and the atmospheric boundary layer, solitary waves in rotating flows, and planetary solitary waves with applications to the ocean and atmosphere. The remaining chapters examine the theory and application of envelope solitary waves and the nonlinear Schrödinger equation to water waves.

Series: Advances in Fluid Mechanics, Vol 47
Published 2007 / 208pp / £81.00

Transport Properties of Organic Liquids
G. LATINI, R. COCCI GRIFONI and G. PASSERINI, Università Politecnica delle Marche, Italy

The book is organised into five chapters. The first chapter presents our theoretical knowledge of the liquid state. The second presents the tentative models for the evaluation of the thermal conductivity of organic liquids and confronts their results with the experimental data available in literature. The third presents the tentative models for the evaluation of the dynamic viscosity of organic liquids and confronts their results with the experimental data available in literature. The fourth presents a deeper review of the choice methods for thermal conductivity and their applications to mixtures of organic liquids and the fifth chapter presents a deeper review of the choice methods for dynamic viscosity and their applications to mixtures of organic liquids.

Series: Advances in Fluid Mechanics, Vol 46
Published 2006 / 208pp / £121.00

Debris Flow
Phenomenology and Rheological Modelling
G. LORENZINI and N. MAZZA, University of Bologna, Italy

Debris flows are among the most frequent and destructive of all geomorphic processes and the damage they cause is often devastating. Increased anthropisation calls for improvements in the criteria used to identify debris-flow risk areas and the prevention measures adopted.

One of the main difficulties encountered by the approaches illustrated in previous literature lies in their possible validation, either in the field or in a laboratory environment. The choice of a rheological model is extremely important. This book provides methodological details that can be applied to investigations on debris-flow mechanics, capable of providing an accurate representation of the phenomenology.


Published 2004 / 216pp / £102.00
Heat Transfer XIII
Simulation and Experiments in Heat and Mass Transfer
Edited by: B. Sundén, Lund University, Sweden and C.A. Brebbia, Wessex Institute of Technology, UK
Heat Transfer XIII: Simulation and Experiments in Heat and Mass Transfer contains the proceedings of the thirteenth conference in the well established series on Simulation and Experiments in Heat Transfer and its applications. Advances in computational methods for solving and understanding heat transfer problems continue to be important because heat transfer topics and related phenomena are commonly of a complex nature and different mechanisms like heat conduction, convection, turbulence, thermal radiation and phase change as well as chemical reactions may occur simultaneously. Typically, applications are found in heat exchangers, gas turbine cooling, turbulent combustion and fires, fuel cells, batteries, micro- and mini-channels, electronics cooling, melting and solidification, chemical processing etc.
Topics covered include: Heat Transfer in Energy Producing Devices; Heat Transfer Enhancements; Heat Exchangers; Convection and Radiation; Multiphase Flow Heat Transfer; Modelling and Experiments; Heat Recovery; Heat and Mass Transfer; Experimental and Measuring Technologies.
WIT Transactions on Engineering Sciences, Vol 83
Published 2014 / 548pp / £236.00

Introduction to Heat Transfer
Edited by: B. Sundén, Lund University, Sweden
"[The book] is a relatively concise, although surprisingly comprehensive, text addressing virtually all practical aspects of heat transfer."

CHOICE

Presenting the basic mechanisms for transfer of heat, Introduction to Heat Transfer provides a deeper and more comprehensive view than existing titles on the subject. The author provides derivation and presentation of analytical and empirical methods for calculation of heat transfer rates and temperature fields as well as pressure drop. The sections on thermal conductivity, finned heat transfer (extended surface heat transfer), evaporation, heat exchangers, and convective turbulent heat transfer are particularly notable in their depth of coverage. Developed from lecture notes that have been proven in classroom use, the book can be used successfully in R & D work and thermal engineering design in industry and by consultancy firms. It can also be used in both undergraduate and graduate courses in heat transfer and thermal engineering.

CONTENTS: Introduction; Heat conduction; Thermal conductivity; Steady heat conduction; Unsteady heat conduction; Heat conduction with moving boundaries; Convection-general theory; Similarity solutions for laminar boundary layer flow; Forced convection in channels-laminar case; Forced convection-turbulent flow; Natural convection; Forced convective heat transfer for bodies in external flow; Thermal radiation; Condensation; Boiling and evaporation; Heat exchangers; Addenda; Index.

Published 2012 / 366pp / £150.00

Advanced Computational Methods and Experiments in Heat Transfer XII
Edited by: B. Sundén, Lund University, Sweden; C.A. Brebbia, Wessex Institute of Technology, UK and D. Poljak, University of Split, Croatia

WIT Transactions on Engineering Sciences, Vol 75
Published 2012 / 376pp / £162.00

Heat Transfer 2016
14th International Conference on Simulation and Experiments in Heat Transfer and its Applications
7–9 September 2016, Ancona, Italy

Heat Transfer 2016 is the 14th conference in the well-established series on Simulation and Experiments in Heat Transfer and its Applications. The objective of the series is to provide a forum for presentation and discussion of advanced topics, new approaches and applications of innovative advanced computational methods and experimental measurements to heat and mass transfer problems.

Submit an abstract or register online: www.wessex.ac.uk/heat2016
Heat Transfer

Computational Fluid Dynamics and Heat Transfer
Emerging Topics
Edited by: R.S. AMANO, University of Wisconsin-Milwaukee, USA and B. SUNDÉN, Lund University, Sweden

Heat transfer and fluid flow issues are of great significance. This state-of-the-art edited book with reference to new and innovative numerical methods is an important reference for researchers in both academia and research organizations, as well as industrial scientists and college students.

The book provides comprehensive chapters on research and developments in emerging topics in computational methods, e.g., the finite volume method, finite element method, and turbulent flow computational methods. Fundamentals of the numerical methods, comparison of various higher-order schemes for convection-diffusion terms, turbulence modelling, the pressure-velocity coupling, mesh generation and the handling of arbitrary geometries are presented. Results from engineering applications are provided. Chapters have been co-authored by eminent researchers.

Series: Development in Heat Transfer, Vol 18
Published 2008 / 416pp / £109.00

Thermal Engineering in Power Systems
Edited by: R.S. AMANO, University of Wisconsin-Milwaukee, USA and B. SUNDÉN, Lund University, Sweden

Research and development in thermal engineering for power systems are of significant importance to many scientists who work in power-related industries and laboratories. This book focuses on a variety of research areas including Components of Compressors and Turbines that are used for both electric power systems and aero engines, Fuel Cells, Energy Conversion, and Energy Reuse and Recycling Systems.

To be competitive in today’s market, power systems need to reduce operating costs, increase capacity and deal with many other tough issues. Heat Transfer and fluid flow issues are of great significance to power systems. Design and R&D engineers in the power industry will therefore find this state-of-the-art book on those issues very useful in their efforts to develop sustainable energy systems.

Series: Developments in Heat Transfer, Vol 21
Published 2008 / 416pp / £158.00

Plate Heat Exchangers
Design, Applications and Performance
L. WANG, Siemens Industrial Turbines, Sweden; B. SUNDÉN, Lund Institute of Technology, Sweden and R.M. MANGLIK, University of Cincinnati, USA

Heat exchangers are important, and used frequently in the processing, heat and power, air-conditioning and refrigeration, heat recovery, transportation and manufacturing industries. Such equipment is also important in electronics cooling and for environmental issues like thermal pollution, waste disposal and sustainable development.

The present book concerns plate heat exchangers (PHEs), which are one of the most common types in use. It presents comprehensive descriptions of such heat exchangers and their advantages and limitations, provides in-depth thermal and hydraulic design theory for PHEs, and presents state-of-the-art knowledge.

The major part of the book concerns the basic design methods for both single-phase and two-phase flow cases, various flow arrangements, thermal-hydraulic performance in single-phase flow and for PHEs operating as condensers and evaporators.

Series: Developments in Heat Transfer, Vol 17
Published 2007 / 288pp / £109.00

Exergy Method
Technical and Ecological Applications
J. SZARGUT, Silesian University of Technology, Poland

This book contains a short presentation on the basic principles of exergy analysis and discusses new achievements in the field over the last 15 years. One of the most important issues considered by the distinguished author is the economy of non-renewable natural exergy.

The exergy method makes it possible to detect and quantify the possibilities of improving thermal and chemical processes and systems.

The methodology of the concept “thermo-ecological cost” (cumulative consumption of non-renewable natural exergy resources) generates large application possibilities for exergy in ecology.

Previously discussed only in scientific journals, other important new problems highlighted include: calculation of the chemical exergy of all the stable chemical elements; global natural and anthropogenic exergy losses; practical guidelines for improvement of the thermodynamic imperfection of thermal processes and systems; development of the determination methods of partial exergy losses in thermal systems; evaluation of the natural mineral capital of the Earth; the application of exergy for the determination of a pro-ecological tax.

Series: Developments in Heat Transfer, Vol 18
Published 2007 / 192pp / £98.00

Transport Phenomena in Fires
Edited by: M. Faghri, University of Rhode Island, USA and B. Sundén, Lund University, Sweden

Controlled fires are beneficial for the generation of heat and power while uncontrolled fires, like fire incidents and wildfires, are detrimental and can cause enormous material damage and human suffering. This edited book presents the state of the art of modelling and simulation of the important transport phenomena in fires. It describes how computational procedures can be used in analysis and design of fire protection and fire safety. Computational fluid dynamics, turbulence modelling, combustion, soot formation, and thermal radiation modelling are demonstrated and applied to pool fires, flame spread, wildfires, fires in buildings and other examples.

Series: Developments in Heat Transfer, Vol 20
Published 2008 / 496pp / £187.00

Heat Transfer in Food Processing
Recent Developments and Applications
Edited by: S. Yanniotis, Agricultural University of Athens, Greece and B. Sundén, Lund University, Sweden

Heat transfer is one of the most important and most common engineering disciplines in food processing. There are many unit operations in the food industry where steady-state or unsteady-state heat transfer is taking place. These operations are of primary importance and affect the design of equipment as well as safety, nutritional and sensory aspects of the product.

The chapters in this book deal mainly with: heat transfer applications; methods that have considerable physical property variations with temperature; methods not yet widespread in the food industry; or methods that are less developed in the food engineering literature. The application of numerical methods has received special attention with a separate chapter, as well as emphasis in almost every chapter. A chapter on artificial neural networks (ANN) has also been included since ANN is a promising alternative to conventional methods for modelling, optimisation, etc in cases where a clear relationship between the variables is not known, or the system is too complex to be modelled with conventional mathematical methods.

Series: Developments in Heat Transfer, Vol 21
Published 2007 / 288pp / £109.00
**Historical Interest**

**BEST SELLER**

In the Wake of the Graf Spee

**ENRIQUE DICK, War College, Buenos Aires, Argentina**

This is an indispensable book for anyone wanting to know more about the before, during and after the Battle of the River Plate, the naval tactics that were employed, the games of diplomacy, the honour of the captains and crews, and the ground-breaking technology involved. The book takes a balanced view of pre-war and post-war events that shaped those years and of Argentina’s willingness to take the crew of the Graf Spee in and offer them refuge, which proved to be beneficial to both communities.

For those with an interest in social history, the book tells the fascinating story of the changes that the arrival of 200 young German sailors in the foothills of the Sierras de Córdoba meant for what in 1940 had been a small village, Villa General Belgrano, where their traditions still endure.

The technical details of the Graf Spee are set out in an Appendix at the back of the book where readers with an interest in such things will be able to find a comprehensive description of her own fascinating story and details of her armaments and capabilities in both words and numbers. The illustrations have been carefully selected in an attempt to reflect what that era was really like and the context in which she was built.

Contents include: The Kriegsmarine; Life on board; The outbreak of war; Battle stations; Buenos Aires to Capilla Vieja; Illustrious name, Illustrious origin.

Illustrations have been carefully selected in an attempt to reflect what that era was really like and the context in which she was built.

Published 2013 / 272pp / £39.50

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A Suitcase from the Titanic

**ENRIQUE DICK, War College, Buenos Aires, Argentina**

Years after he disappeared on the Titanic, one victim’s suitcase, having been retrieved from the bottom of the ocean, becomes the ticket to a journey into discovery. Armed with the mementos of a life contained in the suitcase, and the truth they generate as they are plucked from the submerged Titanic, author Enrique Dick embarked on an excursion into his maternal family history, intertwined with both British and Argentine submerged Titanic, author Enrique Dick embarked on an excursion into his maternal family history, intertwined with both British and Argentine history - that which measures our distance from the past -- is not confused with tradition -- the past living through us.

The papers presented in this book that discuss these points and many others are a fascinating miscellany. With contributions ranging from the practical to the academic these papers can leave no doubt about the continued role and significance of tradition, the passion of those who understand its relevance and the dangers inherent in its denial.

Published 2008 / 160pp / £34.00

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Britain and the making of Argentina

**GORDON BRIDGER, UK**

By 1914 Argentina had become one of the worlds largest trading nations and, according to some, the tenth most prosperous country in the world. She exported more than all the other South American countries together. Argentina was the agricultural “El Dorado” of the world.

It was principally British technology, British capital and British management, combined with massive immigration from southern Europe, which converted Argentina from an economic backwater into the wealthiest country in South America. Buenos Aires became the richest, most European city, in the southern hemisphere.

This sadly neglected history needs retelling as it is not without relevance today. While it is a history of development it has been personalised to bring alive the pioneering achievements of the many thousands of British people who contributed to its transformation. (Its author, a development economist, traces his family’s involvement with Argentina, to its earliest days of independence).

Published 2008 / 352pp / £109.00

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' *Magic is No Magic*'

The Wonderful World of Simon Stevin

**J.T. DEVREESE, University of Antwerp, Belgium and G. VANDEN BERGHE, Ghent University, Belgium**

...'Magic is no magic until it is properly understood; science was the means by which the unknown could be demystified. This admirable, well-illustrated book describes Stevin’s work and assesses the significance of his many contributions to the advancement of knowledge.'

Published 2013 / 172pp / £29.50

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Tradition Today

Continuity in Architecture & Society

Edited by: **R. ADAM, Robert Adam Architects, UK and M. HARDY, INTBAU, London, UK**

In January 2002, after a two year gestation period, the International Network for Traditional Buildings, Architecture and Urbanism (INTBAU) was launched. To celebrate the launch, a conference was held to debate the place of tradition in modern society; while INTBAU was specifically concerned with building and urbanism, it tradition is indeed relevant then it must have a place throughout society. The conference forms the basis of this book.

Published 2008 / 352pp / £34.00

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Choice – Current Reviews for Academic Libraries
The New Forest
A Personal View by C.A. Brebbia

C.A. BREBBIA, Wessex Institute of Technology, UK

This is a new edition of a very successful book offering a personal view of the New Forest that stems from the author’s many years of residence and research activities there. This has provided him with a deep appreciation of its unique rural charm and rich history. Its difference from many other National Parks is that it is home to many people and this has given the Forest a more dynamic environment.

The narrative starts with a brief history of the area. There follows a description of the author’s favourite places such as Lyndhurst, the so-called capital of the Forest; the charm of Minstead and its unique church, Fritham, the wilderness of the northern Forest; Burley, the home of witches and smugglers; the extravagant Rhinefield House; old Brockenhurst and its churches; New Park, the site of many escapes of Charles I; the glory that was Christchurch Priory; the magnificence of Highcliffe Castle; Lymington, the ancient port of the Forest; Hurst Castle and its links to the unfortunate Charles I, the story of the ghost who designed Swan Tower; Boldre and its beautiful church; Beaulieu Abbey and how it was before its destruction; the ancient shipyard at Buckler’s Hard and finally Ashurst Lodge from its early associations with saltpetre manufacturing to its current use as the home of the Wessex Institute of Technology.

This new edition contains a substantial number of photographs taken by Pier Paolo Strona and Keith Godwin as well as other illustrations, including those of some famous characters associated with the New Forest.

Published 2014  /  128pp  /  £22.00

Patagonia, a Forgotten Land
From Magellan to Peron

C.A. BREBBIA, Wessex Institute of Technology, UK

This book describes the history of Patagonia from its discovery by Magellan to recent times. Since its early exploration Patagonia has been associated with conditions of extreme hardship and suffering. Early Spanish attempts to colonise Patagonia also ended in failure and the region remained largely uninhabited until the arrival of the Welsh in 1865. Their peaceful coexistence with the natives ended abruptly when the Argentine Army entered Patagonia and took over the indigenous people’s lands, which were promptly distributed to new settlers.

As a new and anarchic society, Patagonia could not fail to attract its share of desperados and adventurers, the most notorious of which are described in the book, including gold prospectors, hunters and bandits such as Butch Cassidy and the Sundance Kid. The volume also relates the anarchists’ struggles that took place and the failed attempt by Peron’s government to convert Argentina to a nuclear power.

The book conveys the image of Patagonia as still a largely unknown and forbidding place. Five hundred years of recorded history have not dispelled the image of Patagonia being a new frontier.

Contents: Early Hopes and Tribulations – Magellan, A man of destiny; More II Fated Expeditions; Enter Drake; Enter the British, Follow the Dutch; In Search of Dreams – The laboratory of mankind; The New Forest that stems from the author’s many years of residence and research activities there. This has provided him with a deep appreciation of its unique rural charm and rich history. Its difference from many other National Parks is that it is home to many people and this has given the Forest a more dynamic environment.

The narrative starts with a brief history of the area. There follows a description of the author’s favourite places such as Lyndhurst, the so-called capital of the Forest; the charm of Minstead and its unique church, Fritham, the wilderness of the northern Forest; Burley, the home of witches and smugglers; the extravagant Rhinefield House; old Brockenhurst and its churches; New Park, the site of many escapes of Charles I; the glory that was Christchurch Priory; the magnificence of Highcliffe Castle; Lymington, the ancient port of the Forest; Hurst Castle and its links to the unfortunate Charles I, the story of the ghost who designed Swan Tower; Boldre and its beautiful church; Beaulieu Abbey and how it was before its destruction; the ancient shipyard at Buckler’s Hard and finally Ashurst Lodge from its early associations with saltpetre manufacturing to its current use as the home of the Wessex Institute of Technology.

This new edition contains a substantial number of photographs taken by Pier Paolo Strona and Keith Godwin as well as other illustrations, including those of some famous characters associated with the New Forest.

Published 2014  /  128pp  /  £22.00

Information & Communication Technologies

FORTHCOMING

Big Data
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK

Due to the rise of IT and the rapid inclusion of the internet and mobile computing in our lives, companies, enterprises and governments have been amassing huge volumes of information. This information overload greatly complicates the process of expert decision-making in any field. Furthermore, the heterogeneous nature of the sources and the large size of these databases imply a difficult challenge for analysts.

Continuing the proceedings of a new conference organised by Wessex Institute of Technology, this book offers solutions from experts on computer science, statistics and economics and other areas to secure current data management from the perspective of Big Data, data mining and predictive classical statistics. Addresses all stages of the data management process, including data collection, integration, storage, pre-processing, analysis and visualisation. Application areas where techniques of data management are particularly relevant today include e-commerce, finance, smart cities and medicine.

Topics covered include: Forecasting from Big Data; Optimization; New visualisation techniques; Social network analysis; Search and data mining; Complexity and algorithms; Open data; Cloud computing; OLAP technologies; ETL (Extract, Transform and Load).

