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*Handbook of Wind Energy
Aerodynamics Springer*

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Nature

*Developments in Renewable
Energies Offshore contains
the papers presented at
the 4th International
Conference on Renewable
Energies Offshore (RENEW*

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*2020, Lisbon, Portugal, 12
- 15 October 2020). The
book covers a wide range
of topics, including:
resource assessment; wind
energy; wave energy; tidal
energy; ocean energy*

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*devices; multiuse
platforms; PTO design;
grid connection; economic
assessment; materials and
structural design;
installation planning and
maintenance planning. The*

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*book will be invaluable to
professionals and
academics involved or
interested in Offshore
Engineering, and Renewable
and Wind Energy.*

A COMPREHENSIVE REFERENCE

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*TO THE MOST RECENT
ADVANCEMENTS IN OFFSHORE
WIND TECHNOLOGY Offshore
Wind Energy Technology
offers a reference based
on the research material
developed by the acclaimed*

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*Norwegian Research Centre
for Offshore Wind
Technology (NOWITECH) and
material developed by the
expert authors over the
last 20 years. This
comprehensive text covers*

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*critical topics such as
wind energy conversion
systems technology,
control systems, grid
connection and system
integration, and novel
structures including*

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*bottom-fixed and floating.
The text also reviews the
most current operation and
maintenance strategies as
well as technologies and
design tools for novel
offshore wind energy*

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*concepts. The text
contains a wealth of
mathematical derivations,
tables, graphs, worked
examples, and illustrative
case studies.
Authoritative and*

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*accessible, Offshore Wind
Energy Technology:
Contains coverage of
electricity markets for
offshore wind energy and
then discusses the
challenges posed by the*

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*cost and limited
opportunities Discusses
novel offshore wind
turbine structures and
floaters Features an
analysis of the stochastic
dynamics of*

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*offshore/marine structures
Describes the logistics of
planning, designing,
building, and connecting
an offshore wind farm
Written for students and
professionals in the*

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*field, Offshore Wind
Energy Technology is a
definitive resource that
reviews all facets of
offshore wind energy
technology and grid
connection.*

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The book "Assessment of Renewable Energy Resources with Remote Sensing" focuses on disseminating scientific knowledge and technological developments for the assessment and

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forecasting of renewable energy resources using remote sensing techniques. The eleven papers inside the book provide an overview of remote sensing applications on hydro,

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solar, wind and geothermal energy resources and their major goal is to provide state of art knowledge to contribute with the renewable energy resource deployment, especially in

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regions where energy demand is rapidly expanding. Renewable energy resources have an intrinsic relationship with local environmental features and the regional

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climate. Even small and fast environment and/or climate changes can cause significant variability in power generation at different time and space scales. Methodologies

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*based on remote sensing
are the primary source of
information for the
development of numerical
models that aim to support
the planning and operation
of an electric system with*

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*a substantial contribution
of intermittent energy
sources. In addition,
reliable data and
knowledge on renewable
energy resource assessment
are fundamental to ensure*

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*sustainable expansion
considering environmental,
financial and energetic
security.*

*Realizing Renewable Energy
Projects
Transmission,*

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*Distribution, and
Renewable Energy
Generation Power Equipment
Wind Turbine Aerodynamics
and Vorticity-Based
Methods
Measurement, Assessment,*

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and Control

Princípios e operação

Maintenance Management of

Wind Turbines

TURbWind 2018 Colloquium

***This Special Issue is a
collection of twelve papers on***

***the design and application of
biomedical circuits and
systems. We hope you enjoy
reading this Special Issue and
become inspired to address
technological challenges
toward helping the medical***

industry and biologists to increase the quality of life for humans, which is the main objective. Several topics have been highlighted: muscle electrostimulation, analog front-end (AFE) circuits,

waveform generators, real-time velocimetry estimators, interference suppression, bio-signal encryption, IoT electronic nose, ultrasound image processing, noise in medical imaging, elbow

actuators, and aids for visually impaired people. We are conscious about the very wide scope of biomedical circuits and systems applications, and that our contribution represents only a grain of

sand, though we expect to be useful in contributing to the progress of knowledge in the field.