WIT Transactions on Information and Communication Technologies, Vol 70

Forthcoming 2016  /  apx 300pp  /  apx £129.00

BEST SELLER

Innovation in Wearable and Flexible Antennas
Edited by: H. KHALEEL, California State University, USA

This book deals with the design, numerical simulation, state-of-the-art fabrication processes and methods, qualitative and quantitative tests, and measurement techniques of wearable and flexible antennas of different topologies, such as Planar Inverted F, Printed Monopoles, Microstripes and Microstrips. Novel trends, materials, and fabrication and measurement techniques used in this vital field of antenna systems are also discussed.

To the best of the editor’s knowledge, at the time of publication, there are no published books targeting the vital topic of flexible antennas specifically and/or serving as a complete reference. There are only a few books on wearable antennas that deal with specific applications. The editor was thus motivated to propose a book that would serve as a complete technical reference on the addressed technology.

This book can serve as a reference source for Research and Development scientists, RF and antenna engineers working in this vital field; moreover, it could be used as a text book for Antenna Theory and Advanced Antennas courses which are mainly offered for graduate students.

Published 2015  /  236pp  /  £108.00
**BEST SELLER**

**Managing Complexity**  
G. RZEVSKI, The Open University, UK and  
P. SKOBELEV, Samara State Aerospace University, Russia

This is the first book to describe large-scale complex adaptive systems and their application to practical business problems so as to yield excellent returns on investment. Various case studies are included: real-time scheduling of 2,000 taxis in London; 10% of world capacity of sewage tankers transporting crude oil around the globe; adaptive cargo delivery to the International Space Station; semantic processing of scientific abstracts; dynamic patterns discovery from large quantity of data; real-time management of global supply chains; adaptive management of design modifications of large aircraft wings. The book provides an insight into the connection between digital technology and the ever-increasing complexity of contemporary social and economic environments. It describes in some detail a powerful method of managing complexity. In addition, to back up the applications presented, it gives a concise outline of the fundamental concepts, principles and methods of Complexity Science. The book contains an extensive description of the fundamentals of multi-agent technology, which has been developed by the authors and used in the design of complex adaptive software and complex adaptive business processes.

ISBN: 978-1-84564-936-4  
eISBN: 978-1-84564-937-1  
Published 2014  /  216pp  /  £59.00

**Coevolutionary Computation and Multiagent Systems**  
L. JIAO, J. LIU and W. ZHONG, Xidian University, China

The origins of coevolutionary computation can be traced back to the late 1950s when it remained, almost unknown to the broader scientific community, for three decades until the 1980s, when it started to receive significant attention, as did the study of multi-agent systems (MAS). This volume focuses on systems in which many intelligent agents interact with each other. Today these systems are not simply a research topic but are also beginning to become an important subject of academic teaching and industrial and commercial application. Coevolutionary Computation and Multiagent Systems introduces the authors’ recent work in these two new and important branches of artificial intelligence.

ISBN: 978-1-84564-638-7  
eISBN: 978-1-84564-639-4  
Published 2012  /  270pp  /  £129.00

**Handbook of Communications Security**  
F. GARZIA, University of Rome “La Sapienza”, Italy

Communications represent a strategic sector for privacy protection and for personal, company, national and international security. The interception, damage or loss of information during communication can generate material and non material economic damages from both a personal and a collective point of view. Giving the reader information relating to all aspects of communications security, this book begins with the basic ideas and builds to present the most advanced and updated concepts. The comprehensive coverage makes the book a one-stop reference for integrated system designers, telecommunication designers, system engineers, system analysts, security managers, technicians, intelligence personnel, security personnel, police, army, private investigators, scientists, graduate and postgraduate students and anyone who needs to communicate in a secure way. The CD included with the book contains freeware cryptography and steganography Programs.

ISBN: 978-1-84564-768-1  
eISBN: 978-1-84564-769-8  
Published 2013  /  680pp +CD  /  £360.00

**Pervasive Systems and Ubiquitous Computing**  
A. GENCO and S. Sorce, University of Palermo, Italy

“it might help those not familiar with the field to obtain a brief overview of the fundamentals of pervasive computing and the involved disciplines.” 

Pervasive systems are today’s hardware/software solution to Mark Weiser’s 1991 vision of Ubiquitous Computing, with the aim of enabling everyone to enjoy computer services by means of the surrounding environment. Mainly thanks to low-cost wireless communication technology and small portable personal devices, pervasive services can now be implemented easily. Advanced local or network applications can be joined everywhere simply by means of a mobile terminal like the ones we already carry (cellular, PDA, smartphone, etc.). Pervasive systems aim to free people from conventional interaction with desktop and laptop computers and allow a new human-environment interaction to take place on the basis of wireless multimedia communication.

This book on pervasive systems discusses the fundamentals of pervasive systems theory as they are currently studied and developed in the most relevant research laboratories.

ISBN: 978-1-84564-482-6  
Published 2010  /  160pp  /  £75.00

**Data Management and Security**  
Applications in Medicine, Science and Engineering

Edited by: A. RABASA, University Miguel Hernandez, Spain; C. BREBBIA, Wessex Institute of Technology, UK and A. RIA, University Miguel Hernandez, Spain

Containing the papers presented at the First International Conference on Data Management and Security with applications in Medicine, Sciences and Engineering, this book focuses on the modern techniques applied in data management and knowledge acquisition, with applications in a broad variety of fields. It also discusses recent developments in data security systems. Papers in the book cover such topics as Coding Theory and Cryptography; Encryption; Data Management; Statistical Processing and Data Mining to Solve Real Problems; Applications in Medicine.

eISBN: 978-1-84564-709-4  
Published 2013  /  264pp  /  £110.00

**Broadband Power-line Communication Systems**  
Theory and Applications

J. ANATORI, University of Dodoma, Tanzania and  
N. THEETHAYI, Bombardier Transportation, Sweden

The topics include classification of BPLC systems, models for analyzers based on TL theory, estimation of channel capacity and performance and finally application of modulation, coding and media access control techniques for boosting the performance of BPLC systems. For the convenience of the readers, a couple of chapters are dedicated to the fundamental aspects of TL communication and networking theories, acting as warm-up for the other chapters.

ISBN: 978-1-84564-416-1  
eISBN: 978-1-84564-417-8  
Published 2010  /  192pp  /  £75.00
Mobile Agents
Principles of Operation and Applications
Edited by: A. GENC0, University of Palermo, Italy

Multi-agent systems are one of the most effective software design paradigms, and they are considered to be the most recent evolutionary step of object-oriented programming. Agents have several advantages when compared with objects. The most important among them is that they are made of active code, which is capable of acting autonomously.

Agents can be a suitable choice to exploit the Internet reality since users can operate easily in a less compelling way and also reduce Internet connection time. Mobile agents thus make a PC an intelligent entity when compared with objects. The most important among them is that they are made of active code, which is capable of acting autonomously.

The book describes the mobile agent principles of operation in detail. It starts by giving some definitions, and illustrates their main features, such as mobility, communication, coordination, interoperability, fault tolerance and security. Comparisons of these features between most relevant multi-agent developing platforms are then discussed. The book ends with a discussion on a mobile agent application field, namely data mining and information retrieval, thus showing how mobile agents can help us to face these field-related problems.

WIT Transactions on State-of-the-art in Science and Engineering, Vol 12
Series: Advances in Management Information, Vol 6
Published 2008 / 304pp / £109.00
Coastal Cities and their Sustainable Futures
Edited by: G.R. RODRIGUEZ, Universidad de Las Palmas de Gran Canaria, Spain and C.A. BREBBIA, Wessex Institute of Technology, UK

This book contains papers presented at the International Conference on Coastal Cities and their Sustainable Future. First held in 2015, the conference evolved from a series of conferences on coastal processes, sustainable development, and city sustainability that began in 1992.

The multidisciplinary papers in Coastal Cities and their Sustainable Futures examine some of the possible models and potential solutions. Contents include topics such as: Planning, Development and Management; The Coastal City and its Environments; Coastal Flooding; Heritage Issues; Tourism; Socio-Economic Issues; Slow Mobility along Coastlines and Waterways; Beaches and Port Areas; Waves.

WIT Transactions on The Built Environment, Vol 148
Published 2015 / 350pp / £151.00

Coastal Processes III
Edited by: G.R. RODRIGUEZ, Universidad de Las Palmas de Gran Canaria, Spain and C.A. BREBBIA, Wessex Institute of Technology, UK

Containing papers presented at the Third International Conference on Physical Coastal Processes, Management and Engineering, this book examines coastal zone dynamics, which involve complex interactions between the atmosphere, ocean, and land. Management of coastal zones is dependent on a number of factors. Large temporal and spatial differences in air-sea exchange processes and wind strength and direction result from the complex interactions referred to above. Recreational and tourism activities make demands on coastal areas. While the number and frequency of extreme events increases with climate change, their role in changing coastal zones also needs to be considered.

The book considers all of these and covers such topics as: Wave Modelling; Sediment Transport and Erosion; Coastal Processes; Coastal Zone Management.

WIT Transactions on Ecology and the Environment, Vol 169
Published 2013 / 272pp / £117.00

Coastal Processes II
Edited by: G. BENASSAI, University of Naples Parthenope, Italy; C.A. BREBBIA, Wessex Institute of Technology, UK and G.R. RODRIGUEZ, University of Las Palmas de Gran Canaria, Spain

This book contains the edited papers presented at the Second International Conference on the topic, convened by the Wessex Institute of Technology, the University Parthenope of Naples, and the University of Las Palmas, Gran Canaria to meet the need for interdisciplinary research on the problems faced by coastal zones.

The papers are grouped into the following topics: Coastal Management; Coastal Processes and GIS; Coastal Geomorphology; Extreme Events and Sea Level Rise; Coastal Processes and Navigation; Sediment Transport and Erosion; Interaction between Coastal Defence and Processes; Pollution and Dispersion; Hydrodynamic Forces.

WIT Transactions on Ecology and the Environment, Vol 149
Published 2011 / 368pp / £158.00

Petroleum Resources with Emphasis on Offshore Fields
O.T. GUDMESTAD, University of Stavanger, Norway; A.B. ZOLOTUKHIN, Gubkin Russian State University of Oil and Gas, Moscow, Russia and E.T. JARLSBY, PETRAD, Stavanger, Norway

Lessons learned and experience gained from mature Norwegian offshore projects form the cornerstone of this timely new book, which aims to increase the reader’s general understanding of the "upstream" part of the petroleum industry, the locating of underground resources and their conversion to valuable products.

Starting with Chapter (1): The Geology of Petroleum Resources, the text follows the hydrocarbons from their origin in reservoirs through Chapter (3): Drilling, Well Design and Well Completion to Chapter (6): Hydrocarbon Off Take.

The authors address the large challenges facing the oil and gas industry in subsequent chapters on: Decommissioning; Safety Management; Environmental Management; Licensing and Fiscal Regimes; The Economics of Petroleum Operations and Investments; Responsibilities to Society and Business Ethics.

The book treats key aspects related to the development of petroleum resources. It is organised to allow the reader to review the different topics individually so that the book can serve as a reference book or as a textbook. It will be useful to readers who have a professional or student interest in the petroleum industry and a modest level of prior knowledge of the technical and commercial aspects of the industry, including specialists from the industry who want to upgrade their competence, and engineers in oil and gas companies, governmental bodies, and institutions who would like to have a desktop reference book, people in the contracting industry serving the offshore market who want to understand how their contribution fits into the totality of developing oil and gas resources, university students specialising in petroleum sciences, and interested readers from the general public, such as teachers and policy decision makers.

Published 2010 / 280pp / £98.00
This volume comprises a selection of articles dedicated to the study of advanced composites. The collection has a broad scope that encompasses various constituent materials, types of reinforcement and manufacturing techniques, as well as characterisation methods and objectives.

Split into three main groupings this book presents selections of articles concerned with: fibre performance improvements and assessment of the respective processes, composite performance enhancement through novel manufacturing techniques and finally, characterisation; including investigations into mechanical performance, thermal characteristics and electromagnetic interference shielding in polymers reinforced with glass fibres and carbon nanotubes.

Composites: Advances in Manufacture and Characterisation will be a valuable addition to the literature used by scientists and engineers in the higher education sector as well as to members of private agencies and industrial organizations concerned with new material production for advanced technological applications.


Natural Filler and Fibre Composites Development and Characterisation

Edited by: S. SYNGELLAKIS, Wessex Institute of Technology, UK

Natural Filler and Fibre Composites comprises a collection of articles dedicated to a range of materials with natural constituents, currently attracting considerable interest among researchers and engineers due to their environmental advantages. The purpose of the collection is to disseminate knowledge about and insight into the composition, structure, manufacture and properties of these materials in order to facilitate progress towards their further development as well as their wider adoption in engineering practice.

A wide range of issues is addressed starting with a review of treatments and properties that render several plant fibres applicable to engineering design. The volume includes several accounts of advanced manufacturing processes involving cellulose nanofibres and nanocrystals as well as micro-fibrillated cellulose as reinforcing substances. Another innovative process begins with the manufacture of composite fabric through plaiting a polymer fibre around natural yarn; this fabric is subsequently heat moulded into a fibre-reinforced composite. Special moulding techniques are studied on multiple scales. Since real engineering, rather than academic, problems are the main interest, these scales are treated independently from their internal structure. Also, because of their complexity, all material systems are studied on multiple scales. Since real engineering, rather than academic, problems are the main interest, these scales are treated independently from each other on the grounds of fully uncoupled multi-scale analysis. Attention is limited to elastic and viscoelastic behaviour and to linear heat transfer analysis.

The book describes the electrochemical basis for the models, their numerical implementation and experimental validation, and how the corrosion rate of the Al alloys at the various scales is influenced by its material properties and the surface protection methods. It will be of interest to scientists and engineers interested in corrosion modelling, aircraft corrosion, corrosion of other types of vehicle structures such as automobiles and ground vehicles, electrochemistry of corrosion, galvanic corrosion, crevice corrosion, and intergranular corrosion.


Micromechanics in Practice

M. ŠEJNOHA and J. ZEMAN, Czech Technical University Prague, Czech Republic

Micromechanics in Practice applies micromechanics to the analysis of practical engineering problems. It considers both classical composites, represented by carbon/carbon textile laminates, and applications in Civil Engineering, including asphalt and masonry structures. These considerably distinct material systems have as a common denominator the randomness of their internal structure. Also, because of their complexity, all material systems are studied on multiple scales. Since real engineering, rather than academic, problems are the main interest, these scales are treated independently from each other on the grounds of fully uncoupled multi-scale analysis. Attention is limited to elastic and viscoelastic behaviour and to linear heat transfer analysis.


Aluminium Alloy Corrosion of Aircraft Structures Modelling and Simulation

Edited by: J.A. DEROSE and T. SUTER, Laboratory for Joining Technologies and Corrosion, EMPA, Switzerland; T. HACK, Innovation Works, EADS Deutschland GmbH, Germany and R.A. ADEY, CM BEASY Ltd, UK

Bringing together the latest research this book applies new modelling techniques to corrosion issues in aircraft structures. It describes complex numerical models and simulations from the microscale to the macroscale for corrosion of the aluminium (Al) alloys that are typically used for aircraft construction, such as AA2024. The approach is also applicable to a range of other types of structures, such as automobiles and other forms of ground vehicles.

The main motivation for developing the corrosion models and simulations was to make significant technical advancements in the fields of aircraft design (using current and new materials), surface protection systems (against corrosion and degradation) and maintenance. The corrosion models address pitting and intergranular corrosion (microscale) of Al alloys, crevice corrosion in occluded areas, such as joints (mesoscale), galvanic corrosion of aircraft structural elements (macroscale), as well as the effect of surface protection methods (anodisation, corrosion inhibitor release, clad layer, etc.).

The book describes the electrochemical basis for the models, their numerical implementation and experimental validation, and how the corrosion rate of the Al alloys at the various scales is influenced by its material properties and the surface protection methods. It will be of interest to scientists and engineers interested in corrosion modelling, aircraft corrosion, corrosion of other types of vehicle structures such as automobiles and ground vehicles, electrochemistry of corrosion, galvanic corrosion, crevice corrosion, and intergranular corrosion.


In summary, this volume describes a wide variety of innovative manufacturing processes, involving many natural materials, used both as reinforcement and matrix, as well as composite performance assessments under various conditions. As such, it is expected to make a valuable reference publication for engineers and scientists interested in the development and industrial applications of environmentally friendly composites.
Petroleum and Mineral Resources
Edited by: FUAD M. KHOSHNAW, Koya University, Kurdistan

The Kurdistan region of Northern Iraq is one of the emerging areas in the Middle East, rich in oil, gas and mineral resources as well as underground water. However, until recently the political and security issues were such that the region was unable to take advantage of these resources. Nowadays Kurdistan is emerging as one of the fastest developing areas in the Middle East with its universities playing a major role in this process.

This book contains the proceedings of the First International Conference on Petroleum and Mineral Resources, held at Koya University in Kurdistan, Iraq. Topics covered include Petroleum Exploration; Drilling and Well Design; Gas Production; Petroleum Engineering; Geophysical Structures; Metal Ore Extraction; Resource and Production Engineering; Multiphase Flow; Processing of Oil and Gas; Hydrocarbon Transportation; Pipelines; Field Support Facilities; Project Development and Management; Safety Management; Environmental Management; Operation Economics and Investment; Regulations and Legislation; Corrosion, Infrastructure Protection.

WIT Transactions on Engineering Sciences, Vol 81
Published 2015  /  280pp  /  £120.00

Mechanics of Granular Matter
Q. SUN and G. WANG, Tsinghua University, China

Focusing on the basic mechanics and underlying physics of granular material, Mechanics of Granular Matter starts with an introduction to contact mechanics of individual particles before moving on to a discussion of the structure of force chain networks and the influence on bulk mechanical properties of granular solids and granular flows. Furthermore, a preliminary multi-scale framework is proposed for the nonlinear mechanics and strain localisation in granular materials.

Published 2013  /  208pp  /  £129.00

Materials Characterisation VI
Computational Methods and Experiments
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK

Materials characterisation is important to ensuring that new products meet the needs of industry and consumers. The accurate characterisation of the physical and chemical properties of the materials requires the application of both experimental techniques and computer simulation methods. The wide range of materials now available, from metals to polymers and semiconductors to composites, necessitates a variety of experimental techniques and numerical methods.

The papers in the book examine various combinations of techniques. The papers cover such topics as: Mechanical Characterisation and Testing; Micro and Macro Materials Characterisation; Cementitious Materials; Advances in Composites; Semiconductor Materials Characterisation; Computational Models and Experiments; Corrosion Problems.

WIT Transactions on Engineering Sciences, Vol 90
Published 2015  /  412pp  /  £172.00

Tribology and Design II
Edited by: M. HADFIELD, Bournemouth University, UK and C.A. BREBBIA, Wessex Institute of Technology, UK

Today it is more important than ever for designers to consider product and system durability in relation to reliability and sustainability issues. Containing papers presented at the Fourth International Conference on Tribology and Design, Tribology and Design II helps designers do just that by bringing together conference research papers by colleagues from different disciplines dealing with problems of surface interaction and design.

The topics covered include: Lubrication Studies; Test Methods; Surface Engineering; Wear Mechanics.