This book comprises the select proceedings of the International Conference on

***Recent Trends in
Developments of Thermofluids
and Renewable Energy (TFRE
2020). The major topics
covered include aerodynamics,
alternate energy, bio fuel, bio
heat transfer, computational***

fluid dynamics, control mechanism for constant power generation, and energy storage. The book also discusses latest developments in the fields of electric vehicles, hybrid power

systems, and solar and renewable energy. Given the scope of its contents, this book will be useful for students, researchers, and professionals interested in the field of thermofluids and

***renewable energy resources.
This handbook provides both a
comprehensive overview and
deep insights on the state-of-
the-art methods used in wind
turbine aerodynamics, as well
as their advantages and limits.***

The focus of this work is specifically on wind turbines, where the aerodynamics are different from that of other fields due to the turbulent wind fields they face and the resultant differences in

structural requirements. It gives a complete picture of research in the field, taking into account the different approaches which are applied. This book would be useful to professionals, academics,

***researchers and students
working in the field.***

***This book highlights the
essential theoretical and
practical aspects of lightning,
lightning protection, safety
and education. Additionally,***

several auxiliary topics that are required to understand the core themes are also included. The main objective of the contents is to enlighten the scientists, researchers, engineers and social activists

(including policy makers) in developing countries regarding the key information related to lightning and thunderstorms. A majority of developing countries are in tropics where the lightning

characteristics are somewhat different from those in temperate regions. The housing structures and power/communication networks, and human behavioural patterns(that

depends on socio-economic parameters) in these countries are also different from those in the developed world. As the existing books on similar themes address only those scenarios in developed

countries, this book serves a vast spectrum of readership in developing world who seek knowledge in the principles of lightning and a practical guidance on lightning protection and safety

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education.

***Fundamentals and Recent
Applications***

***Coastal Geohazard and
Offshore Geotechnics***

***Trends in Maritime Technology
and Engineering***

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***Innovation and Research
Select Proceedings of TFRE
2020
Advances in Sustainable
Energy
Developments in Renewable
Energies Offshore***

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Wind farm operators utilize various financial agreements to generate revenue and mitigate risk. These agreements are often based on some estimate of the energy production from

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the wind farm. A power purchase agreement (PPAs), which is a long-term fixed volume fixed price arrangement, was the most common type of agreement for much of the growth of

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wind energy in the U.S.
Recently, wind turbine
power production
estimations are relying
less on fixed production
volumes and PPAs as the
basis for energy

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estimation in financial agreements and more on proxy generation, or an estimate of what the wind farm should make given a set of inflow conditions. These newer types of

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financial agreements are shifting the focus to when power is produced rather than just how much, and so it is imperative to understand and analyze the errors arising in proxy

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generation and how it may impact the financial agreements that use proxy generation. This work quantifies the errors in proxy generation and compares two methods of

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estimating power production, examining the financial impacts of both, for one wind project. These two methods are the nacelle transfer function (NTF) method and the

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reanalysis data method,
which may be used if
onsite data is
unavailable.

This book reviews
alternative and renewable
energy resources in order

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to pave the way for a more sustainable production in the future. A multi-disciplinary team of authors provides a comprehensive overview of current technologies and

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future trends, including solar technologies, wind energy, hydropower, microbial electrochemical systems and various biomass sources for biofuel production. In

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addition, the book focuses on solutions for developing countries. Conventional energy sources are finite, and estimates suggest that they will be exhausted

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within a few decades.

Finding a solution to this problem is a global challenge, and developing countries in particular are still highly dependent on fossil fuels due to

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their rapidly growing populations accompanied by a huge growth in primary energy consumption.

Moreover, the most common conventional energy sources (coal and

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petroleum) are non-sustainable since their combustion exponentially increases greenhouse gas emissions. As such, there is a pressing need for clean energy based on

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alternative or renewable resources, not only to ensure energy supplies at an affordable price but also to protect the environment.

Programme and the Book of

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Abstracts Twenty-first
Annual Conference YUCOMAT
2019 & Eleventh World
Round Table Conference on
Sintering WRTCS 2019,
Herceg Novi, September
2-6, 2019

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Green Banking is the first guide encompassing all the disciplines necessary to realize renewable energy projects. This book focuses on cost-competitive and mature

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technologies, and on the processes enabling to develop, finance and execute such utility-scale projects. The book starts with the aspects relevant for every form of

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renewable energy. It covers essential themes such as the role of renewables amid a changing energy world, the importance of the regulatory regime, its

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social acceptance and bankability criteria, to name only a few. Chapters describe project financings vehicles for a range of renewable energy technologies including

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solar photovoltaic power plants, onshore wind farms and offshore wind farms. The book give readers a unique perspective on how renewable energy projects are realized, and is a go-

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to reference manual for understanding how the different project stakeholders act. All of the articles are provided by authors with an ample experience in renewable

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energies and many years experience. This book is especially useful for people working in this industry or students willing to get better knowledge out of their

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field of experience.

Data Science for Wind
Energy

Advances in Thermofluids
and Renewable Energy

Lightning

Handbook of Wind Energy

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Aerodynamics

Aging and Life Extension

Techniques, Second Edition

Wind Energy Meteorology

18th Mexican International

Conference on Artificial

Intelligence, MICAI 2019,

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Xalapa, Mexico, October 27
– November 2, 2019,
Proceedings

This Special Issue “Atmospheric
Conditions for Wind Energy
Applications” hosts papers on
aspects of remote sensing for

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atmospheric conditions for wind energy applications. Wind lidar technology is presented from a theoretical view on the coherent focused Doppler lidar principles. Furthermore, wind lidar for applied use for wind turbine control, wind

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farm wake, and gust characterizations is presented, as well as methods to reduce uncertainty when using lidar in complex terrain. Wind lidar observations are used to validate numerical model results. Wind

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Doppler lidar mounted on aircraft used for observing winds in hurricane conditions and Doppler radar on the ground used for very short-term wind forecasting are presented. For the offshore environment, floating lidar data

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processing is presented as well as an experiment with wind-profiling lidar on a ferry for model validation. Assessments of wind resources in the coastal zone using wind-profiling lidar and global wind maps using satellite data are presented.

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The book introduces the fundamentals of fluid-mechanics, momentum theories, vortex theories and vortex methods necessary for the study of rotors aerodynamics and wind-turbines aerodynamics in particular. Rotor

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theories are presented in a great level of details at the beginning of the book. These theories include: the blade element theory, the Kutta-Joukowski theory, the momentum theory and the blade element momentum method. A part of the

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book is dedicated to the description and implementation of vortex methods. The remaining of the book focuses on the study of wind turbine aerodynamics using vortex-theory analyses or vortex-methods. Examples of vortex-theory

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applications are: optimal rotor design, tip-loss corrections, yaw-models and dynamic inflow models. Historical derivations and recent extensions of the models are presented. The cylindrical vortex model is another example of a

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simple analytical vortex model presented in this book. This model leads to the development of different BEM models and it is also used to provide the analytical velocity field upstream of a turbine or a wind farm under aligned or

yawed conditions. Different applications of numerical vortex methods are presented. Numerical methods are used for instance to investigate the influence of a wind turbine on the incoming turbulence. Sheared inflows and aero-elastic

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simulations are investigated using vortex methods for the first time. Many analytical flows are derived in details: vortex rings, vortex cylinders, Hill's vortex, vortex blobs etc. They are used throughout the book to devise simple rotor models

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or to validate the implementation of numerical methods. Several Matlab programs are provided to ease some of the most complex implementations.