WIT Transactions on Engineering Sciences, Vol 76
Published 2012  /  220pp  /  £95.00

Surface Effects and Contact Mechanics including Tribology XII
Computational Methods and Experiments
Edited by: J.TH.M. DE HOSSON, University of Groningen, The Netherlands; M. HADFIELD, University of Bournemouth, UK and C.A. BREBBIA, Wessex Institute of Technology, UK

The book contains papers from the twelfth in a series of biennial conferences, first held in 1993, on the topics of contact mechanics and surface effects and their interaction.

In general, structural components fail by wear, corrosion and fatigue, that is to say affected and initiated by surface conditions. Consequently, it is often appropriate to modify the surface layer of a base material or coat it, so as to provide an enhanced performance or longer life. However, in many cases it is the combined effect of wear and corrosion that is damaging, contributing to complexity in determining the proper approach. The surface treatment chosen should be suitably related to the problem to be solved. The necessary thickness of the coating depends largely on the applied loading and environmental conditions.

The papers in the book address novel protective layers for advances in sliding wear and low friction. The contents cover topics such as: Experimental and Measurement Tests; Surface Modification; Surface Problems in Contact Mechanics; Thin and Thin Coatings; Tribomechanics; Computer Simulation.

WIT Transactions on Engineering Sciences, Vol 81
Published 2015  /  364pp  /  £157.00

Materials Characterisation VII
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK

Containing papers presented at the Seventh International Conference on Materials Characterisation, this book presents the latest advances in a rapidly developing field that requires the application of a combination of numerical and experimental methods. The work has been contributed by researchers who use computational methods, those who perform experiments, and those who combine both.
Surface Effects and Contact Mechanics XI
Computational Methods and Experiments
Edited by J.T.M. De Hosson, University of Groningen, The Netherlands and C.A. Brebbia, Wessex Institute of Technology, UK

The book’s papers cover: Experimental and Measurement Tests; Computer Simulation; Surface Problems in Contact Mechanics; Thick and Thin Coatings; Surface Modification; Fracture Fatigue and Mechanics; Composite Materials and Structures.

WIT Transactions on Engineering Sciences, Vol 78
Published 2013 / 363pp / £151.00

Applications of Fourier Transforms to Generalized Functions
M. Rahman, Dalhousie University, Canada

The generalized function is one of the important branches of mathematics and is applicable in many practical fields. Its applications to the theory of distribution and signal processing are especially important. The Fourier transform is a mathematical procedure that can be thought of as transforming a function from its time domain to the frequency domain. This book explains how Fourier transforms can be applied to generalized functions.

The book includes new material not found in other literature on the topic, including solutions to previously unsolved problems. It is written to be accessible to non-experts, with clear explanations of mathematical theory, graphical illustrations, and exercises at the end of every chapter.

Contents: Introduction; Generalized functions and their Fourier transforms; Fourier transforms of particular generalized functions; Asymptotic estimation of Fourier transforms; Fourier series as series of generalized functions; The fast Fourier transform (FFT); Appendix A: Table of Fourier transforms; Appendix B: Properties of impulse function (δ(x)) at a glance; Appendix C: Bibliography.

Published 2011 / 192pp / £83.00

Mathematics & Statistics

The Method of Response Function in Psychology & Sociology
I.G. Malkina-Pykh and Y.A. Pykh, Russian Academy of Sciences, Russia

Social (psychological and sociological) systems present considerable difficulties for modellers because of their complexity, multidimensionality, uncertainty, irreducibility, and so on. The authors propose the method of response functions (MRF) as a method for the construction of purposeful, credible, integrated models of social systems from data and prior knowledge or information, overcoming some of the difficulties.

The method of response functions is a nonlinear regression method that implies credible models in the sense that they are identifiable, and, hopefully, explains system output behaviour satisfactorily.

For case studies the authors selected the problems usually studied by psychologists and sociologists with statistical procedures, such as analysis of variance and discriminant analysis, based on the general linear model or one of its multivariate generalisations (structural equation models, etc.): disordered eating and obesity, subjective well-being and alexithymia. An accompanying CD-ROM contains the demonstration versions of three models that are discussed in the various chapters.

Published 2013 / 368pp + CD / £112.00

Fundamentals of Wavelets
D. JiZheng, Zhejiang University of Technology, China

Many researchers from various scientific disciplines use wavelets, but as often as not they fail to understand the fundamental concepts of wavelet analysis and why wavelets can be used both to solve and to treat problems. Fundamentals of Wavelets is designed to meet the needs of the above-mentioned researchers and to demonstrate that wavelets are not only the microscopes and telescopes in mathematics but that it is also not necessary to have a detailed theoretical knowledge to use them to solve problems.

Published 2012 / 274pp / £129.00

Introduction to Regression Analysis
M.A. Golberg, and H.A. Cho, University of Nevada, Las Vegas, USA

In order to apply regression analysis effectively, it is necessary to understand both the underlying theory and its practical application. This book explores conventional topics as well as recent practical developments, linking theory with application. Intended to continue from where most basic statistics texts end, it is designed primarily for advanced undergraduates, graduate students and researchers in various fields of engineering, chemical and physical sciences, mathematical sciences and statistics.

Published 2008 / 240pp / £86.00

All Books in this Catalogue are Available Both as Print and eBook

BEST SELLER

Biologically Inspired Optimization Methods
An Introduction
M. Wahde, Chalmers University of Technology, Sweden

The advent of rapid, reliable and cheap computing power over the last decades has transformed many, if not most, fields of science and engineering. The multidisciplinary field of optimization is no exception. First of all, with fast computers, researchers and engineers can apply classical optimization methods to problems of larger and larger size. In addition, however, researchers have developed a host of new optimization algorithms that operate in a rather different way than the classical ones, and that allow practitioners to attack optimization problems where the classical methods are either not applicable or simply too costly (in terms of time and other resources) to apply.

This book is intended as a course book for introductory courses in stochastic optimization algorithms and it has grown from a set of lecture notes used in courses taught by the author at the international master programme Complex Adaptive Systems at Chalmers University of Technology in Göteborg, Sweden. Thus, a suitable audience for this book is third-year and fourth-year engineering students with a background in engineering mathematics (analysis, algebra, and probability theory) as well as some knowledge of computer programming.

Published 2008 / 240pp / £86.00

Appendix C: Bibliography.

Available Both as Print and eBook

Materials & Manufacturing

The Generalized Function is One of the Important Branches of Mathematics and is Applicable in Many Practical Fields. Its Applications to the Theory of Distribution and Signal Processing Are Especially Important. The Fourier Transform is a Mathematical Procedure that Can Be Thought of as Transforming a Function from Its Time Domain to the Frequency Domain. This Book Explains How Fourier Transforms Can Be Applied to Generalized Functions.

The Book Includes New Material Not Found in Other Literature on the Topic, Including Solutions to Previously Unsolved Problems. It Is Written to Be Accessible to Non-Experts, with Clear Explanations of Mathematical Theory, Graphical Illustrations, and Exercises at the End of Every Chapter.

Contents: Introduction; Generalized Functions and Their Fourier Transforms; Fourier Transforms of Particular Generalized Functions; Asymptotic Estimation of Fourier Transforms; Fourier Series as Series of Generalized Functions; The Fast Fourier Transform (FFT); Appendix A: Table of Fourier Transforms; Appendix B: Properties of Impulse Function (δ(x)) at a Glance; Appendix C: Bibliography.
Contents: Some Basic Results in Probability and Statistics; Simple Linear Regression; Random Vectors and Matrix Algebra; Multiple Regression; Residuals, Diagnostics and Transformations; Further Applications of Regression Techniques; Selection of a Regression Model; Multicollinearity: Diagnosis and Remedies; Appendix.

Reprinted 2010 / 425pp / £155.00

Numerical Methods for Engineering

NEW TITLE
Kelvin, Thermodynamics and the Natural World
Edited by: M W COLLINS, Brunel University, UK; R.C. DOUGAL, Maxwell Foundation, UK; C.S. KÖNING, Brunel University, UK and I.S. RUDDOCK, Strathclyde University, UK

This volume looks afresh at the life and works of Lord Kelvin including his standing and relationships with Charles Darwin, T S Huxley and the X-club, thereby throwing new light on the nineteenth-century conflict between the British energy and biology specialists. It focuses on two principal issues. Firstly, there is the contribution made by Kelvin to the formulation of the Laws of Thermodynamics, both personal and in the content of the scientific communications exchanged with other workers, such as Joule and Clausius. Secondly, there is Kelvin’s impact on the wider field of science such as thermelectricity and geology (determination of the age of the earth). Of late a number of studies and initiatives, including the Centenary celebrations of Kelvin’s death and exhibits such as that of the ‘Revolutionary Scientist’ in the Hunterian Museum, Glasgow, have been undertaken aiding the redefinition of Kelvin’s greatness and achievements. The book also raises awareness to ‘improve our approach to the teaching of elementary thermodynamics by attempting to empathise with Kelvin’s perspective’. It is completed by a full biography, overviews of various monuments to his memory, and short ‘Stories in Pictures’ on the Atlantic cable, Maxwell’s Demon, the universities associated with the development of thermodynamics and the Royal Society of Edinburgh.

Scientists and engineers with an interest in thermodynamics and anyone interested in the work of Lord Kelvin will find benefit in Kelvin, Thermodynamics and the Natural World.

Published 2015 / apx 324pp / apx £139.00

FORTHCOMING
Complex Systems in Business, Administration, Science and Engineering II
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK

Containing the proceedings of the 2016 New Forest Conference on Complex Systems, this multi-disciplinary book presents new approaches for resolving complex issues that cannot be resolved using conventional mathematical or software models.

Complex Systems occur in an infinite variety of problems encompassing fields as diverse as economics, the environment, humanities, social and political sciences, physical sciences and engineering. The papers in the book, contributed by researchers, developers and users of complex systems, cover such topics as: Complexity of the Internet-based Global Market; Complex Business Processes; Supply Chain Complexity; Transportation Complexity; Logistics Complexity; Complex Adaptive Software; Complexity of Big Data; Management of Complexity; Complexity in Social Systems; Complex Political Systems; Administrations as Complex Systems; Complexity in Engineering; Complex Ecological Systems; Complexity Science and Urban Developments; Extreme Events: Natural and Human made Disasters; Climate Change; Complexity and Environment; Complexity and Evolution; Complexity in Linguistics, Literature and Arts.

Published 2015 / apx 330pp / apx £142.00

NEW TITLE
Complex Systems in Business, Administration, Science and Engineering
Edited by: G. RZEVSKI, The Open University, UK and C.A. BREBBIA, Wessex Institute of Technology, UK

The papers contained in this volume were originally presented at the 2015 International Conference on Complex Systems in Business, Administration, Science and Engineering. Included are the latest works of practitioners from a variety of disciplines who have developed new approaches for resolving complex issues that cannot be formulated using conventional, mathematical or software models.

Complex Systems occur in an infinite variety of problems, not only in the realm of physical sciences and engineering, but also in such diverse fields as economics, the environment, humanities, and social and political sciences.

The papers in the book cover such topics as: Complex Ecological Systems; Complexity Science and Urban Developments; Complex Energy Systems; Complex Issues in Biological and Medical Sciences; Extreme Events: Natural and Human made Disasters; Climate Change; Complexity of the Internet-based Global Market; Complex Business Processes; Supply Chain Complexity; Transportation Complexity; Logistics Complexity; Closed and Open Systems; Attractions and Chaotic Systems; Complex Adaptive Software; Complexity of Big Data; Management of Complexity; Global Economy as a Complex System; Complexity in Social Systems; Complex Political Systems; Administrations as Complex Systems; Complexity in Engineering; Complexity and Environment; Complexity and Evolution; Complexity in Linguistics, Literature and Arts.

Forthcoming 2016 / apx 330pp / apx £142.00

Water Hammer Simulations
S. MAMBRETTI, UNICAMP, Brazil

Water Hammer Simulations is a comprehensive guide to modelling transients in closed pipes. The models presented range from those used for the first studies into the field to the most advanced available today.

All of the models are described in detail, starting from the simplest to the most complex. Most of the presented models have been implemented in computer codes, which are provided with the book as both executable files and the sources. The use of these programs is explained in the book.

Laboratory tests and real case applications are also presented and discussed, together with the still unresolved problems in the field. The focus of researcher’s efforts will be on these issues in the coming years.

The book is suitable for professionals working in the field as well as scholars and undergraduate students.

Published 2014 / 200pp + CD / £86.00
Stochastic Methods in Engineering
I. DOLTSINIS, University of Stuttgart, Germany

The increasing industrial demand for reliable quantification and management of uncertainty in product performance forces engineers to employ probabilistic models in analysis and design, a fact that has occasioned considerable research and development activities in the field. Notes on Stochastics eventually address the topic of computational stochastic mechanics. The single volume uniquely presents tutorials on essential probability and statistics, recent finite element methods for stochastic analysis by Taylor series expansion as well as Monte Carlo simulation techniques. Design improvement and robust optimisation represent key issues as does reliability assessment. The subject is developed for solids and structures of elastic and plastic material, large displacements and material deformation processes; principles are transferable to various disciplines. A chapter is devoted to the statistical comparison of systems exhibiting random scatter. Where appropriate examples illustrate the theory, problems to solve appear instructive; applications are presented with relevance to engineering practice.

The book, emanating from a university course, includes research and development in the field of computational stochastic analysis and optimization. It is intended for advanced students in engineering and for professionals who wish to extend their knowledge and skills in computational mechanics to the domain of stochastics.

Contents: Introduction, Randomness, Structural analysis by Taylor series expansion, Design optimization, Robustness, Monte Carlo techniques for system response and design improvement, Reliability, Time variant phenomena, Material deformation processes, Analysis and comparison of data sets, Probability distribution of test functions.

Published 2012 / 378pp / £158.00

Risk & Security

Flood Early Warning Systems
Knowledge and Tools for their Critical Assessment
D. MOLINARI, S. MENONI, F. BALLIO, Politecnico di Milano, Italy

This book presents the results of an ambitious research activity designed to understand why Early Warning Systems (EWSs) fail. However, from the beginning, the objective of the research proved to be challenging for two reasons. First, as yet there is not a shared understanding of what an EWS is among either researchers or practitioner communities. Second, as a consequence, it is equally unclear when an EWS can be considered successful or not. Because of this, the research needed first to define EWS and identify its components, functions, peculiarities, and weak points. Only at that point was a first attempt to evaluate EWSs performance possible.

Flood Early Warning Systems Performance is organised according to the conceptual steps required by the research. In part I the “open questions” about the definition and the role of EWSs are handled, the aim being the identification of how to evaluate EWSs effectiveness/performance. Part II focuses on the real aim of the research, providing concepts and tools to assess EWSs performance; suggested tools are also implemented in a case study to describe how they can be applied in practice. The sections are independent of each other to allow readers to focus only on the content they are most interested in.

The book is designed for a wide audience. The book can serve as a sort of manual for EWS designers, managers, and users, but also has appeal for general readers with an interest in the subject. While the focus of the book is flood risk in mountain regions, most of the results can be applied to other hazards as well.

Traditionally early warning systems (EWSs) have been identified with monitoring and forecasting systems and their assessment has therefore focused only on the accuracy of predictions. The authors propose a shift in thinking towards the more comprehensive concept of total warning systems, where monitoring and forecasting systems are coupled with risk assessment, emergency management and communication aspects. In line with this, a new approach to assess EWSs is proposed that is based on system’s capacity of reducing expected damages, with the hope that improved EWSs will result.

Published 2013 / 196pp / £84.00

Tsunami
From Fundamentals to Damage Mitigation
Edited by: S. MAMBRETTI, Universidade Estadual de Campinas, Brasil

A tsunami is a series of water waves caused by the sudden displacement of a large volume of a body of water, typically an ocean. Earthquakes, volcanic eruptions and other underwater explosions (including detonations of underwater nuclear devices), landslides, glacier calving, meteorite impacts and other disturbances above or below water all have the potential to generate a tsunami.

These waves are very different from normal sea waves, because their wavelength is far longer. Large events can generate wave heights of tens of metres and therefore, although the main impact of tsunamis is to coastal areas, their potential destructive power is enormous and they can affect entire ocean basins; the 2004 Indian Ocean tsunami was among the deadliest natural disasters in human history with over 230,000 people killed in 14 countries bordering the Indian Ocean.

Tsunami: From Fundamentals to Damage Mitigation comprises seven chapters, dealing with the different aspects of the field. The first chapter deals with the different types of tsunami and their historical data. Chapter 2 describes an inverse type solution to find a posteriori of the tsunami waveform. One of the main problems with tsunamis, described in Chapter 3, is how to assess the flooding they produce. Chapter 4 deals with the very important topic of Early Warning Systems. Chapter 5 not only studies the behaviour of RO buildings under the 2011 Japanese Tsunami but puts
forward a series of recommendations. One of the most damaging aspects of
natural disasters is the damage to infrastructure and building systems. Chapter
6 discusses this along with providing guideline measures to take in the
future. Finally, Chapter 7 studies the important problem of health and
related issues due to tsunami disasters.
Series: Safety & Security Engineering
Published 2013 / 168pp / £76.00

Flood Risk Assessment and
Management
Edited by: S. MAMBRETTI, Politecnico Di Milano, Italy

This volume is the first in a new series that covers various aspects of
Safety and Security Engineering with the aim of developing a
comprehensive view on risk mitigation. This volume is devoted to floods,
since one-third of annual natural disasters and economic losses, and
more than half of the victims of natural disasters are flood-related.
The present volume contains selected papers presented at Conferences
organised by the Wessex Institute of Technology. The papers have been
revised by the Authors to bring them up to date and to integrate them
into a coherent understanding of the topic. It covers: Risk Assessment;
Mathematical Models for Flood Propagation; Effect of Topographic
Data Resolution; Social and Psychological Aspects; Decision Making
and Management; Legislations and Directives; Alternatives in Flood
Protection; Response and Recovery; Damages and Economic-related
Problems; Case Studies
Series: Safety & Security Engineering
Published 2012 / 168pp / £65.00

Landslides
Edited by: S. MAMBRETTI, Politecnico Di Milano, Italy

This volume is the second in the new Safety and Security Engineering
series that is designed to provide a comprehensive view on risk mitigation.
The book is devoted to landslides and debris flow, addressing the need for a
better understanding of these increasingly frequent phenomena. With a
better understanding comes a greater ability to manage the attendant risk.
Landslides contains selected research papers presented at Wessex
Institute of Technology Conferences. The Authors have revised their
papers to bring them up to date and to integrate them into a coherent
volume on the topic. The book includes the following chapters: Ranging
scales in spatial landslide hazard and risk analysis; From national
landslide database to national hazard assessment; An aid in the most
accurate rainfall thresholds evaluation; Computer analysis of slope
failure and landslide processes caused by water; The management
of territorial risks: which integration between planning instruments,
emergency planning and management; Decision making and Management;
Legislations and Directives; Alternatives in Flood Protection; Response
and Recovery; Damages and Economic-related Problems; Case Studies
Series: Safety & Security Engineering
Published 2012 / 144pp / £65.00

Critical Infrastructure Security
Assessment, Prevention, Detection,
Response
Edited by: F. FLAMMINI, University of Naples Italy

Critical Infrastructure Security: Assessment, Prevention, Detection,
Response provides the most comprehensive survey yet of state-of-the-art
techniques for the security of critical infrastructures (CI). It addresses
both logical and physical aspects of security from an engineering point
of view, and considers both theoretical aspects and practical applications
for each topic. The book emphasises model-based holistic evaluation
approaches as well as emerging protection technologies, including smart
surveillance through networks of intelligent sensing devices.