A comprehensive guide to wind farm noise prediction,

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measurement, assessment, control
and effects on people Wind Farm
Noise covers all aspects associated
with the generation, measurement,
propagation, regulation and
adverse health effects of noise
produced by large horizontal-axis

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wind turbines of the type used in wind farms. The book begins with a brief history of wind turbine development and the regulation of their noise at sensitive receivers. Also included is an introductory chapter on the fundamentals of

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acoustics relevant to wind turbine noise so that readers are well prepared for understanding later chapters on noise measurements, noise generation mechanisms, noise propagation modelling and the assessment of the noise at

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surrounding residences. Key features: Potential adverse health effects of wind farm noise are discussed in an objective way. Means for calculating the noise at residences due to a wind farm prior to construction are covered in detail

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along with uncertainty estimates. The effects of meteorological conditions and other influences, such as obstacles, ground cover and atmospheric absorption, on noise levels at residences are explained. Quantities that should be

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measured as well as how to best measure them in order to properly characterise wind farm noise are discussed in detail. Noise generation mechanisms and possible means for their control are discussed as well as aspects of

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wind farm noise that still require further research to be properly understood. The book provides comprehensive coverage of the topic, containing both introductory and advanced level material.
Renewable Energy Systems:

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Modelling, Optimization and Control aims to cross-pollinate recent advances in the study of renewable energy control systems by bringing together diverse scientific breakthroughs on the modeling, control and optimization of

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renewable energy systems by leading researchers. The book brings together the most comprehensive collection of modeling, control theorems and optimization techniques to help solve many scientific issues for

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researchers in renewable energy and control engineering. Many multidisciplinary applications are discussed, including new fundamentals, modeling, analysis, design, realization and experimental results. The book also

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covers new circuits and systems to help researchers solve many nonlinear problems. This book fills the gaps between different interdisciplinary applications, ranging from mathematical concepts, modeling, and analysis,

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up to the realization and experimental work. Covers modeling, control theorems and optimization techniques which will solve many scientific issues for researchers in renewable energy
Discusses many multidisciplinary

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applications with new
fundamentals, modeling, analysis,
design, realization and
experimental results Includes new
circuits and systems, helping
researchers solve many nonlinear
problems

Einsatz der Lidar-Technik zur
Realisierung eines virtuellen
Messmastes
Modelling, Optimization and Control
Konzeptionierung und Validierung
eines Multilidar-Systems für
Standortbewertung von

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Windenergieanlagen

New Technologies, Development
and Application

Design, Fabrication and

Performance of Wind Turbines

2020

Proceedings of the 6th International

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Conference on Maritime
Technology and Engineering
(MARTECH 2022, Lisbon, Portugal,
24-26 May 2022)

Advances in Mechanical Design
*The papers included in this
book were presented at the*

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*International Conference
“New Technologies,
Development and
Application,” which was held
at the Academy of Sciences
and Arts of Bosnia and
Herzegovina in Sarajevo,
Bosnia and Herzegovina on*

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28th-30th June 2018. The book covers a wide range of technologies and technical disciplines including complex systems such as: Robotics, Mechatronics Systems, Automation, Manufacturing, Cyber-

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*Physical Systems, Autonomous
Systems, Sensors, Networks,
Control Systems, Energy
Systems, Automotive Systems,
Biological Systems,
Vehicular Networking and
Connected Vehicles,
Effectiveness and Logistics*

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*Systems, Smart Grids,
Nonlinear Systems, Power
Systems, Social Systems, and
Economic Systems.*

*With rapid developments
being made in the
exploration of marine
resources, coastal geohazard*

and offshore geotechnics have attracted a great deal of attention from coastal geotechnical engineers, with significant progress being made in recent years. Due to the complicated nature of marine environments, there

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*are numerous natural marine
geohazard present throughout
the world's marine areas,
e.g., the South China Sea.
In addition, damage to
offshore infrastructure
(e.g., monopiles, bridge
piers, etc.) and their*

*supporting installations
(pipelines, power
transmission cables, etc.)
has occurred in the last
decades. A better
understanding of the
fundamental mechanisms and
soil behavior of the seabed*

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in marine environments will help engineers in the design and planning processes of coastal geotechnical engineering projects. The purpose of this book is to present the recent advances made in the field of coastal

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geohazards and offshore geotechnics. The book will provide researchers with information regarding the recent developments in the field, and possible future developments. The book is composed of eighteen papers,

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*covering three main themes:
(1) the mechanisms of
fluid-seabed interactions
and the instability
associated with seabeds when
they are under dynamic
loading (papers 1-5); (2)
evaluation of the stability*

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of marine infrastructure, including pipelines (papers 6-8), piled foundation and bridge piers (papers 9-12), submarine tunnels (paper 13), and other supported foundations (paper 14); and (3) coastal geohazards,

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*including submarine
landslides and slope
stability (papers 15-16) and
other geohazard issues
(papers 17-18). The editors
hope that this book will
function as a guide for
researchers, scientists, and*

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*scholars, as well as
practitioners of coastal and
offshore engineering.*

*This volume constitutes the
proceedings of the 18th
Mexican Conference on
Artificial Intelligence,
MICA I 2019, held in Xalapa,*

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*Mexico, in October/November
2019. The 59 full papers
presented in this volume
were carefully reviewed and
selected from 148
submissions. They cover
topics such as: machine
learning; optimization and*

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*planning; fuzzy systems,
reasoning and intelligent
applications; and vision and
robotics.*

*Data Science for Wind Energy
provides an in-depth
discussion on how data
science methods can improve*

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*decision making for wind
energy applications, near-
ground wind field analysis
and forecast, turbine power
curve fitting and
performance analysis,
turbine reliability
assessment, and maintenance*

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optimization for wind turbines and wind farms. A broad set of data science methods covered, including time series models, spatio-temporal analysis, kernel regression, decision trees, kNN, splines, Bayesian

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*inference, and importance
sampling. More importantly,
the data science methods are
described in the context of
wind energy applications,
with specific wind energy
examples and case studies.
Features Provides an*

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*integral treatment of data
science methods and wind
energy applications Includes
specific demonstration of
particular data science
methods and their use in the
context of addressing wind
energy needs Presents real*

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*data, case studies and
computer codes from wind
energy research and
industrial practice Covers
material based on the
author's ten plus years of
academic research and
insights*

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*Handbook of Distributed
Generation
Atmospheric Physics for Wind
Power Generation
Renewable Energy Systems
Design and Construction
Wind Turbine Power
Production Estimation*

*Analysis In west Bengal
From Models to Applications
Remote Sensing of
Atmospheric Conditions for
Wind Energy Applications
All of us are confronted
with complex phenomena
occurring in daily life and*

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in the living and inanimate nature surrounding us. Our scientific curiosity strives to unravel the mechanisms at work to create such complexity. Among various approaches to solve this problem, the field of

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*synergetics, developed by
Hermann Haken, has proven
very successful as a general
and interdisciplinary
concept for describing and
explaining complex phenomena
that appear in systems under
non-equilibrium conditions.*

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These comprise dynamical states in evolving systems, spatial structure-forming processes, synchronization of states and regulatory mechanisms, and many other examples. The encompassing concepts have been applied

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to many disciplines, like physics, chemistry, biology, and beyond those also from synergetics to information theory, brain science, economics, and others. Starting from basic methods of complexity research and

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synergetics, this volume contains thirty contributions on complex systems that exhibit spontaneous pattern formation far from thermal equilibrium. Written by international experts and

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young researchers assembled under one roof, this volume reflects state of the art research from a variety of scientific fields and disciplines where complexity theory and synergetics are important or even

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*indispensable tools today
and in the future.*

*“Maintenance Management of
Wind Turbines” considers the
main concepts and the state-
of-the-art, as well as
advances and case studies on
this topic. Maintenance is a*

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critical variable in industry in order to reach competitiveness. It is the most important variable, together with operations, in the wind energy industry. Therefore, the correct management of corrective,

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*predictive and preventive
politics in any wind turbine
is required. The content
also considers original
research works that focus on
content that is
complementary to other sub-
disciplines, such as*

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*economics, finance,
marketing, decision and risk
analysis, engineering, etc.,
in the maintenance
management of wind turbines.
This book focuses on real
case studies. These case
studies concern topics such*

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as failure detection and diagnosis, fault trees and subdisciplines (e.g., FMECA, FMEA, etc.) Most of them link these topics with financial, schedule, resources, downtimes, etc., in order to increase

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*productivity, profitability,
maintainability,
reliability, safety,
availability, and reduce
costs and downtime, etc., in
a wind turbine. Advances in
mathematics, models,
computational techniques,*

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dynamic analysis, etc., are employed in analytics in maintenance management in this book. Finally, the book considers computational techniques, dynamic analysis, probabilistic methods, and mathematical

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optimization techniques that are expertly blended to support the analysis of multi-criteria decision-making problems with defined constraints and requirements.