Chapters investigate recently developed methodologies and tools for
CI analysis as well as strategies and technologies for CI protection in the
following strongly interrelated and multidisciplinary main fields:
Vulnerability analysis and risk assessment; Threat prevention, detection
and response; Emergency planning and management. Chapters are
written by experts in the field, invited by the editors to contribute to the
book. Researchers who participated are based at such institutions as
Naval Postgraduate School, Argonne National Laboratory, Johns Hopkins
University Applied Physics Laboratory, Pennsylvania State University, the
University of Wisconsin, and SAIC.
The book can serve as a self-contained reference handbook for both
practitioners and researchers or even as a textbook for master/doctoral
degree students in engineering or related disciplines.

WIT Transactions on State-of-the-art in Science and
Engineering, Vol 54
Published 2012 / 326pp / £132.00

Disaster Management and Human
Health Risk IV
Reducing Risk, Improving Outcomes
Edited by: Ş.M. SENER, Istanbul Technical University, Turkey;
C.A. BREBBIA, Wessex Institute of Technology, UK
and Ö. ÖZÇEVİK, Istanbul Technical University, Turkey

As human population has continued to concentrate in urban areas, the
number of people and the value of property affected by disasters, both
natural and human-generated, have grown as well: Earthquakes, floods,
hurricanes, cyclones, tornadoes, and forest fires have all taken their toll.
So have such anthropogenic disasters as pipeline failures, industrial
spills, and terrorist attacks.
The contents of this volume consist of papers presented at the fourth in a
series of conferences convened to assess the potential risk from various
disasters and discuss ways to prevent or mitigate damage. The papers
have been contributed by experts on public health, security, and disaster
management from academia, industry, and government.
Topics covered include: Disaster Analysis; Disaster Monitoring and
Mitigation; Emergency Preparedness; Risk Assessment and Mitigation;
Risk and Security; Safety and Resilience; Socio-economic Issues; Case
Studies.

WIT Transactions on The Built Environment, Vol 150
Published 2015 / 360pp / £155.00

NEW TITLE
Disaster Management and Human Health Risk III
Reducing Risk, Improving Outcomes
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK

Topics covered include: Disaster Monitoring and Mitigation; Disaster Analytics; Emergency Preparedness; Critical Information and Communication Technologies for Disaster Preparedness and Response; Risk Mitigation; Multi-Hazard Risk Assessment; Learning from Disasters; Socio-economic Issues.

WIT Transactions on The Built Environment, Vol 133
Published 2013 / 412pp / £129.00

Forthcoming
Flood Recovery, Innovation and Response V
Edited by: D. PROVERBS, University of the West of England, UK and C.A. BREBBIA, Wessex Institute of Technology, UK

Flood recovery is a global phenomenon that claims countless lives worldwide each year. This book contains the proceedings of the 5th conference in the successful series on Flood Recovery, Innovation and Response that began in 2008 at the Institution of Civil Engineers in London.

When flooding occurs in populated areas, it can cause substantial damage to property as well as threatening human life. Apart from the physical damage to buildings, contents and loss of life, which are the most obvious impacts of floods upon households, indirect losses are often overlooked. These indirect and intangible impacts are generally associated with disruption to normal life as well as longer term health issues including stress related illness. Flooding represents a major barrier to the alleviation of poverty in many parts of the developing world, where vulnerable communities are often exposed to sudden and life threatening events.

This book contains a wide range of technical and management topics related to flooding and its impacts on communities, property and people. These include: Property-level flooding and health consequences; Flood Management; Risk Assessment; Emergency Preparedness and Response; Flood Modelling; Considering “Blue-Green” Approaches to Flood Risk Management; State-of-the-art Flooding Damage Survey and Assessment.

WIT Transactions on Ecology and the Environment, Vol 184
Published 2014 / 320pp / £129.00

Flood Recovery, Innovation and Response IV
Edited by: D. PROVERBS, University of the West of England, UK and C.A. BREBBIA, Wessex Institute of Technology, UK

Flooding is a global phenomenon that claims numerous lives worldwide each year. Set up to promote research into this area of study, this book contains the proceedings of the 4th International Conference on Flood Recovery, Innovation and Response.

When flooding occurs in populated areas, it can cause substantial damage to property as well as threaten human life. In addition, many people must endure the homelessness, upset and disruption that are left in the wake of floods. The increased frequency of flooding in the last few years, coupled with climate change predictions and urban development, suggest that these statistics are set to worsen in the future. How we respond and adapt to these challenges is key to developing our long-term resilience at the property, community and city scale.

Apart from the physical damage to buildings, contents and loss of life, which are the most obvious impacts of floods upon households, other more indirect losses are often overlooked. These indirect and intangible impacts are generally associated with disruption to normal life as well as longer term health issues including stress related illness. Flooding represents a major barrier to the alleviation of poverty in many parts of the developing world, where vulnerable communities are often exposed to sudden and life threatening events.

This book covers a wide range of technical and management topics related to flooding and its impacts on communities, property and people. These include: Property-level flooding and health consequences; Flood Management; Risk Assessment; Emergency Preparedness and Response; Flood Modelling; Considering “Blue-Green” Approaches to Flood Risk Management; State-of-the-art Flooding Damage Survey and Assessment.

WIT Transactions on Ecology and the Environment, Vol 184
Published 2014 / 320pp / £129.00

Flood Recovery, Innovation and Response III
Edited by: D. PROVERBS, University of University of the West of England, UK; S. MAMBRETTI, Politecnico Di Milano, Italy; C.A. BREBBIA, Wessex Institute of Technology, UK and D. DE WRACHIEN, State University of Milan, Italy

Flooding claims many lives worldwide each year. In addition, many more lives are affected by homelessness, disease and crop failures as a result of floods’ destructiveness. The number of recent flood events, coupled with climate change predictions and urban development, suggest that these statistics are likely to worsen in the future.

Containing papers from the third biennial conference on the subject, the book covers: Flood Risk Management; Flood Risk Vulnerability; Emergency Preparedness and Response; Flood Forecasting; Flood Case Studies; Responses to Reduce Vulnerability to Flooding.

WIT Transactions on Ecology and the Environment, Vol 159
Published 2012 / 284pp / £122.00

Modelling, Monitoring and Management of Forest Fires III
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK and G. PERONA, Politecnico di Torino, Italy

Future forest fire scenarios will continue to be impacted by climatic trends and changes in climatic extremes, as well as by anthropic pressure, as in the past. It is to be expected that in future, especially in the Mediterranean regions, we will certainly see an increasing impact of human pressure on the natural environment, due to increases in tourism and to the enlargement of urban residential areas invading the countryside.

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marketing@witpress.com
Forecasting the effects of both factors (climatic and anthropic) and separating their effects on the frequency of forest fires may be particularly difficult, but is essential to improve our ability to predict forest fire occurrence and to better organize prevention and fighting activities. At the same time, estimation of the possible increase of fire risk over coming years is important, taking into account also the diverse fire-prone environments present in the Mediterranean as well as many other areas (mountain slopes, coastal zones, large islands, etc.).

Featured topics include: Air Quality and Health Risks; Computational Methods and Experiments; Detection, Monitoring and Response Systems; Decision Support Systems; Risk and Vulnerability Assessment; Resource Optimisation.

WIT Transactions on Ecology and the Environment, Vol 158
Published 2012  /  258pp  /  £111.00

NEW TITLE

Safety and Security Engineering V
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK; F. GARZIA, University of Rome “La Sapienza”, Italy and D. POLJAK, University of Split, Croatia

This book contains the proceedings of the sixth in a series of interdisciplinary conferences on safety and security engineering. The papers from the biennial conference, first held in 2005, include the work of engineers, scientists, field researchers, managers and other specialists involved in one or more aspects of safety and security.

The papers presented cover areas such as: Risk Analysis, Assessment and Management; Critical Infrastructure Protection; Emergency Response; Security Surveillance Systems; Safety and Security – Water, Wastewater and Waste Plants; Human Factors; Modelling and Experiments; Systems Safety.

WIT Transactions on The Built Environment, Vol 151
Published 2015  /  432pp  /  £186.00

Safety and Security Engineering VI
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK; F. GARZIA, University of Rome “La Sapienza”, Italy and M. GUARASCIO, University of Rome “La Sapienza”, Italy

The papers presented cover Risk analysis, assessment and management; Human factors; Incident management; Infrastructure protection; Construction safety and security; Traffic safety and security; Safety in the design of road networks in ordinary and emergency conditions; Modelling and experiments; Modelling studies, Soil and flood contamination; Air pollution issues; Air quality; Earthquake issues.

WIT Transactions on The Built Environment, Vol 154
Published 2013  /  900pp  /  £387.00

Flood Prevention and Remediation
Edited by: F.C.B. MASCARENHAS, COPPE-UFRJ, Brazil

Flood Prevention and Remediation presents several techniques and approaches to help in dealing with flood problems. Chapters 1 and 2 show simplified mathematical modelling of floods and the results of multifunctional landscape flood control measures in the city of Rio de Janeiro. The remaining book chapters present remedial work against debris after floods in Venezuela; measures for mitigation of flood areas in Japan; studies on flood risk assessment and management in Mediterranean basins; the attitudes of residents in the Tokyo Bay area toward flood hazards.

Published 2011  /  176pp  /  £76.00

FORTHCOMING

Risk Analysis X
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK
Risk Analysis X contains papers presented at the 10th International Conference on Computer Simulation in Risk Analysis and Hazard Mitigation. The contents of the book are concerned with all aspects of risk management and hazard mitigation, associated with both natural and anthropogenic hazards.

Current events highlight the importance to planners and researchers around the world of analysing and managing risk. Natural hazards such as floods, earthquakes, landslides, fires and others have always affected human societies. More recently, as a consequence of the rapid technological advances made in the last few centuries, man-made hazards have emerged as equally important phenomena. The interaction of natural and anthropogenic risks adds to the complexity of the problems.

Topics include: Risk Analysis and Assessment; Risk Prevention, Management and Control; Early Warning Systems; Risk Mapping; Disaster Management; Vulnerability Assessment; Health Risk; Case Studies; Climate Change; Flood Hazards; Seismic Risk; Other Natural Hazards; Construction Risk Management; Transport Risk Analysis; Safety and Security; Evacuation Simulation and Design; Political and Economic Vulnerability; Social Aspects of Risk Management; Community Resilience.

WIT Transactions on Information and Communication Technologies, Vol 71
Forthcoming 2016  /  apx 500pp  /  apx £215.00

Risk Analysis IX
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK

Containing papers presented at the 9th International Conference on Computer Simulation in Risk Analysis and Hazard Mitigation this book covers a series of important topics of current research interest and many practical applications. It is concerned with all aspects of risk management and hazard mitigation associated with both natural and anthropogenic hazards.

The analysis and management of risk and the mitigation of hazards is of fundamental importance to planners and researchers around the world. We live in an increasingly complex society, with the potential for disasters on a worldwide scale. Natural hazards such as floods, earthquakes, landslides, fires and others have always affected human societies. Man-made hazards, however, played a comparatively small role a few centuries ago until the risk of catastrophic events started to increase due to the rapid growth of new technologies. The interaction of natural and anthropogenic risks adds to the complexity of the problem.

Topics covered include: Risk Management; Hazard Prevention, Management and Control; Disaster Management; Vulnerability Assessment; Flood Hazards; Safety and Security; Risk Analysis and Assessment; Emergency Management.

WIT Transactions on Information and Communication Technologies, Vol 47
Published 2014  /  552pp  /  £241.00

All Books in this Catalogue are Available Both as Print and eBook
This book addresses topics such as: Risk Assessment and Management; Risk Mapping; Hazard Prevention, Management and Control; Natural Hazards and Climate Change; Vulnerability and Resilience Assessment; Safety and Security; Emergency Response; Risk Mitigation During Evacuation. The book will be of interest to planners, emergency managers, environmentalists, engineers, policy makers and other government officials, researchers and academics involved in the field of risk and disaster management.

**WIT Transactions on Information and Communication Technologies, Vol 44**

Published 2012 / £52pp / £237.00

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### Structural Engineering

#### FORTHCOMING

**Mobile and Rapidly Assembled Structures V**

Edited by: N. De TEMMERMAN, Vrije Universiteit Brussel, Belgium and C.A. BREBBIA, Wessex Institute of Technology, UK

This multi-disciplinary proceedings volume contains papers presented at the fifth International Conference on Mobile, Adaptable and Rapidly Assembled Structures (MARAS) held in Siena, Italy. This fifth iteration follows the success of the previous conferences in this series. Some areas of the subject are already well documented, but knowledge is fragmented. Mobile and Rapidly Assembled Structures V brings together recent works from engineers, architects and researchers concerned with the design, analysis, manufacture and erection of rapidly assembled structures.

Mobile and rapidly assembled structures play a major role in disaster mitigation and temporary accommodation. They are of primary importance in many military as well as civilian applications and are widely used for rescue and maintenance services. Their importance continues to grow in modern society where speed of response is of primary importance. In many cases, their reversible deployment and potential reuse can lead to a lower economical and ecological impact, providing a more sustainable solution.

Topics comprise: Rapidly Erected Bridges and Transportable Bridges; Disaster Mitigation Structures; Temporary Structures and Dwellings; Deployable Systems and Structural Mechanisms; Tensile and Reciprocal Frames; Origami-based Structures; Inflated and Air-supported Structures and Membrane Shelters; Rapidly Assembled Kit-of-parts Systems; Leisure Structures, Demountable Grandstands and Scaffolding Systems; Mobile Inspection Platforms; Folding and Telescopic Masts and Gangways; Tower Cranes and Mobile Lifting Apparatus; Trackways and Prefabricated Paving for Roads and Airfields; Protective Structures; Rapid Repairs of Structures; Structures in Adverse Conditions; Spacecraft Structures; Construction and Repair.

**WIT Transactions on The Built Environment, Vol 167**

Forthcoming 2016 / apx 400pp / apx £172.00

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**Risk Analysis VIII**

Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK

Comprised of the papers presented at the eighth, International Conference on Simulation in Risk Analysis and Hazard Mitigation, this volume covers a topic of increasing importance.

This book addresses topics such as: Risk Assessment and Management; Risk Mapping; Hazard Prevention, Management and Control; Natural Hazards and Climate Change; Vulnerability and Resilience Assessment; Safety and Security; Emergency Response; Risk Mitigation During Evacuation. The book will be of interest to planners, emergency managers, environmentalists, engineers, policy makers and other government officials, researchers and academics involved in the field of risk and disaster management.

**WIT Transactions on Information and Communication Technologies, Vol 44**

Published 2012 / £52pp / £237.00

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**Mobile and Rapidly Assembled Structures IV**

Edited by: N. De TEMMERMAN, Vrije Universiteit Brussel, Belgium and C.A. BREBBIA, Wessex Institute of Technology, UK

Structures that move in the course of normal use, or which have to be assembled or erected rapidly on a relatively unprepared site, offer a particular challenge to the designer. The interaction between the structure and the mechanism by which it moves is essential in these cases. The speed of assembly, what this means in terms of logistics, materials and cost, is a major factor in many such structures.

There are common problems such as the efficient design of assembly joints, the resistance to damage of the membrane and metal cladding, crashworthiness and the limits of serviceability. Some areas of the subject are already well documented, but knowledge is fragmented and there is little design guidance available in the form of textbooks, data sheets or codes of practice. The interaction between morphology, kinematic behaviour and structural performance – typical for these structures – poses real challenges in terms of design and successful realisation.

This multi-disciplinary proceedings volume contains papers presented at the fourth International Conference on Mobile, Adaptable and Rapidly Assembled Structures.

Topics covered include: Temporary Structures and Dwellings; Tensile and Reciprocal Frames; Rapidly Assembled Kit-of-parts Systems; Engineering Transformation; Innovative Approaches.

**WIT Transactions on The Built Environment, Vol 136**

Published 2014 / 336pp / £144.00

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**System Identification for Structural Health Monitoring**

1. TAKEWAKI, Kyoto University, Japan; M. NAKAMURA, Technical Research Institute, Obayashi Corporation, Japan and S. YOSHITOMI, Kyoto University, Japan

System identification for Structural Health Monitoring is the first textbook on rich content published in international journal papers by the authors, to which have been added introductory explanations to make the material accessible for a broad class of readers.

System identification (SI) techniques play an important role in investigating and reducing gaps between the constructed structural systems and their structural design models and in structural health monitoring for damage detection. A great amount of research has been conducted in SI.

Published 2012 / 272pp / £130.00

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**Bridge Aeroelasticity**

Sensitivity Analysis and Optimal Design

J.A. JURADO, S. HERNÁNDEZ, F. NIETO and A. MOSQUERA, University of A Coruña, Spain

Long-span suspension and cable-stayed bridges are currently of great interest, a fact reflected in an ever-increasing number of bridges being built over bays, straits and estuaries. To address the need for more information on this type of structure, the authors have produced this book describing the current capability for analysis and design of such structures.

The book brings together coherently important information that hitherto could only partially be found scattered in technical magazines, including the historical evolution and recent installations of long-span suspension and cable-stayed bridges. It discusses wind-induced phenomena as one of the main perils such structures have to withstand, specifically the instability known as flutter, and describes in a very comprehensive manner the most advanced methods to evaluate bridge safety under wind flow. Finally, it is the first book to present methodology for analysing the
Structures Under Shock and Impact XIII

Edited by: G. SCHLEYER, The University of Liverpool, UK and C.A. BREBBIA, Wessex Institute of Technology, UK

Of interest to engineers from civil, military, nuclear, offshore, aeronautical, transportation and other backgrounds, this book contains the proceedings of a well-established biennial conference on the subject that was first held in 1989.

Contents:
- Impact and Blast Loading
- Energy Absorbing Issues
- Interaction between Computational and Experimental Results
- Aeronautical and Aerospace Applications
- Response of Reinforced Concrete under Impact
- Response of Building Façade and Components to Blast and Impact Load
- Seismic Behaviour
- Structural Crashworthiness
- Nonlinear Numerical Analysis

WIT Transactions on The Built Environment, Vol 141

Published 2014 / 512pp / £220.00

Elements of Plasticity

Theory and Computation

I. DOLTSINIS, University of Stuttgart, Germany

"...clearly written, and it is easy to follow the text...[the book] gives a good understanding of the inelastic behaviour of materials. The examples chosen are good for illustration...Elements of Plasticity will certainly benefit graduate students, engineers, and consultants working on the numerical aspects of the inelastic behaviour of solids and structures."

APPLIED MECHANICS REVIEWS

In this revised second edition, Elements of Plasticity continues to bridge the gap between classical theory and modern computational techniques and does so by focusing on the most important elements of theory and computation using matrix notation.

Some complementary aspects of creep and viscoplasticity are considered and a number of applications from engineering practice are used to demonstrate the use of computational techniques. Practising engineers, consultants, and graduate students from civil, mechanical, automotive, and aerospace engineering will find this revised edition indispensable.

Series: High Performance Structures and Materials, Vol 1

2nd Edition 2010 / 320pp / £125.00
High Performance Structures and Materials VI
Edited by: W.P. DE WILDE, Vrije Universiteit Brussel, Belgium; C.A. BREBBIA, Wessex Institute of Technology, UK and S. HERNÁNDEZ, University of A Coruña, Spain

Containing the edited papers presented at the Sixth International Conference on High Performance Structures and Materials, this volume addresses the issues involved with advanced types of structures, particularly those based on new concepts or new materials. Contributions highlight the latest developments in design, optimisation, manufacturing and experimentation in these areas.