This practical book deals

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with the technology of small-power wind turbines as opposed to widely diffused industrial wind turbines and wind farms. It covers the most common wind turbine technologies in the small power segment: horizontal

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axis both for electrical generation and water pumping, vertical axis of the Darrieus type, and vertical axis of the Savonius type. With each chapter following the same didactic scheme—a

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theoretical explanation and practical examples showing calculation procedures—it allows anybody with basic technical knowledge to design and build a small wind turbine for any site. A set of simple spreadsheets

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*is available for download,
each providing further
examples of how to solve
specific design problems and
allowing the reader to play
with changing parameters and
see what-if. This simple
trial-and-error learning*

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process allows beginners to develop the feeling of the orders of magnitude involved in the design of a small wind power system, its potential advantages on other alternative solutions, and its limitations under

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*some special circumstances.
This book focus on
innovation, main objectives
are to bring the community
of researchers in the fields
of mechanical design
together; to exchange and
discuss the most recent*

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investigations, challenging problems and new trends; and to encourage the wider implementation of the advanced design technologies and tools in the world, particularly throughout China. The theme of 2021

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ICMD is "Interdisciplinary and Design Innovation" and this conference is expected to provide an excellent forum for cross-fertilization of ideas so that more general, intelligent, robust and

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*computationally economical
mechanical design methods
are created for multi-
disciplinary applications.
Techno-Societal 2016
Springer Handbook of
Atmospheric Measurements
Planning of Hybrid Renewable*

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*Energy Systems, Electric
Vehicles and Microgrid
Green Banking
Complexity and Synergetics
Small Wind Turbines for
Electricity and Irrigation
Electric Power Technologies,
Economics and Environmental*

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Impacts

This book features extensive coverage of all Distributed Energy Generation technologies, highlighting the technical, environmental and economic aspects of distributed resource

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integration, such as line loss reduction, protection, control, storage, power electronics, reliability improvement, and voltage profile optimization. It explains how electric power system planners, developers,

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operators, designers, regulators and policy makers can derive many benefits with increased penetration of distributed generation units into smart distribution networks. It further demonstrates how to best realize

these benefits via skillful integration of distributed energy sources, based upon an understanding of the characteristics of loads and network configuration.

Für die effiziente Planung eines

Windparks ist eine genaue Windmessung zur Bewertung des Windpotenziales eines Standortes im Vorfeld wichtig. Die bodenbasierte Doppler-Lidar-Technik wird in den letzten Jahren für die Windmessung

vermehrt eingesetzt. Allerdings stellen komplexe Standorte Herausforderungen für die gängigen Lidar-Systeme dar, die Unsicherheiten bei der Planung von Windparks erhöhen können. Multilidar-Systeme haben das

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Potenzial, genaue und flexible Messungen zu realisieren. Allerdings ist diese Technologie relativ neu und wird wegen Herausforderungen, wie Kosten und Aufwand, noch nicht eingesetzt. Die vorliegende

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Dissertation befasst sich mit der Erarbeitung eines für das komplexe Gelände ausgerichteten Multilidar-Systems im nahen Bereich. Zuerst werden Systemanforderungen erarbeitet.

Zwei Realisierungskonzepte werden darauf aufbauend vorgestellt und auf deren Realisierungsmöglichkeiten untersucht. Für die Realisierung eines virtuellen Messmastes werden optimale Scanstrategien

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erarbeitet und im Rahmen einer
Messkampagne validiert.

Darüber hinaus wird gezeigt,
dass durch die Nutzung von
Methoden des maschinellen
Lernens eine weitere
Messverbesserung erreicht

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werden kann.

Esta obra aborda temas como princípios da mediação eólica, turbinas e sua evolução mecânica, desafios da inserção da geração eólica, entre outros. Tendo em vista que a geração

de eletricidade a partir de grandes turbinas eólicas avançou significativamente nas matrizes elétricas de diversos países e, no Brasil, elas deixaram de ser coadjuvantes no setor elétrico para se tornar

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protagonistas em um nível de importância equivalente ao das usinas hidrelétricas, este livro se torna necessário ao estudo e à compreensão do papel que a energia eólica tem e terá na geração de energia.

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Wind Turbine Icing Physics and Anti-/De-Icing Technology gives a comprehensive update of research on the underlying physics pertinent to wind turbine icing and the development of various effective and robust

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anti-/de-icing technology for wind turbine icing mitigation. The book introduces the most recent research results derived from both laboratory studies and field experiments. Specifically, the research results based on field

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measurement campaigns to quantify the characteristics of the ice structures accreted over the blades surfaces of utility-scale wind turbines by using a Supervisory Control and Data Acquisition (SCADA) system and

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an Unmanned-Aerial-Vehicle (UAV) equipped with a high-resolution digital camera are also introduced. In addition, comprehensive lab experimental studies are explored, along with a suite of advanced flow

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diagnostic techniques, a detailed overview of the improvements, and the advantages and disadvantages of state-of-the-art ice mitigation strategies. This new addition to the Wind Energy Engineering series will be useful

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to all researchers and industry professionals who address icing issues through testing, research and industrial innovation. Covers detailed improvements and the advantages/disadvantages of state-of-the-art ice mitigation

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strategies Includes condition
monitoring contents for lab-scale
experiments and field tests

Presents the potential of various
bio-inspired icephobic coatings
of wind turbine blades

Offshore Wind Energy

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Technology

Alternative Energy Resources

The Way to a Sustainable

Modern Society

Science, Engineering, and

Economic Implications for

Developing Countries

Programme and the Book of
Abstracts / YUCOMAT &
WRTCS 2019

A Driving Force for Socio-Econo-
Technological Development
Modeling, Control and
Optimization

GAS INSULATED SUBSTATIONS

An essential reference guide to gas-insulated substations The second edition of Gas Insulated Substations (GIS) is an all-inclusive reference guide to gas insulated substations (GIS) and

**its advanced technologies.
Updated to the latest technical
developments and applications,
the guide covers basic physics
of gas insulated systems, SF6
insulating gas and its
alternatives, safety aspects and**

factors to choose GIS. GIS technology, its modular structure, control and monitoring systems, testing, installation rules and guidelines for operation, specification, and maintenance. Detailed

**information on various types for
GIS, with 14 reference project
explanations and three
extensive case studies give
information for the best
solutions of practical
applications. Special solutions**

**using mobile substations
concepts, mixed technology
switchgear (MTS) with air and
gas insulated technology,
underground substations, and
the use of special GIS substation
buildings e.g., shopping centers,**

parking lots, city parks, business complexes' or subway stations are explained. Future developments of GIS technology are shown for the next steps in alternatives to SF6, low power instrument transformers, and

digitalization of substations. A new chapter explains advanced technologies applied to GIS projects which cover the following; environmental issues for the substation permission process, insulation coordination

**studies for the network
requirements including very fast
transients, project scope
development, risk-based asset
management, health and safety
impact, electromagnetic fields,
SF6 decomposition byproducts**

**and condition assessment.
Disruptive development steps in
gas insulated substations
technologies are also covered in
this second edition. Vacuum
breaking and switching
technology for rated voltages of**

up to 500 kV is explained in detail with its physical background. Principle function and possible implementation of low power instrument transformers (LPIT) are explained and examples of

applications are given. The principles of digital twin for gas insulated substations (GIS) and gas insulated transmission lines (GIL) are explained in theory and project applications show the practical use and advantage. The

wide and fast-growing technical field of offshore GIS applications for AC and DC is explained on many examples and gives information on special requirements when getting offshore. Theoretical

requirements on DC gas insulated systems, methods of testing, prototype installation tests, modular design features, and advantages in applications are given. Finally, impact and advantages of digital

substations using GIS are explained. Key features: Written by leading GIS experts involved in development and project applications Discusses practical and theoretical aspects Detailed material of GIS for new and