The book covers such topics as: Emerging Structural Applications; Material Characterisation; Composite Materials and Structures; Contact Mechanics; High Performance Concretes; Steel Structures; Natural Fibre Composites; Experiments and Numerical Analysis; Moderate Span Footbridges.

WIT Transactions on The Built Environment, Vol 124
Published 2012 / 528pp / £227.00

Dynamics in the Practice of Structural Design
O. SIRCIOVICH-SAAR, Israel

Structural dynamics covers a variety of topics, some of which have direct applications in structural design. Among the latter, a clear distinction can be made between those necessary for the engineer in the daily practice of structural design and those related to academic activities, research, and the development of commercial products.

Written as an overview of many aspects of structural dynamics, this book is intended for engineers who normally tackle design situations involving dynamic loads with the appropriate computer software in the daily practice of design. Each chapter deals independently with a subject in structural dynamics without a necessary link to the foregoing chapters. This approach allows the reader to go directly to the topic of interest.

Published 2006 / 208pp / £86.00

High Performance and Optimum Design of Structures and Materials II
Edited by: W.P. DE WILDE, Vrije Universiteit Brussel, Belgium; S. HERNÁNDEZ, University of A Coruña, Spain and C.A. BREBBIA, Wessex Institute of Technology, UK

Containing papers from the 2nd High Performance Design of Structures and Materials and the Optimun Design of Structures conference, following the success of a number of meetings since 1989, this book will be of interest to those in any engineering field.

The use of novel materials and new structural concepts nowadays is not restricted to highly technical areas like aerospace, aeronautical applications or the automotive industry, but affects all engineering fields including those such as civil engineering and architecture.

Most high performance structures require the development of a generation of new higher performance sustainable materials, which can more easily resist a range of external stimuli or react in a non-conventional manner. Emphasis is placed on intelligent structures and materials as well as the application of computational methods for their modelling, control and management.

Optimisation problems of interest involve those related to size, shape and topology of structures and materials. Optimisation techniques have much to offer to those involved in the design of new industrial products. The development of new algorithms and the appearance of powerful commercial computer codes with easy to use graphical interfaces have created a fertile field for the incorporation of optimisation into the design process in all engineering disciplines.

The book addresses the topic of design optimisation with welcomed contributions on numerical methods, different optimisation techniques and new software.

Several of the topics covered are: Composite Materials and Structures; Material Characterisation; Experiments and Numerical Analysis; Transformable Structures; Environmentally Friendly and Sustainable Structures; Evolutionary Methods in Optimisation; Aerospace Structures; Biomemcanics Application and Pneumatic Structures.

WIT Transactions on The Built Environment, Vol 166
Forthcoming 2016 / apx 750pp / apx £323.00

High Performance and Optimum Design of Structures and Materials
Edited by: W.P. DE WILDE, Vrije Universiteit Brussel, Belgium; S. HERNÁNDEZ, University of A Coruña, Spain and C.A. BREBBIA, Wessex Institute of Technology, UK

The use of novel materials and new structural concepts nowadays is not restricted to highly technical areas like aerospace, aeronautical applications or the automotive industry, but affects all engineering fields, including those such as civil engineering and architecture.

Addressing issues involving advanced types of structures, particularly those based on new concepts or new materials and their system design, contributions highlight the latest developments in design, optimisation, manufacturing and experimentation. Also included are contributions on new software, numerical methods and different optimisation techniques. Optimisation problems of interest involve those related to size, shape and topology of structures and materials.

This proceedings volume is the first from a new iteration of the High Performance Design of Structures and Materials and the Optimun Design of Structures conferences, which follows the success of a number of meetings that originated in 1989.

Topics covered include: Composite Materials & Structures; Material Characterisation; Experiments and Numerical Analysis; Steel Structures; Timber Structures; Structural Optimisation; Green Composites; Composites for Automotive Applications; Optimisation Problems; Corrosion Problems; Surface Modification; Innovative Technologies; Heritage Constructions; Sustainable Solutions.

WIT Transactions on The Built Environment, Vol 137
Published 2014 / 704pp / £303.00

Call for Papers from WIT

MARAS 2016
5th International Conference on Mobile, Adaptable and Rapidly Assembled Structures

21–23 September 2016, Siena, Italy

This fifth edition follows the success of the previous conferences in this series, first organised in Southampton, followed by Seville, Madrid and Ostend.

The interaction of ideas and experience during the conference may lead to new mobile structural forms and an increased awareness of the problems of rapid assembly and mobility of structures. This multi-disciplinary meeting will bring together engineers, architects and researchers concerned with the design, analysis, manufacturing and erection of rapidly assembled structures.

Submit an abstract or register online: www.wessex.ac.uk/maras2016
This collection of research papers, presented at meetings organised by the Wessex Institute of Technology (WIT), concerns a variety of issues relating to the area of sustainable development. WIT has a long and very successful record of organising conferences on the topic of sustainability, which requires an interdisciplinary approach. Any sustainable solutions that are derived solely from the perspective of a single discipline may have unintended damaging consequences that create new problems.

Thus effective sustainable solutions require the collaboration of scientists and engineers from various disciplines, as well as planners, architects, environmentalists, policy makers, social scientists, and economists.

The contents of this book reflect that interdisciplinary approach, and include topics under the main areas of: Sustainable Development and Planning; Disaster Management; Air Pollution; Urban Transport; Ecosystems and Water Resources Management.

WIT Transactions on The Built Environment, Vol 168
Published 2015 / 1340pp / £602.00

This book presents an analysis of six different sources for pre-selecting SDIs, accompanied by a methodology to then finalise with a set of SDIs for the surface mining operations in oil sands projects. Surface mining projects are complex operations, with several social, economic, environmental, and health impacts. As the government and oil sands developers are turning towards increasing productivity with a more conscious sustainable development approach, a pre-selection of SDIs is required to assist further formal multi-criteria selection processes.

International Fish Screening Techniques
Edited by: A.W.H. TURNPENNY and R.A. HORSFIELD, Turnpenny Horsfield Associates Ltd, UK
Countless millions of fish disappear into water abstractions used for power generation, water supply, irrigation and other uses. As fish stocks become depleted, countries around the world increasingly see this as a threat to sustainability and are seeking to minimise these losses through legislation and introduction of best practice guidance on fish screening. In March 2011, the United Kingdom’s Institute of Fisheries Management organised a two-day conference that attracted international experts from the UK, Europe and the USA. This book presents key papers from the meeting, which will be of interest to academics, practitioners and environmental regulators everywhere.

There have been many new developments in physical and behavioural screening techniques, expanding the range of techniques available and their applicability to a wider range of species. For example, European legislation on protection of European eel stocks has added impetus to developing effective screening methods for this species, while there is increasing emphasis internationally on protecting younger life stages, which have previously been ignored. The developments covered are associated with potable and industrial water supply, irrigation, power plant cooling, hydroelectric generation, flood defence and other applications.

The advent of individual based models (IBMs) of fish behaviour is also seen to offer new opportunities to predict fish behaviour associated with a given set of hydraulic conditions, with the potential to compare alternative techniques and deployments at the planning stage.

WIT Transactions on State-of-the-art in Science and Engineering, Vol 71
Published 2014 / 220pp / £99.00
Sustainable Development

First International Symposium on Urban Development
Koya as a Case Study
Edited by: F.M. KHOSHNAW, Koya University, Iraq

This book contains papers presented at the International Symposium on Urban Development held in the Kurdistan region of Iraq, organised by the Faculty of Engineering at Koya University.

The Kurdistan region is rich in oil, gas, mineral resources and underground water. However, until recently, the political and security issues were such that the region was unable to take advantage of those resources. Nowadays, Kurdistan is emerging as one of the fastest developing areas in the Middle East, with its universities playing a major role in this process.

The International Symposium papers included in this volume cover a wide range of topics and are written by people with different specialisations and perspectives. They relate the research carried out at academic and government institutions with the needs of Society.

WIT Transactions on State-of-the-art in Science and Engineering, Vol 77
Published 2014 / 376pp / £162.00

Environmental Impact II
Edited by: G. PASSERINI, Università Politecnica delle Marche, Italy and C.A. BREBBIA, Wessex Institute of Technology, UK

This book contains papers presented at the 2nd International Conference on Environmental and Economic Impacts on Sustainable Development incorporating Environmental Economics, Toxicology and Brownfields. It considers the pressing issues related to environmental impacts in order to provide complete solutions.

The included papers discuss how to assess the impact of economic constraints on the environment, considering the social aspects as well as any resulting environmental damage. The overuse of natural resources and the resulting pollution of the environment need to be better understood in financial terms.

Topics covered include: Environmental Policies; Environmental Assessments; Sustainable Cities; Natural Resources Management; Energy and the Environment; Food and the Environment; Brownfields Rehabilitation; Water Resources Management; Environmental Health Risk; Economic Impact; Air Quality.

WIT Transactions on Ecology and the Environment, Vol 181
Published 2014 / 768pp / £330.00

Environmental Impact III
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK

Delegates to the 3rd International Conference on Environmental and Economic Impact on Sustainable Development contributed the peer-reviewed papers contained in this book. The papers discuss the most serious problems affecting sustainable development. They consider the impact of economic constraints on the environment, taking into account the social aspects as well as the over-use of natural resources. Uncontrolled development can also result in damage to the environment in terms of the release of toxic substances and hazardous waste. Thus, attention is paid to issues related to whether some forms of development are compatible with environmental protection, particularly in cases of possible serious contamination and toxicity.

The focus in the book is on more constructive and progressive approaches to the problems discussed, to ensure sustainability. The hope is that through the shared experiences of experts, we can learn from past failure, to avoid repeating similar mistakes, while attempting to prevent emerging threats to the environmental and ecological systems. Fundamental to these concepts are an analysis of the inherent risks and the development of appropriate strategies.

The papers in the book address such topics as: Environmental Policies and Planning; Environmental Assessments; Development Issues; Sustainable Cities; Economic Impact; Natural Resources Management; Ecosystems Health; Soil Contamination; Remediation; Decommissioning of Hazardous Plants; Brownfields Rehabilitation; Water Resources Management; Air and Water Pollution; Toxicity Studies; Pollution and Public Health; Environmental Health Risk; Community Participation; Legislation and Regulations.

WIT Transactions on Ecology and the Environment, Vol 203
Forthcoming 2016 / apx 650pp / apx £280.00

Cultural Tourism
Edited by: P. DIAZ, Universidad de La Laguna and Universidad Pablo de Olavide, Sevilla, Spain and M.F. SCHMITZ, Universidad Complutense de Madrid, Spain

The selection of papers presented in this book deal with cultural tourism, and comprises case studies and theoretical contributions. The volume addresses issues of cultural tourism management, demand analysis, post-tourism, new forms of tourism, cultural effects on destinations and products of sustainable cultural tourism.

The contributions are edited versions of selected papers presented at the International Conferences on Sustainable Tourism organised by the Wessex Institute of Technology, a forum for discussion of theoretical developments related to tourism sustainability, classical and new forms of tourism and their socio-ecological effects.

Tourism Today, Vol 1
Published 2014 / 152pp / £84.00

Tourism and Environment
Edited by: F. D. PINEDA, Universidad Complutense de Madrid, Spain

The contributions contained in this volume deal with two perspectives of “tourism and environment”; the “role of the environment in tourism” and “environmental tourism”. The same message would be expected in both cases. The environment comprises the set of biophysical and cultural events surrounding us and influences the activities developed depending on time and site.

Certain places in the world captivate visitors who flock to them in large numbers. Local people recognise the benefit of this, employers become interested in the economic aspects and so the tourism infrastructure develops.

The appeal of “good climate” has led to a change from a rural subsistence culture to a lucrative services economy in some areas. Unfortunately, however, in many cases short-sightedness and corruption can lead to the ruin of the natural landscape. Situations like this are now common throughout the world due to the environmental mismanagement of tourism. Local populations within emerging tourism-based economies should learn this lesson.

The edited papers included in this volume address important issues related to tourism and the environment and offer a better understanding of some of the current challenges.

Tourism Today, Vol 2
Published 2014 / 164pp / £84.00
Tourism and Natural Protected Areas

Edited by: M.F. Schmitz, Universidad Complutense de Madrid, Spain

Yellowstone National Park spans the states of Montana, Wyoming and Idaho in the USA. It is famous worldwide. Since their creation in 1872, most “protected natural areas” have been considered as probably the greatest achievement of nature conservation. Many countries have such spaces within their territories and many visitors, native or foreign, use some of their free time to get to know them. In this sense these spaces undertake to conserve nature and educate society and give us a kind of cultural tourism that has grown considerably in recent decades.

Cultural tourism today specifically includes, along with cities, museums, monuments and rural traditions, the aim of “getting to know nature”. Protected natural areas are ideal for this. The tourism industry has realised this and so the value of the landscape and natural resources is becoming increasingly recognised. This is a welcome development and represents a challenge for tourism management, for educational tourism and for dissemination of nature and conservation.

This volume of the series Tourism Today considers the evolving relationship between tourism and protected natural areas. The contributions selected are papers that were presented at relevant conferences organised by the Wessex Institute of Technology.

Tourism Today, Vol 3
Published 2014 / 152pp / £84.00

Tourism as a Tool for Development

Edited by: P. Diaz, Universidad de La Laguna and Universidad Pablo de Olavide, Sevilla, Spain

Some researchers perceive tourism as a process which creates dependency and causes loss of socio-economic and environmental control, and is harmful to traditional sociocultural structures. For others it is clearly an opportunity for development and convergence among societies.

The main consequences of tourism are economic, sociocultural and socio-ecological ones. These directly affect the natural and cultural landscape, as well as the inhabitants of the destinations.

“Proper management” can unite the local community, strengthen the historical memory and promote the recognition that the landscape is a legacy worth preserving. If local people can learn to appreciate the need for regulation and careful development of cultural tourism then it is possible to have an alternative to the strategies of convenience, based upon the view of tourism only for profit.

Designing tourism to serve heritage and local sustainable development not only helps to conserve the resources that make it possible, but also complies with the ethical duty to guide social perception towards awareness and respect, which in turn will lead to sustainability.

The ideas offered in the papers of this book are selections from those presented at a series of conferences organised by the Wessex Institute of Technology. The contributions selected are papers that were presented at relevant conferences organised by the Wessex Institute of Technology.

Tourism Today, Vol 4
Published 2014 / 192pp / £84.00

Defence Sites III

Heritage and Future

Edited by: C.A. Brebbia and C. Clark, Wessex Institute of Technology, UK

Containing the proceedings of the third International Conference on Defence Sites: Heritage and Future, this book deals with the scale, design and functions of defence sites. It facilitates a better understanding of the issues raised by their decommissioning and the implications of various disposal processes for the land. Defence sites due to be decommissioned offer a range of opportunities to planners, architects and local communities to redevelop large areas, bringing new life to previously neglected parts of towns. However, the re-use of defence sites also raises questions regarding the recovery of brownfields and contaminated land, since these can have far-reaching legal responsibilities and environmental consequences. Achieving the sustainable development of these sites involves issues related to maintenance and conservation, as well as built and natural environmental controls, while also responding to the needs and aspirations of the community. Many of the opportunities and problems in the re-use of defence sites are shared by a number of countries and the book stresses these common experiences.

Topics covered include: Fortified Cities; Community Involvement; Economic Analysis; Risk Assessment; Simulation and Modelling; Funding and Legal Requirements; Military Engineering in the Modern Age; Conservation and in multiple contextual realities. These edited papers were selected from those presented at different international conferences organised by the Wessex Institute of Technology. They address important issues related to tourism as a tool for development which will give a better understanding of some of the current challenges.

Tourism Today, Vol 5
Published 2014 / 168pp / £84.00

 Defence Sites III

Heritage and Future

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Tourism Today, Vol 5
Published 2014 / 168pp / £84.00

 All Books in this Catalogue are Available Both as Print and eBook
Defence Sites II
Heritage and Future

Edited by: C.A. BREBBIA and C. CLARK, Wessex Institute of Technology, UK

Containing the proceedings of the second International Conference on Defence Sites: Heritage and Future, this book promotes the knowledge of the scale, design and functions of defence sites. It brings a better understanding of the issues raised by their redundancy and the implications of different disposal processes for the land.

Defence sites offer a range of opportunities to planners, architects and local communities to redevelop large areas, bringing new life to often neglected parts of towns. These opportunities are common to many countries and the papers in this book stress this common feature and help to share experiences with the transformation of defence sites to civilian uses around the world.

Topics covered include: Military Heritage History; Castles and Fortresses; Fortified Cities; Case Studies; Transition From Military to Civilian Life; Risk Assessment; Castles and Fortresses; Defence Tourism.

WIT Transactions on The Built Environment, Vol 143
Published 2014 / 432pp / £186.00

Defence Sites
Heritage and Future

Edited by: C. CLARK and C.A. BREBBIA, Wessex Institute of Technology, UK

The book covers such topics as: Military Heritage History; Naval Dockyard Heritage; Air Force Heritage; Historical Naval Ships; Disposal Processes for Defence Sites; Transition from Military to Civilian Life; Castles and Fortresses; Brownfield Recovery; Legal Responsibilities and Environmental Consequences; Infrastructure Maintenance; Financing Mechanisms; Community Involvement; Public Consultation Mechanisms; Architectural Issues; Mechanisms for Knowledge Transfer; Structural Issues; Simulation and Modelling; Surveying and Monitoring; Assessment and Retrofitting. It includes case studies highlighting examples of good practices.

WIT Transactions on The Built Environment, Vol 123
Published 2012 / 500pp / £129.00

The Crisis in Two Pacific Rim Economies
Higher Education and Employment in Mexico and Thailand

J.E. RANGEL DELGADO, The University of Colima, Mexico and A. IVANOVA BONCHEVA, Autonomous University of Baja California Sur, Mexico

The Crisis in Two Pacific Rim Economies: Higher Education and Employment in Mexico and Thailand is the first study that provides a comparative analysis of the development of higher education and employment policies of two Pacific Rim economies, one Latin American and one Asian. Although distant geographically, closer inspection reveals remarkable similarities between Mexico and Thailand in the areas of education and employment; resemblances that can provide learning opportunities for both. Another important similarity is the economic crisis both countries endured in the last decade of the 20th century, including the first financial crisis of the 21st century.

After presenting a brief panorama of their world position with regard to economic development, the authors take into account the development plans for Thailand and Mexico, placing great importance on proactively developing human resources and directly linking human development to labour markets and economic growth. To delve even deeper into this complex question, they developed and applied an opinion survey in order to members of the academic community, government officials and private sector entrepreneurs from both countries in order to gain greater insight into how the different actors view their current economic situation.

The authors conclude that important changes must be made in the higher education systems of both Mexico and Thailand in order to produce the highly skilled human capital required to increase efficiency and competitiveness. They hope to contribute to the process of study and reflection necessary to develop more integral plans in the areas of education and economic development for Pacific Rim countries. Furthermore, they hope the text can provide lessons and promote a dialogue about Mexico’s and Thailand’s participation within the highly dynamic Asia Pacific economic region.

Published 2012 / 120pp / £65.00

Environmental Innovation in China
L. XIELIN, Graduate University of Chinese Academy of Sciences, China; D. STRANGWAY, The University of British Columbia, Canada and F. ZHIJUN, China Democratic League, China

China has both the capacity and the need to become a global leader in sustainable development and innovation in environmental technology. Environmental Innovation in China acknowledges many of the mistakes that have been made in the past where economic development has resulted in pollution to land, air and water but more importantly it presents a blueprint for the future with the recommendation that a National Environmental Innovation Action Plan be established. In addition, to achieve a more effective nationwide regulatory environment and to bolster public participation, the creation of a National Environment Information System is proposed that would be managed by the new Ministry of Environmental Protection.

Published 2012 / 176pp / £129.00

Food and Environment II
The Quest for a Sustainable Future

Edited by: C.A. BREBBIA and V. POPOV, Wessex Institute of Technology, UK

While advances in food production over the past century have made it possible to feed world population, food production and processing have also had detrimental effects on the environment, product quality, and human health, and have even resulted in some suffering. These food-related problems have not been sufficiently well discussed. It is essential that we understand the consequences of our food production processes, as well as the demands of rising standards of living on the food consumed around the world.

This book includes papers presented at the second international conference convened to discuss these challenges. Topics include Impact of Food Production and Food Processing on the Environment; Contamination of Food; Food Production and Climate; Food Characterisation; Pesticides and Nutrients; Policies and Regulations; Temperature Control and Traceability.

WIT Transactions on Ecology and the Environment, Vol 170
Published 2013 / 272pp / £117.00

Island Sustainability II

Edited by: S. FAVRO, Hydrographic Institute of the Republic of Croatia, Croatia and C.A. BREBBIA, Wessex Institute of Technology, UK

Containing the papers presented at the second conference organised on island sustainability by the Wessex Institute of Technology, the book addresses the massive scale of seasonal population mobility that has such a profound effect on coastal regions and islands. The problems that result from large temporary increases in population are especially serious for islands and archipelagos, which have limited resources and possibilities of developing supporting infrastructures.
The topics covered include: Tourism Impact and Strategies; Community Issues; Changing Climate and Environment; Infrastructure; Transport Issues; Natural Resources; Energy Issues; Risk and Safety; Waste Management; Island Services.

WIT Transactions on Ecology and the Environment, Vol 166
Published 2012 / 228pp / £98.00

City out of Chaos
Urban Self-Organization and Sustainability
R.M. PULSELLI and E. TIEZZI, University of Siena, Italy

This book introduces concepts from thermodynamics, non-equilibrium systems theory, and evolutionary physics to the study of contemporary cities and to the understanding of how human systems interact with the built environment. This theoretical framework asserts that cities can be conceived as ecosystems and dissipative structures with the emergence of collective properties and self-organisation processes. Methods for understanding the complexity of contemporary cities and the life of human systems are thus investigated.

Series: The Sustainable World, Vol 19
Published 2009 / 176pp / £67.00

The Road to Sustainability
GDP and Future Generations
F.M. PULSELLI, S. BASTIANONI, N. MARCHETTINI and E. TIEZZI, University of Siena, Italy

This book presents a view of sustainability that starts from the acknowledgment of physical conditions and limits that humans can no longer neglect. It also includes some epistemological foundations for the concept of sustainability as well as historical backgrounds. The view is optimistic to the extent that economics, the compass of our industrial society, is open to inputs and suggestions coming from outside orthodox schemes. Transdisciplinary science is one key element of such a change, and this book is a transdisciplinary project.

Series: The Sustainable World, Vol 18
Published 2008 / 224pp / £85.00

FORTHCOMING
The Sustainable City XI
Urban Regeneration and Sustainability
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK

Covers the proceedings of the 11th International Conference on Urban Regeneration and Sustainability held in Alicante, Spain, this volume addresses the multidisciplinary aspects of urban planning; a result of the increasing size of cities, the amount of resources and services required, and the complexity of modern society. Most of earth’s population now lives in cities and the process of urbanisation continues generating many problems deriving from the drift of the population towards them. These problems can be resolved by cities becoming efficient habitats, saving resources in a way that improves the quality and standard of living. The process, however, faces a number of major challenges, related to reducing pollution and improving main transportation and infrastructure systems. These challenges contribute to the development of social and economic imbalances and require the development of new solutions that optimise the use of space and energy resources and improve the environment, i.e. reduction in air, water and soil pollution and more efficient waste management. Large cities are probably the most complex mechanisms to manage. However, despite such complexity they represent a fertile ground for architects, engineers, city planners, social and political scientists, and other professionals able to conceive new ideas and time them according to technological advances and human requirements. The challenge of planning sustainable cities lies in considering their dynamics, the exchange of energy and matter, and the function and maintenance of ordered structures directly or indirectly, supplied and maintained by natural systems.

Covers topics such as: Planning, development and management; The community and the city; Urban strategies; Architectural issues; Cultural heritage issues; Landscape planning and design; Urbanisation of rural areas; Environmental management; Sustainable energy and the city; Transportation; Waste management; Intelligent environments; Quality of life Infrastructures and social services; Sustainable urban tourism; Planning for risk and natural hazards.

WIT Transactions on Ecology and the Environment, Vol 194
Published 2015 / 504pp / £217.00

Environmental Impact 2016
3rd International Conference on Environmental and Economic Impact on Sustainable Development
8–10 June 2016, Valencia, Spain

This 3rd meeting follows the success of the previous two held in the New Forest, UK in 2012 and Ancona, Italy in 2014.

Submit an abstract or register online:
www.wessex.ac.uk/impact2016
The Sustainable City IX
Urban Regeneration and Sustainability
(2 Volume Set)
Edited by: N. MARCHETTINI, University of Siena, Italy; C.A. BREBBIA, Wessex Institute of Technology, UK; R.M. PULSELLI and S. BASTIANONI, University of Siena, Italy

Containing the proceedings of the 9th International Conference on Urban Regeneration and Sustainability these books address the many challenges faced by today’s urban planners faced with increasing needs for resources and services and the growing complexity of modern society. In spite of their great complexity, and the consequent difficulty in managing them, large cities present a great opportunity for architects, engineers, city planners, social and political scientists, and other professionals apply new ideas that take advantage of technological advances and meet new requirements. The challenge lies in balancing urban dynamics with human needs and the demands and properties of the ecosystem.

Topics covered include: Urban Strategies; Planning and Development; Urban Conservation and Regeneration; The Community and the City; Eco-town Planning; Environmental Management; Sustainable Energy and the City; Transportation; Quality of Life; Architectural Issues; Cultural Heritage Issues; Waste Management; Infrastructure and Society; Urban Metabolism; The S3 City: Spatial Conflicts in the City; Urban Transport; Recent Advances on Urban Transportation Planning; Flood Risk; Urban Air Pollution; Health Issues; Air Pollution; Water Resources; Case Studies.

WIT Transactions on Ecology and the Environment, Vol 191
Published 2014  /  1766pp  /  £759.00

The Sustainable City VIII
Urban Regeneration and Sustainability
(2 Volume Set)
Edited by: S.S. ZUBIR, Universiti Teknologi MARA, Malaysia and C.A. BREBBIA, Wessex Institute of Technology, UK

Containing research on sustainable urban redevelopment, presented at the eighth in a biennial series organised by the Wessex Institute of Technology and first held in 2000, these books address an area of growing interest.

The papers cover such topics as: Planning; Managing Development; Urban Strategies; Community Interaction; Architecture; Cultural Heritage; Waste Management; Sustainable Energy; Transportation; Emerging Technologies; Risk Management; Quality of Life; Infrastructure and Social Services; Tourism.

WIT Transactions on Ecology and the Environment, Vol 179
Published 2014 / 1428pp / £645.00

Sustainable Tourism VII
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK

Sustainable Tourism VII contains papers presented at the seventh in a series of meetings on the topic organised by the Wessex Institute. The papers included in the book address problems, including social costs and ecological impacts, that have arisen as tourism has become an important component of development. Many ancient local cultures have practically lost their identity as their economies have become solely oriented to the tourism industry. Both the natural and cultural—rural or urban—landscapes have also paid a high price for certain forms of tourism. These problems will persist to the point of being ruinous if economic benefit is the only target. It is also a grave error to disregard the increasing cultural and environmental standards that visitors demand nowadays.

Natural ecosystems are now a rarity on the planet and ecologists talk today about ‘socio-ecosystems’. Natural changes are inherent in the Earth’s ecosystem. Technological and social changes are inherent to mankind, and are now becoming widespread. Cities are growing rapidly and industry requires increasingly larger areas. Many traditional rural areas are being abandoned. Tourism should play an important role in this context. Thus, interestingly, many historic agricultural districts have maintained, or even recovered, their local population numbers through intelligent strategies of tourism focused on nature and rural culture. Natural landscapes and biodiversity are becoming increasingly appreciated. The tourism industry must be able to respond to these aspirations.

The papers in the book present new solutions to protect the natural and cultural landscape by minimizing the adverse effects of tourism. Topics addressed include: Tourism Strategies; Environmental Issues; Community Issues; Climate Change; Safety and Security; Tourism as a Tool of Development; Cultural Tourism; Heritage Tourism; Wildlife and Adventure Tourism; Health and Wellbeing Tourism; Medical Tourism; Marine and Coastal Areas Tourism; Sport Tourism; City Tourism; Tourism Impact; Tourism and Protected Areas; Ecotourism; Rural Tourism; Industrial Tourism; Tourism and Technology; Transport and Tourism; Education and Tourism; Theme Parks and Leisure; Destination Management; Planning and Development; eTourism; Simulation Models; Social and Physical Infrastructure.

WIT Transactions on Ecology and the Environment, Vol 201
Forthcoming 2016 / apx 400pp / apx £172.00

Related conferences
To request Call for Papers for forthcoming Wessex Institute of Technology conferences related to Sustainable Development contact: enquiries@wessex.ac.uk
NEW TITLE

Management of Natural Resources, Sustainable Development and Ecological Hazards IV
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK

This book contains papers presented at the fourth in a series of trans-disciplinary conferences on Management of Natural Resources, Sustainable Development, and Ecological Hazards, first held in 2006. Papers presented at the conference suggest solutions to move our planet to a more sustainable modus operandi, and avoid the oft-projected “point of no return.” The papers are based on economic, social, political, and environmental sciences and examine risk, lessons learned from nature, and new technologies. They present planning and development solutions that may address air, water, energy, soil, and/or ecology.

WIT Transactions on Ecology and the Environment, Vol 199
Published 2015 / 314pp / £135.00

Management of Natural Resources, Sustainable Development and Ecological Hazards III
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK and S.S. ZUBIR, Universiti Teknologi Mara, Malaysia

The transdisciplinary papers in this book, presented at the Third International Conference on Management of Natural Resources of Natural Resources, Sustainable Development, and Ecological Hazards, suggest constructive principles and policies for a way forward. The papers examine ethical, political and social issues, health, safety and risk, lessons from nature, planning and development, and new technologies.

WIT Transactions on Ecology and the Environment, Vol 148
Published 2012 / 680pp / £296.00

FORTHCOMING

Sustainable Development and Planning VIII
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK

The 8th International Conference on Sustainable Development and Planning is part of a series of biennial conferences on the topic of sustainable regional development which began in Greece in 2003. The papers included in these proceedings report on the latest advances from scientists specialising in the range of subjects included within sustainable development and planning.

Planners, environmentalists, architects, engineers, policy makers and economists have to work together in order to ensure that planning and development can meet our present needs without compromising the ability of future generations.

The use of modern technologies in planning gives us new potential to monitor and prevent environmental degradation. Problems related to development and planning, which affect both rural and urban areas, are present in all regions of the world and accelerated urbanisation has resulted in both the deterioration of the environment and quality of life. Urban development can also intensify problems faced by rural areas such as forests, mountain regions and coastal areas, which urgently require solutions in order to avoid irreversible damage.

The papers in the book cover the following topics: City planning; Regional planning; Rural developments; Sustainability and the built environment; Sustainability indicators; Policies and planning; Environmental planning and management; Energy resources; Cultural heritage; Quality of life; Community planning and resiliency; Sustainable solutions in emerging countries; Sustainable tourism; Learning from nature; Transportation Social and political issues and Community planning.

WIT Transactions on Ecology and the Environment, Vol 210
Forthcoming 2016 / apx 1200pp / apx £516.00

Defence Heritage 2016
3rd International Conference on Defence Sites: Heritage and Future
4–6 May 2016, Alicante, Spain

The 3rd International Conference on Defence Sites: Heritage and Future will be reconvened in 2016 in Alicante following the success of the previous meetings held in Portsmouth, UK in 2012 and the Arsenale di Venezia, Italy in 2014.

Submit an abstract or register online:
www.wessex.ac.uk/defence2016
This book contains the proceedings of the sixth in a series of biennial conferences on the topic of sustainable regional development that began in 2003. Organised by the Wessex Institute, the conference series provides a common forum for all scientists specialising in the range of subjects included within sustainable development and planning.

In order to ensure that planning and development can meet our present needs without compromising future generations, planners, environmentalists, architects, engineers, policy makers, and economists must work together. The use of modern technologies in planning gives us new potential to monitor and prevent environmental degradation. In recent years, in many countries an increase in spatial problems has led to planning crises. Planning problems are often associated with uneven development, deterioration of the quality of urban life, and destruction of the environment. The increasing urbanisation of the world, coupled with the global issues of environmental pollution, resource shortage, and economic restructuring, demand that we ensure a decent quality of life for our cities. Other environments, such as rural areas, forests, coastal regions, and mountains, face their own problems that urgently require solutions in order to avoid irreversible damage. Effective strategies for management should consider planning and regional development, two closely related disciplines, and emphasise the demand to handle these matters in an integrated way.

The papers in the book cover such topics as: City Planning; Regional Planning; Rural Development; Sustainability and the Built Environment; Sustainability Indicators; Policies and Planning; Environmental Planning and Management; Energy Resources; Cultural Heritage; Quality of Life; Community Planning and Resilience; Sustainable Solutions in Emerging Countries; Sustainable Tourism; Learning from Nature.

WIT Transactions on Ecology and the Environment, Vol 193

Published 2015 / 1146pp / £493.00


Sustainable Development and Planning VI

Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK

This book contains the proceedings of the sixth in a series of biennial conferences on the topic of sustainable regional development. Begun in 2003 and organised by the Wessex Institute of Technology, the conference series covers a range of subjects related to sustainable development and planning.

The topics covered by the papers in the book include: Regional Planning; Cultural Heritage; Energy Resources; City Planning; Environmental Management; Environmental Policies and Planning; Sustainability and the Built Environment; Sustainable Tourism; Sustainable Solutions in Emerging Countries; Environmental Economics; Sustainability Assessment and Management; Waste Management; Improving safety of users in evacuation.

WIT Transactions on Ecology and the Environment, Vol 173

Published 2013 / 828pp / £356.00


Available Both as Print and eBook

Transport Engineering

Public Mobility Systems

Edited by: A. PRATELLI, University of Pisa, Italy

Public Mobility Systems deals with real case studies relating to mass transport, rapid transit services, carpooling measures and car sharing strategies. The included papers present case studies from all over the world including: Zagreb, Croatia; Mexico City, Mexico; Holy Makkah, Saudi Arabia and the Gauteng region of South Africa.

Papers are also included which relate to the more theoretical aspects of transit systems, which span general methodology, the latest advancements and model analysis. It is well known that model development cannot replace a deep knowledge and understanding of real world phenomena and human experiences. To this end, the book collects fragments of public mobility systems both from international practices and academic theory, in an effort to share current research and ideas to progress and lay the groundwork for future innovations.

The book will be of interest to research and academic organisations as well as practitioners, especially in large civil engineering consultancies. Many papers from the book can also be used as advanced background reading in graduate courses on transport studies and traffic engineering.


Published 2014 / 160pp / £77.00


Urban Street Design & Planning

Edited by: A. PRATELLI, University of Pisa, Italy

This second book of the series on Transport Systems and Traffic Engineering addresses operational, safety, costs, benefits, control and geometrical aspects associated with street design and roadway network planning in urban areas.

The design features and planning goals consider urban-sensitive solutions for coping with motorised traffic, pedestrians and public transport passengers. Great emphasis is placed on the critical interactions involved with traffic safety problems.

The included papers offer a variety of sample studies and developed projects and provide useful references to academics and traffic engineers.

One of the most noteworthy characteristics of this book is that the reported experiences come from different national policies and standard requirements as well as local guidelines.

As such it provides a well-structured and consistent book that will be of great interest to those working in this field.


Published 2014 / 152pp / £77.00


Intersections Control and Safety

Edited by: A. PRATELLI, University of Pisa, Italy

The inaugural volume of a new series on Transport Systems and Traffic Engineering Intersections Control and Safety helps to bridge the gap between research and practice, encouraging a critical dialogue on various specific subjects, spanning innovation, development and technology transfer. Those who offer innovation often do not meet the immediate needs of practitioners, especially in the traditional field of civil engineering. Still, the adequate diffusion of research results and wisdom derived from practical experience are crucial to both theoretical underpinnings and technical applications.

The papers comprising the book are devoted to intersection control and safety and have been selected bearing in mind the criteria stated above. That is, these papers provide both scholarly contribution as well as vision for application.
As a general rule, about one-third of all highway crashes happen at intersections. This rule holds for many different countries. Intersection crashes also represent a significant portion of serious injury crashes, and by right are receiving considerable attention from researchers and practitioners alike. This book is therefore devoted to relevant safety aspects of road intersections and innovative features in design and operations that may address the intersection crash problem. The thirteen papers are more or less equally devoted to roundabouts (rotaries) and signals. These papers cover many of the most recent and emerging issues related to intersection control and safety. Topics range from design details to driver perception, from pedestrians’ behavior to signal timing, and from capacity models to red-light running.

The book will be useful for those wishing to expand their knowledge of this ever important subject area.

Series: Transport Systems and Traffic Engineering, Vol 1
Published 2013 / 164pp / £77.00

Fundamentals of Road Design
W. KÜHN, Germany

“...the book should find a place in the bookshelf of every modern and prominent highway design professional.”

Advances in Transportation Studies an international Journal, Section B30, 2013

This reference book communicates the basic theoretical knowledge, the practical requirements and experience for designing, mapping, calculating and checking roads and the planning process overall — and at the same time reveals important development trends.

The book is guided by the current rules and regulations in Germany, if it universalizes this knowledge and also integrates important current research results in road design processes. In order to restrict the scope of the book, it only deals with the theoretical principles and knowledge, and the practical experience for designing rural roads, i.e. the special features of urban roads are not mentioned here. This clear separation primarily results from the different principles and rules and regulations.

The work is particularly designed to be a course book for students of road design. As a reference book, it supports the ongoing training process for road transportation engineers in planning offices and public bodies. Any specialist working in the transportation sector can use it as a reference book.

Published 2013 / 348pp / £156.00

Regional Airports
Edited by: M.N. POSTORINO, University of Reggio Calabria, Italy

The revolution of the existing airport system, including regional airports, requires the developing of new optimisation tools that can simulate the whole process and produce optimal solutions. These models are also essential to predict future demands and, in particular, the role that regional airports will play.

The siting of new airports involves taking into consideration a variety of environmental, ecological, social and economic factors that transcend the traditional approach to the siting of new airports. Regional airports can be a powerful driving force behind the development of an area and conversely can result in major problems if they are wrongly sited.

Contents: Exploring multi-criteria decision analysis method as a tool to choose regional airport hubs within Africa; Airport-airline relationships: opportunities for Italian regional airports; Potential demand for new high speed rail services in high dense air transport corridors; Regional airports and the accessibility of mountain areas: networks, importance and contribution to development; Analysis of the regional air passenger transport system in Brazil: some aspects of its evolution and diagnosis; Regional airports’ environmental management key messages from the evaluation of European airports; Sustainable logistics platform in a regional Brazilian airport; Regional airport: study on economic and social profitability; Assessment of air pollution from Tehran-Mehrabad airport, Iran; Environmental effects of airport nodes: a methodological approach; Architectural design standards for Muslims prayer facilities in airports.

WIT Transactions on State-of-the-art in Science and Engineering, Vol 48
Published 2011 / 148pp / £59.00

Development of Regional Airports
Theoretical Analyses and Case Studies
Edited by: M.N. POSTORINO, University of Reggio Calabria, Italy

Great attention is being devoted nowadays to the development of regional airports, both to decrease the congestion at the main hubs and to stimulate the economic development of some decentralised areas. In this context, more actors can play an important role, as airport planners, air companies (including low-cost companies), and users (passengers and/or freight handlers) can affect demand levels at airports through their transportation choices. Furthermore, an efficient use of resources suggests that we consider the role of existing regional airports before building new ones. In the USA, more studies concern the analysis of airport systems (as in the Los Angeles area) in order to verify the role of each airport and the effects on the main congested hub(s).

This book gives an overview of the main aspects of the potential development of regional airports, particularly the economic aspects, the role of low-cost companies, demand modelling, the airport, airline and access mode choices, and the relationships between capacity constraints on hubs and the growth of regional airports. Examples from different airports around the world are presented to illustrate the various aspects.

WIT Transactions on State-of-the-art in Science and Engineering, Vol 38
Published 2010 / 192pp / £73.00

Call for Papers from WIT

Urban Transport 2016
22nd International Conference on Urban Transport and the Environment
21–23 June 2016, Crete, Greece

The International Conference on Urban Transport and the Environment has been successfully held annually for more than 20 years. It began in Southampton in 1995 and most recently was held in Valencia in 2015. The conference attracts delegates from all over the world and is well-established as the premier event of its type.

Submit an abstract or register online:
www.wessex.ac.uk/transport2016
A distinctive element of the Urban Transport and the Environment series is the interaction between academic and practical perspectives where theories and ideas are debated and their practical applications rigorously tested. Clearly the issue of providing effective and efficient transport systems in the urban setting remains an acute challenge with financial, political and environmental constraints limiting the ability of transport system planners and operators to deliver high-quality outcomes expected by the public.

Topics covered include: Environmental Impact; Environmentally Friendly Transport Modes; Transport Strategies; Public Transport Systems; Transport Modelling; Urban Transport Simulation; Transport Safety and Security; Infrastructure; Intermodel Transport Systems; Port and Airport Cities; Land use and Transport Integration; Transport Policy and Regulations; Experiences from Emerging Countries; Non-motorized Transport Models; Intelligent Transport Systems; Electromobility; Mobility and Urban Space; Sustainability and Resilience; Emerging Transport Systems; Energy Efficiency.

WIT Transactions on The Built Environment, Vol 164
Forthcoming 2016 / apx 750pp / apx £323.00

Urban Transport XX

Edited by: C. A. BREBBIA, Wessex Institute of Technology, UK

Urban Transport XX contains the proceedings of the 20th International Conference on Urban Transport and the Environment.

Topics covered include: Environmental Impact; Environmentally Friendly Transport Modes; Transport Strategies; Public Transport Systems; Transport Safety and Security; Infrastructure; Intermodel Transport Systems; Port and Airport Cities; Land use and Transport Integration; Transport Policy and Regulations; Experiences from Emerging Countries; Non-motorized Transport Models; Intelligent Transport Systems; Electromobility; Mobility and Urban Space; Sustainability and Resilience; Emerging Transport Systems; Energy Efficiency.

WIT Transactions on The Built Environment, Vol 138
Published 2014 / 700pp / £298.00

Urban Transport XIX

Edited by: C. A. BREBBIA, Wessex Institute of Technology, UK

This book contains the papers presented at the nineteenth annual International Conference on Urban Transport and the Environment.

Topics covered include: Urban Transport Planning and Management; Transportation; Intelligent Transport Systems; Transport Modelling and Simulation; Land Use and Transport Integration; Public Transport Systems; Environmental Aspects; Safety and Security; Economic and Social Impact; Transport Strategies; Rail Transport Strategies; Travel Behaviour Studies; Customer Satisfaction; Infrastructure; Models and Methodologies to City Logistic Plan.

WIT Transactions on The Built Environment, Vol 130
Published 2013 / 860pp / £357.00

Related conferences

To request Call for Papers for forthcoming Wessex Institute of Technology conferences related to Transport Engineering contact: enquiries@wessex.ac.uk
prevailing on two-lane rural roads. By using the “good” ranges, sound alignments in plan and profile, matching the expected driving behaviour of motorists, can be achieved.

The safety criteria are then combined into an overall safety module for a simplified general overview of the safety evaluation process. The authors also encourage the coordination of safety concerns with important economic, environmental, and aesthetic considerations.

This book will be an invaluable aid to educators, students, consultants, highway engineers, and administrators, as well as scientists in the fields of highway design and traffic safety engineering.

Published 2007  /  144pp  /  £63.00

### Computers in Railways XIV

#### Special Contributions

**Railway Engineering Design and Optimization**

Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK; N. TOMI, Chiba Institute of Technology, Japan; P. TZIEROPOULOS, Ecole Polytechnique Federale de Lausanne, Switzerland and J.M. MERA, Polytechnic University of Madrid, Spain

This volume contains special contributions presented at the 14th International Conference on Railway Engineering Design and Operation (COMPRAIL’14) held in Rome. It is a companion to the Volume containing most of the contributions (VoL 1 of WIT Transactions on the Built Environment) and comprises papers presented orally during the Conference.

The book focuses on the use of computer systems in advanced railway engineering. It covers computer applications in the design, manufacture, management, and operation of railways and other emerging passenger, freight and transit systems.

The book consists of five sections, covering: Planning; Computer Techniques and Simulations; Energy Supply and Consumption; Monitoring and Control; Safety and Security.

**WIT Transactions on the Built Environment**, Vol 155
Published 2014  /  208pp  /  £86.00

### Water Resources

#### Hydrology, Hydraulics and Water Resources Management

**A Heuristic Optimization Approach**

Edited by: K. L. KATSIFARAKIS, Aristotle University of Thessaloniki, Greece

With population of our planet exceeding seven billion, funds for infrastructure works being limited worldwide and climate change affecting water resources, their optimal development and management is literally vital. This volume deals with application of some non-traditional optimization techniques to hydraulics, hydrology and water resources management and aims at helping scientists dealing with these issues to reach the best decisions.

Chapter 1 is a brief introduction to optimization and its application to water resources management. Chapter 2 is dedicated to genetic algorithms. Chapter 3 focuses on applications of genetic algorithms to hydraulic networks, mainly irrigation ones. Chapter 4 is dedicated to simulated annealing. The particle swarm method (PSO) is discussed in Chapter 5. In Chapter 6 the basic concepts and features of Tabu search are presented and its coupling with other heuristic optimizers is discussed. Chapter 7 is dedicated to the Harmony Search method. Finally, Chapter 8 deals with the Outer Approximation method.

This book is aimed at engineers and other scientists working on water resources management and aims at helping scientists dealing with these issues to reach the best decisions.

Published 2012  /  174pp  /  £77.00

### How to Make Two-Lane Rural Roads Safer

**Scientific Background and Guide for Practical Application**

R. LAMM, A. BECK and T. RUSCHER, University of Karlsruhe, Germany; T. MAILAENDER, Mailaender Ingenieur Consult GmbH, Germany; S. CAFISO and G. LA CAVA, University of Catania, Italy

In most countries, two-lane rural roads make up about 90 percent of rural networks and account for about 60 percent or more of highway fatalities worldwide – 500,000 people per year. Based on new research and the demands of many design professionals, this book provides an understandable scientific framework for the application of quantitative safety evaluation processes to two-lane rural roads.

The methodology described will support the achievement of quantified measures of 1) design consistency, 2) operating speed consistency, and 3) driving dynamic consistency. All three criteria are evaluated in three ranges described as “good”, “fair”, and “poor”. It has been proved that the results of these criteria coincide with the actual accident situation.
Urban Water
Edited by: S. MAMBRETTI, Politecnico di Milano, Italy and C.A. BREBBIA, Wessex Institute of Technology, UK

Containing the proceedings of the first international conference organised by the Wessex Institute of Technology on the Design, Construction, Maintenance, Monitoring and Control of Urban Water Systems, this book covers an area of increasing worldwide concern.

Topics include the following in the area of Water Supply: Surface Water and Ground Water Sources; Water Supply Networks; Coping with Water Scarcity; Safety and Security of Water Systems; Water Quality; Water and Sustainability; Water Savings; Water Re-use. The Following Topics are related to Urban Drainage: Waste Water Treatment and Disposal; Structural Works and Infrastructure; Networks Design; Real Time Control; Water Quality Issues; Combined Sewer Overflows; Storage Tanks; Flood Control; Environmental Impact; Industrial Waste Water.

WIT Transactions on The Built Environment, Vol 122
Published 2012 / 300pp / £132.00

Water and Society
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK

The proceedings from The Water and Society Conference 2015 contain papers that encourage trans-disciplinary communication on issues related to the nature of water, and its use and exploitation by society. The papers within this book bridge the gap between the broad spectrum of socio-political sciences and humanistic disciplines and the physical, biological, environmental, and health sciences.

The Water and Society conference series which began in 2011 exchanges ideas on issues such as the need for clean and inexpensive water by an increasing global population, and the growing demands of Agriculture and Industry. The book deals with the interaction between water and energy systems, as well as the more technical aspects of water resources management and quality, with the aim of helping policy makers put forward policies and legislation that will lead to improved solutions for all.

Topics covered include: Water as a Human Right; Water Quality; Water Resources Contamination; Water Sanitation and Health; Water and Disaster Management; Future Water Demands; Irrigation and Desertification.

WIT Transactions on Ecology and the Environment, Vol 200
eISBN: 978-1-84564-973-9
Published 2015 / 408pp / £181.00

FORTHCOMING
Urban Water III
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK

Urban Water III is the proceedings of the 3rd International Conference on the Design, Construction, Maintenance, Monitoring and Control of Urban Water Systems. The conference reconvened following its success in 2012 and in 2014, when it was held in the Algarve, Portugal.

These proceedings deal with two main subjects: water supply systems and urban drainage. Water distribution networks often suffer substantial losses which indicate energy and treatment waste. Sewer systems are under relentless pressure due to urbanisation and climate change, and the environmental impact caused by urban drainage overflows is related to both water quantity and water quality.

Most architects and town planners are aware of the importance of the interaction between urban water cycles and city planning and landscaping. Specialised computer tools are needed to manage all of these aspects and are required to respond to the increased complexity of urban water systems.

Topics such as contamination and pollution discharges in urban water bodies, as well as the monitoring of water recycling systems are currently receiving a great deal of attention from researchers and professional engineers working in the water industry. Other related topics include: Leakage and Losses; Modelling and Experimentation; Safety and Security of Water Systems; Maintenance and Repairs; Surface Water and Groundwater Sources; Reservoirs; Network Design; Waste Water Treatment and Disposal; Combined Sewer Networks; Flood Control; Storage Tanks; Environmental Impact; Domestic and Industrial Waste Water Issues.

In addition to the above, the conference discusses legal and regulatory aspects, along with more technical problems.

WIT Transactions on The Built Environment, Vol 165
ISBN: 978-1-78466-141-0
eISBN: 978-1-78466-142-7
Forthcoming 2016 / apx 500pp / apx £215.00

Urban Water II
Edited by: S. MAMBRETTI, Politecnico di Milano, Italy and C.A. BREBBIA, Wessex Institute of Technology, UK

Urban Water II is the proceedings of the 2nd International Conference on the Design, Construction, Maintenance, Monitoring and Control of Urban Water Systems. The meeting was reconvened following the success of the first conference held in the New Forest, home to the Institute of Technology, in 2012.

Topics such as contamination and pollution discharges in urban water bodies, as well as the monitoring of water recycling systems are currently receiving a great deal of attention from researchers and professional engineers working in the water industry. Architects and town planners are also aware of the importance of the interaction between urban water cycles and city planning and landscaping. Management of all these aspects requires the development of specialised computer tools that can respond to the increased complexity of urban water systems.

Relating to the subject areas of Water Supply Networks and Urban Drainage, topics covered include: Leakage and Losses; Modelling and Experimentation; Water Quality; Network Design; Combined Sewer Networks; Flood Control; Water Supply Networks; Urban Drainage Systems for Water Sensitive Cities; Infrastructure Issues.

WIT Transactions on The Built Environment, Vol 139
ISBN: 978-1-84564-780-3
eISBN: 978-1-84564-781-0
Published 2014 / 444pp / £191.00

Water and Society II
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK

Containing the proceedings of the Second International Conference on the title topic, the book examines issues related to the nature of water, and its use and exploitation by society. Since ensuring an adequate water supply is becoming a critical issue in more and more countries, the conference brings together specialists from the social sciences and humanistic disciplines and the physical and natural sciences, biology, environmental sciences, and health to bridge gaps between the disciplines in addressing the problem. The international, interdisciplinary nature of the book’s contents makes it possible to arrive at equitable solutions to the many transnational issues, relating to the rights of states, that arise around water supply.

The book discusses: Water as a Human Right; Water Resources Contamination; Water Resources Management; Water, Sanitation and Health; Water and Disaster Management; Water Quality; Policy and Legislation.

WIT Transactions on Ecology and the Environment, Vol 178
ISBN: 978-1-84564-742-1
eISBN: 978-1-84564-743-8
Published 2015 / 364pp / £157.00

Water and Society III
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK

The proceedings from The Water and Society Conference 2015 contain papers that encourage trans-disciplinary communication on issues related to the nature of water, and its use and exploitation by society. The papers within this book bridge the gap between the broad spectrum of socio-political sciences and humanistic disciplines and the physical, biological, environmental, and health sciences.

The Water and Society conference series which began in 2011 exchanges ideas on issues such as the need for clean and inexpensive water by an increasing global population, and the growing demands of Agriculture and Industry. The book deals with the interaction between water and energy systems, as well as the more technical aspects of water resources management and quality, with the aim of helping policy makers put forward policies and legislation that will lead to improved solutions for all.

Topics covered include: Water as a Human Right; Water Quality; Water Resources Contamination; Water Sanitation and Health; Water and Disaster Management; Future Water Demands; Irrigation and Desertification.

WIT Transactions on Ecology and the Environment, Vol 200
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Published 2015 / 408pp / £181.00
Groundwater Characterization, Management and Monitoring

M. CUNHA, University of Coimbra, Portugal and L.M. NUNES, University of Algarve, Portugal

This book provides the theoretical background necessary to accomplish planning and management of groundwater systems, and presents up-to-date applications of the decision-aid techniques in this field.

Groundwater systems play an essential role in meeting the ever-increasing demand for water for various purposes. Proper design and management of such systems should therefore be a very important matter of concern, not only to ensure that water will be available in adequate quantity and quality to satisfy demands, but also to guarantee that this would be done in an optimal manner from a WARM perspective. There are many different decisions to be taken: where to locate wells, how much water is to be pumped, remedial strategies to be adopted, water supply structures (especially pumping equipment and pipe networks) to be installed, monitoring networks to be defined, etc. These decisions must take many constraints into account, including drawdown limitations, flow gradients, and quality standards. Given the uncertainty characterizing groundwater flow and transport, risk issues have to be considered. Decision-aid techniques must be capable of handling simultaneously the various facets characterizing such problems (economic, social, technical, environmental, etc). Therefore detailed simulation models have to be incorporated into the decision models. The application of simulation-optimization methods to planning and managing groundwater systems has become an area of active research.


Sustainable Irrigation and Drainage V

Management, Technologies and Policies

Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK and H. BJORNLUND, University of South Australia & University of Lethbridge, Canada

Irrigation, as the biggest water user in most regions of the world, is facing significant challenges in balancing social, economic and environmental needs for water.

These proceedings of the 5th International Conference on Sustainable Irrigation and Drainage: Management, Technologies and Policies provide examples of how irrigation and drainage can become more sustainable, while acknowledging that the concept of sustainability is a goal that continues to change as our knowledge of the biophysical realities alters. A focus is made on the implications for improving sustainability, whether this is drainage, irrigation technologies, economic modelling, governance studies for irrigation management, reuse of water or any other aspect.

Topics covered include: Irrigation Management; Irrigation Systems; Groundwater Issues; Climate Change Effects; Socio-economic Benefits.

WIT Transactions on Ecology and the Environment, Vol 185

Call for Papers from WIT

Urban Water 2016

3rd International Conference on Design, Construction, Maintenance, Monitoring and Control of Urban Water Systems

27–29 June 2016, San Servolo, Venice, Italy

This meeting is reconvened following the success of the first two conferences, that took place in 2012 and 2014. Submit an abstract or register online: www.wessex.ac.uk/urbanwater2016

Sustainable Irrigation and Drainage IV

Management, Technologies and Policies

Edited by: H. BJORNLUND, University of South Australia, Australia & University of Lethbridge, Canada; C.A. BREBBIA, Wessex Institute of Technology, UK and S. WHEELER, University of South Australia, Australia

Sustainable Irrigation and Drainage IV: Management, Technologies and Policies addresses various aspects of irrigation. It includes not only the scientific and technical aspects of the management of water resources, but also covers the economic and policy aspects.


Water Pollution XIII

Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK

Water Pollution XIII is the proceedings of the 13th International Conference in the series of Modelling, Monitoring and Management of Water Pollution. The conference, which has always been very successful, provided a forum for discussion amongst scientists, managers and academics from different areas of water contamination. Their papers, included in this book, provide a wealth of information which will be of great benefit to all those involved with water pollution problems.

The environmental problems caused by the increase of pollutant loads discharged into natural water bodies requires the formation of a framework for regulation and control. This framework needs to be based on scientific results that relate pollutant discharge with changes in water quality. The results of these studies allow industry to apply more efficient methods of controlling and treating waste loads, and water authorities to enforce appropriate regulations regarding this matter.

Environmental problems are essentially interdisciplinary. Engineers and scientists working in this field must be familiar with a wide range of issues, including the physical processes of mixing and dilution, chemical and biological processes, mathematical modelling, data acquisition and measurement, to name but a few. In view of the scarcity of available data, it is important that experiences are shared on an international basis. Thus, a continuous exchange of information between scientists from different countries is essential.

Topics covered include: Monitoring, Modelling and Forecasting; Freshwater Quality; Marine Water Quality; Groundwater and Aquifer Issues; Water Management; Remediation; Agricultural Contamination; Wastewater Treatment and Management; Offshore Pollution and Oil Spills; Mining and Water Quality; Soil Erosion and Water Pollution; Emerging Technologies; Health Risk Studies; Micropolllution and Nanoparticles; Microbiological Aspects; Risk Assessments; Socio-economic-political Consequences; Education and Training; Population and Climate Change; Future Trends in Water Pollution; Emerging Approaches for Water Management.

WIT Transactions on Ecology and the Environment, Vol 209
Water Resources Management VIII
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK
Water Resources Management VIII contains papers presented at the eighth conference in a biennial series organised by the Wessex Institute. First held in 2001, the Conference includes the work of scientists, practitioners and other experts regarding the sustainable management of water resources.

It is predicted that population growth and irregular precipitation due to climate change may lead to more restricted access to water in certain regions of the world. The problem will be aggravated by human activities that affect the quality of available water. In order to improve strategies for dealing with a scarcity of potable water, it is important to review and compare the performance of current technologies and practices in order to select those that will provide the most effective approaches. It is also important that technologies and practices be able to respond with agility to changing conditions. New ways of thinking are required in order to successfully predict future trends and prepare adequate sustainable solutions.

The papers included in this book cover such topics as: Water Management and Planning; River Basin Management; Urban Water Management; Irrigation; Desalination; Climate Change; Water Quality; Governance and Regulations; Pollution Contaminants and Control; Water Pollution.

WIT Transactions on Ecology and the Environment, Vol 196
Published 2015 / 582pp / £250.00

NEW TITLE

Water Pollution XII
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK
Water Pollution XII contains the proceedings of the 12th International Conference in the series on Modelling, Monitoring and Management of Water Pollution. The book will be of interest to scientists, managers and academics from various areas of water contamination.

Environmental problems are essentially interdisciplinary. Engineers and scientists working in this field must be familiar with a wide range of issues including the physical processes of mixing and dilution, chemical and biological processes, mathematical modelling, data acquisition and measurement to name but a few. In view of the scarcity of available data, it is important that experiences are shared on an international basis. Thus, a continuous exchange of information between scientists from different countries is essential.

Topics covered include: Water Quality; Groundwater and Aquifer Issues; Environmental Monitoring; Wastewater Treatment and Management; Monitoring and Modelling.

WIT Transactions on Ecology and the Environment, Vol 182
Published 2014 / 412pp / £177.00

NEW TITLE

River Basin Management VII
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK
This book contains the proceedings of the eighth international conference on River Basin Management including all aspects of Hydrology, Ecology, Environmental Management, Flood Plains and Wetlands. The biennial conference is organised by the Wessex Institute and was first held in 2001. The papers included in the book cover recent advances in the use of computers to predict the flow, sediment transport, water quality, and ecological processes in river systems.

The papers presented at the Conference cover such topics as: River and Watershed Management; Flood Risk Management; Erosion and Sediment Transport; Water Resources Management; Water Quality; River Basin Risk Analysis; Extreme Event Management.

WIT Transactions on Ecology and the Environment, Vol 197
Published 2015 / 302pp / £130.00

Water Pollution XII
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK
Water Pollution XII contains the proceedings of the 12th International Conference in the series on Modelling, Monitoring and Management of Water Pollution. The book will be of interest to scientists, managers and academics from various areas of water contamination.

Contaminants and Control; River Basin Management; Flood Risk; Wetlands; Regional and Geo-politics of Water; Water Resources and Economics; Government and Regulations.

WIT Transactions on Ecology and the Environment, Vol 171
Published 2013 / 356pp / £153.00

NEW TITLE

River Basin Management VII
Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK
Containing papers presented at the seventh international conference on the topic, this book reviews the advances that have been made in the development and application of software tools for predicting the flow, water quality, sediment transport and ecological processes in river systems. Organised by the Wessex Institute of Technology, the biennial conference was first held in 2001.

The papers presented at the Conference address: Water Resources Management; Flood Risk Management; Erosion and Sediment Transport; Hydrological Modelling; River Restoration and Rehabilitation; Water Quality; Changing Climate; Hydrodynamics.

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Z. WANG, J. ZUO, C. YUAN & H. XIE

Statistical expressions on water based wildfire suppression in Sweden, 1996–2011
R. HANSEN

Application of gray target models in the prediction of coal and gas outburst: The case of Jinzhushan coal mine in China
Q. HU, S. PENG, J. XU, L. ZHANG & D. LIU

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C. SUN, Y. XU, S. JIANG & Q. CHE

Enterprise risk assessment for innovation talents
C. CHEN & X. ZHANG
The International Journal of Computational Methods and Experimental Measurements (CMEM) provides the scientific community with a forum to present the interaction between the complementary aspects of computational methods and experimental measurements, and to stress the importance of their harmonious development and integration.

The steady progress in the efficiency of computers and software has resulted in the continuous development of computer simulation, which has influenced all scientific and engineering activities. As these simulations expand and improve, the need to validate them grows, and this can only be successfully achieved by performing dedicated experimental tests. Furthermore, because of their continual development, experimental techniques are becoming so complex and sophisticated that they need to be controlled by computers, with the data obtained processed by means of computational methods.

The aim of the Journal is to review the latest work in computational methods and experimental measurements, with a view to achieving harmonious development and interaction between the two.

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4 issues per year Access to all back copies Offsite remote account access
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The Journal deals with the comparison of conventional energy sources, particularly hydrocarbons, with a number of alternative ways of producing energy, based on renewable resources such as solar, hydro, wind and geothermal, and by applying new technologies. It also welcomes papers on energy use, including industrial processes, imbedded energy contents of materials, such as those used in the built environment, requirements in transportation, ICT and all other energy related activities.

A key issue is the conversion of new, sustainable sources of energy into useful forms (electricity, heat, fuel), while finding efficient ways of storage and distribution. In many cases, the challenge lies as much in the production of such renewable energy at an acceptable cost – including damage to the environment – as with integration of those resources into the existing infrastructure.

The changes required to progress from an economy mainly based on hydrocarbons to one taking advantage of sustainable energy resources are massive and require considerable scientific research as well as the development of advanced engineering systems. Such progress demands close collaboration between different disciplines in order to arrive at optimum solutions.
The International Journal of Transport Development and Integration covers all transportation modes and the general topic of transport systems, with particular emphasis on their integration and harmonisation.

The Journal addresses the areas of urban and road transportation, maritime and fluvial transport, rail and aviation, and topics related to logistics, optimisation and complex systems, amongst others. The growing need for integration is partly to respond to the many advances that are taking place in transportation and in order to achieve better uses of all systems, with the subsequent gains in energy efficiency. There is also the need for integration of transportation with telecommunications systems and IT in order to improve safety, security and efficiency.

The Journal aims to report on advanced railways transport modes, including passenger, freight and transit systems. It welcomes contributions in the field of marine and fluvial transport. The Journal also covers papers resulting from the rapid growth in air freight and passenger transportation, together with the need to develop the required airport facilities.

Transportation is one of the largest consumers of energy, particularly hydrocarbons, and has a considerable share of the economics of governments, industry and households.

Subscription Information:
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The Journal addresses a wide range of topics related to studies, repairs and maintenance of the built cultural heritage. Technical issues on the structural integrity of different types of buildings, such as those constructed with materials as varied as iron and steel, concrete, masonry, wood or earth are discussed. Restoration processes require the appropriate characterisation of those materials, the modes of construction and the structural behaviour of the building. Of particular importance are studies related to their dynamic and earthquake behaviour aiming to provide an assessment of the seismic vulnerability of heritage buildings.

The Journal contributions aim to provide the knowledge to facilitate regulating policies. They also address topics related to historical aspects and the reuse of heritage sites. Of particular interest is the study of Heritage Architecture in Asia, Islamic countries, Native American cultures and vernacular civilizations in Africa and Oceania. An important aim of the Journal is to investigate cross-cultural influences.

The Journal brings together contributions from scientists, architects, engineers, restoration experts, social scientists, planners, and economists dealing with different aspects of heritage buildings.
### INDEX

#### A

- Advanced Computational Methods and Experiments in Heat Transfer XII ........................................... 25
- Advancements in City Transport ........................................... 53
- Advances in Fluid Mechanics IX ......................................... 23
- Advances in Fluid Mechanics XI ......................................... 23
- Aerodynamics of Wind Turbines ......................................... 19
- Air Pollution XXII .............................................................. 2
- Air Pollution XXIII ............................................................. 2
- Air Pollution XXIV ............................................................. 2
- Aluminium Alloy Corrosion of Aircraft Structures ................. 32
- Applications of Fourier Transforms to Generalized Functions .................................................. 34
- Assessment of Daylight Performance in Buildings ....................... 3

#### B

- Big Data ............................................................................. 7
- Biologically Inspired Optimization Methods ......................... 34
- Biomass Pelletization ........................................................... 2
- Biomass to Biofuels ............................................................. 18
- Biotechnology ................................................................. 7
- Boundary Element Methods for Electrical Engineers ................. 17
- Boundary Elements and other Mesh Reduction Methods XXXIV ......................................................... 9
- Boundary Elements and other Mesh Reduction Methods XXXVI .................................................................. 9
- Boundary Elements and other Mesh Reduction Methods XXXVII .......................................................... 9
- Boundary Elements and other Mesh Reduction Methods XXXVIII .......................................................... 9
- Boundary Elements and other Mesh Reduction Methods XXXIX .......................................................... 8
- Boundary Elements ........................................................... 10
- Bridge Aerelasticity ............................................................. 40
- Britain and the making of Argentina .................................... 27
- Broadband Power-line Communication Systems ................. 29
- Building Information Modelling (BIM) in Design, Construction and Operations .................................. 4

#### C

- Chilean Earthquake and Tsunami 2010, The ........................................... 14
- City out of Chaos ................................................................ 47
- Coastal Cities and their Sustainable Futures ................................. 31
- Coastal Processes II ............................................................. 31
- Coastal Processes III ............................................................ 31
- Convoluntary Computation and Multiagent Systems ...................... 29
- Colour in Art, Design and Nature ........................................... 11
- Complex Systems in Business, Administration, Science and Engineering ............................................. 35
- Complex Systems in Business, Administration, Science and Engineering II ........................................... 35
- Composites ........................................................................ 32
- Computational Fluid Dynamics and Heat Transfer .................... 26
- Computational Methods and Experimental Measurements XVII .................................................. 36
- Computational Methods in Multiphase Flow VII ......................... 22
- Computational Methods in Multiphase Flow VIII ......................... 22
- Computers in Railways XIV .................................................. 53
- Computers in Railways XIV: Special Contributions .................... 53
- Computers in Railways XV ................................................... 52
- Computers in Sport ............................................................. 30
- Conservation and Structural Restoration of Architectural Heritage, The ........................................... 7
- Creative Design in Industry and Architecture ......................... 3
- Crisis in Two Pacific Rim Economies, The .............................. 46
- Critical Infrastructure Security ............................................. 37
- Cultural Tourism .................................................................. 44

#### D

- Damage-based Earthquake Engineering ................................ 13
- Dam-break Problems, Solutions and Case Studies .................... 23
- Data Management and Security ........................................ 29
- Data Mining X ................................................................. 30
- Debris Flow ....................................................................... 24
- Defence Sites I .................................................................... 46
- Defence Sites II .................................................................... 46
- Defence Sites III ................................................................... 45
- Design & Intuition ............................................................. 6
- Design Against Blast ........................................................ 10
- Design and Information in Biology ....................................... 12
- Design and Nature VI .......................................................... 12
- Development of Regional Airports ........................................ 51
- Disaster Management and Human Health Risk III ..................... 38
- Disaster Management and Human Health Risk IV ...................... 37
- Dynamics in the Practice of Structural Design ......................... 42

#### E

- Earthquake Ground Motion .............................................. 13
- Earthquake Resistant Engineering Structures IX ......................... 14
- Earthquake Resistant Engineering Structures X ......................... 14
- Earthquake–Soil Interaction .............................................. 13
- Eco-Architecture IV ........................................................... 3, 12
- Eco-Architecture V ........................................................... 3, 11
- Eco-Architecture VI ........................................................... 2, 11
- Eco-Exergy as Sustainability .................................................. 16
- Ecological Dimensions for Sustainable Socio Economic Development .................................................. 15
- Ecological Indicators for Coastal and Estuarine Environmental Assessment ........................................... 16
- Ecological Modelling .......................................................... 15
- Ecosystems and Sustainable Development IX ......................... 16
- Ecosystems and Sustainable Development X .......................... 15
- Eco-Towers ........................................................................ 4
- Electromagnetic Field Interaction with Transmission Lines ............. 17
- Electromagnetics Engineering Handbook ................................. 16
- Elements of Plasticity .......................................................... 41
- Emerging Topics in Heat Transfer ........................................... 24
- Energy and Sustainability IV .............................................. 20
- Energy and Sustainability V .............................................. 20
- Energy and Sustainability V: Special Contributions .................. 20
- Energy and Sustainability VI ............................................... 19
- Energy Design Strategies for Retrofitting ................................ 19
- Energy Production and Management in the 21st Century .................. 18
- Energy Production and Management in the 21st Century II ............. 17
- Environment and Health .................................................... 22
- Environmental Health & Biomedicine .................................... 8
- Environmental Health Risk VII ........................................... 22
- Environmental Impact II ..................................................... 44
- Environmental Impact III .................................................... 44
- Environmental Innovation in China ........................................ 46
- Exergy Method ..................................................................... 26

#### F

- Failure Assessment of Thin-walled Structures with Particular Reference to Pipelines ......................... 9
- First International Symposium on Urban Development .......... 44
- Flood Early Warning Systems ............................................. 36
- Flood Prevention and Remediation ...................................... 39
- Flood Recovery, Innovation and Response III ......................... 38
- Flood Recovery, Innovation and Response IV ......................... 38
- Flood Recovery, Innovation and Response V .......................... 38
- Flood Risk Assessment and Management ............................... 37
- Flood Phenomena in Nature ............................................... 12
- Fluid Structure Interaction VII ............................................. 23
- Food and Environment II .................................................... 46
- Fracture and Damage of Composites ..................................... 11
- Fundamentals of Road Design ............................................. 51
- Fundamentals of Wavelets ................................................... 34
- Future of the City, The ...................................................... 5

#### G

- Great Structures in Architecture, The .................................... 7
- Groundwater Characterization, Management and Monitoring .................................................. 55

#### H

- Handbook of Communications Security ................................ 29
- Handbook of Ecological Modelling and Informatics .................. 15
- Heat Transfer in Food Processing ........................................ 26
- Heat Transfer XIII ............................................................. 25
- Heat Transfer XIV ............................................................. 25
- Heritage and Sustainability in the Islamic Built Environment .................. 6
- Heritage Masonry ............................................................. 5
- High Level Radioactive Waste (HLW) Disposal ....................... 21
- High Performance and Optimum Design of Structures and Materials .................................................. 42
- High Performance and Optimum Design of Structures and Materials II .................................................. 42
- High Performance Structures and Materials VI ......................... 42
<table>
<thead>
<tr>
<th>Conference Name</th>
<th>Event Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BIG DATA 2016</strong></td>
<td>International Conference on Big Data 3 – 5 May 2016 Alicante, Spain</td>
</tr>
<tr>
<td><strong>DEFENCE HERITAGE 2016</strong></td>
<td>3rd International Conference on Defence Sites: Heritage and Future 4 – 6 May 2016 Alicante, Spain</td>
</tr>
<tr>
<td><strong>ISLAMIC HERITAGE ARCHITECTURE 2016</strong></td>
<td>1st International Conference on Islamic Heritage Architecture and Art 17 – 19 May 2016 València, Spain</td>
</tr>
<tr>
<td><strong>SUSTAINABLE TOURISM 2016</strong></td>
<td>7th International Conference on Sustainable Tourism 18 – 20 May 2016 València, Spain</td>
</tr>
<tr>
<td><strong>SUSI 2016</strong></td>
<td>14th International Conference on Structures under Shock and Impact 24 – 26 May 2016 Crete, Greece</td>
</tr>
<tr>
<td><strong>RISK ANALYSIS 2016</strong></td>
<td>10th International Conference on Risk Analysis and Hazard Mitigation 25 – 27 May 2016 Crete, Greece</td>
</tr>
<tr>
<td><strong>COMPLEX SYSTEMS 2016</strong></td>
<td>The New Forest Conference on Complex Systems 2016 1 – 3 June 2016 New Forest, UK</td>
</tr>
<tr>
<td><strong>WASTE MANAGEMENT 2016</strong></td>
<td>8th International Conference on Waste Management and the Environment 7 – 9 June 2016 València, Spain</td>
</tr>
<tr>
<td><strong>ENVIRONMENTAL IMPACT 2016</strong></td>
<td>3rd International Conference on Environmental and Economic Impact on Sustainable Development 8 – 10 June 2016 València, Spain</td>
</tr>
<tr>
<td><strong>AIR POLLUTION 2016</strong></td>
<td>24th International Conference on Modelling, Monitoring and Management of Air Pollution 20 – 22 June 2016 Crete, Greece</td>
</tr>
<tr>
<td><strong>URBAN TRANSPORT 2016</strong></td>
<td>22nd International Conference on Urban Transport and the Environment 21 – 23 June 2016 Crete, Greece</td>
</tr>
<tr>
<td><strong>WATER POLLUTION 2016</strong></td>
<td>13th International Conference on Modelling, Monitoring and Management of Water Pollution 27 – 29 June 2016 San Servolo, Venice, Italy</td>
</tr>
<tr>
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<td>5th International Conference on Flood Risk Management and Response 29 June – 1 July 2016 San Servolo, Venice, Italy</td>
</tr>
<tr>
<td><strong>SUSTAINABLE CITY 2016</strong></td>
<td>11th International Conference on Urban Regeneration and Sustainability 12 – 14 July 2016 Alicante, Spain</td>
</tr>
<tr>
<td><strong>ECO-ARCHITECTURE 2016</strong></td>
<td>6th International Conference on Harmonisation between Architecture and Nature 13 – 15 July 2016 Alicante, Spain</td>
</tr>
<tr>
<td><strong>COMPRAIL 2016</strong></td>
<td>15th International Conference on Railway Engineering Design and Operation 19 – 21 July 2016 Madrid, Spain</td>
</tr>
<tr>
<td><strong>AFM 2016</strong></td>
<td>11th International Conference on Advances in Fluid Mechanics 5 – 7 September 2016 Ancona, Italy</td>
</tr>
<tr>
<td><strong>ENERGY QUEST 2016</strong></td>
<td>2nd International Conference on Energy Production and Management in the 21st Century: The Quest for Sustainable Energy 6 – 8 September 2016 Ancona, Italy</td>
</tr>
<tr>
<td><strong>HEAT TRANSFER 2016</strong></td>
<td>14th International Conference on Simulation and Experiments in Heat Transfer and its Applications 7 – 9 September 2016 Ancona, Italy</td>
</tr>
<tr>
<td><strong>DESIGN AND NATURE 2016</strong></td>
<td>8th International Conference on Comparing Design in Nature with Science and Engineering 13 – 15 September 2016 New Forest, UK</td>
</tr>
<tr>
<td><strong>HPSM/OPTI 2016</strong></td>
<td>The 2016 International Conference on High Performance and Optimum Design of Structures and Materials 19 – 21 September 2016 Siena, Italy</td>
</tr>
<tr>
<td><strong>BEM/MRM 39</strong></td>
<td>39th International Conference on Boundary Elements and other Mesh Reduction Methods 20 – 22 September 2016 Siena, Italy</td>
</tr>
<tr>
<td><strong>MARAS 2016</strong></td>
<td>5th International Conference on Mobile, Adaptable and Rapidly Assembled Structures 21 – 23 September 2016 Siena, Italy</td>
</tr>
<tr>
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