**experienced GIS users, and
project planners Invaluable
guide to practicing electrical,
mechanical and civil engineers
as well as third- and fourth-year
electric power engineering
students**

This study explains the data preparation processes, plausibility checking of meteorological parameters, correction of met-mast wind speed, and also the determination of the nominal

**power of a wind farm using met-
mast measurements. The wind
speed correction of met-mast
FINO1 is evaluated from the
perspective of power produced
by alpha ventus by using
uncorrected and corrected**

**measurements from this met-
mast. Afterwards this data is
used for the determination of
nominal power for alpha ventus.
Renewable Energy Forecasting:
From Models to Applications
provides an overview of the**

state-of-the-art of renewable energy forecasting technology and its applications. After an introduction to the principles of meteorology and renewable energy generation, groups of chapters address forecasting

models, very short-term forecasting, forecasting of extremes, and longer term forecasting. The final part of the book focuses on important applications of forecasting for power system management and

in energy markets. Due to shrinking fossil fuel reserves and concerns about climate change, renewable energy holds an increasing share of the energy mix. Solar, wind, wave, and hydro energy are dependent

on highly variable weather conditions, so their increased penetration will lead to strong fluctuations in the power injected into the electricity grid, which needs to be managed. Reliable, high quality forecasts

of renewable power generation are therefore essential for the smooth integration of large amounts of solar, wind, wave, and hydropower into the grid as well as for the profitability and effectiveness of such renewable

energy projects. Offers comprehensive coverage of wind, solar, wave, and hydropower forecasting in one convenient volume Addresses a topic that is growing in importance, given the increasing

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**penetration of renewable energy
in many countries Reviews state-
of-the-science techniques for
renewable energy forecasting
Contains chapters on
operational applications
This practical handbook**

**provides a clearly structured,
concise and comprehensive
account of the huge variety of
atmospheric and related
measurements relevant to
meteorologists and for the
purpose of weather forecasting**

and climate research, but also to the practitioner in the wider field of environmental physics and ecology. The Springer Handbook of Atmospheric Measurements is divided into six parts: The first part offers instructive

descriptions of the basics of atmospheric measurements and the multitude of their influencing factors, fundamentals of quality control and standardization, as well as equations and tables of atmospheric, water, and soil

quantities. The subsequent parts present classical in-situ measurements as well as remote sensing techniques from both ground-based as well as airborne or satellite-based methods. The next part focusses on complex

measurements and methods that integrate different techniques to establish more holistic data. Brief discussions of measurements in soils and water, at plants, in urban and rural environments and for

renewable energies demonstrate the potential of such applications. The final part provides an overview of atmospheric and ecological networks. Written by distinguished experts from

academia and industry, each of the 64 chapters provides in-depth discussions of the available devices with their specifications, aspects of quality control, maintenance as well as their potential for the future. A

large number of thoroughly compiled tables of physical quantities, sensors and system characteristics make this handbook a unique, universal and useful reference for the practitioner and absolutely

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**essential for researchers,
students, and technicians.**

Wind Farm Noise

**Wind Turbine Power Production
Estimation Analysis**

**Proceedings of the 2021
International Conference on**

**Mechanical Design (2021 ICMD)
Development of an Offshore
Specific Wind Power
Forecasting System
Renewable Energy Forecasting
Wind Energy Exploitation in
Urban Environment**

**Wind Turbine Icing Physics and
Anti-/De-Icing Technology**

*The revised edition
presents, extends, and
updates a thorough
analysis of the factors
that cause and*

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*accelerate the aging of
conductive and
insulating materials of
which transmission and
distribution electrical
apparatus is made. New
sections in the second*

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*edition summarize the
issues of the aging,
reliability, and safety
of electrical apparatus,
as well as supporting
equipment in the field
of generating renewable*

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*energy (solar, wind,
tide, and wave power) .
When exposed to
atmospheric corrosive
gases and fluids,
contaminants, high and
low temperatures,*

*vibrations, and other
internal and external
impacts, these systems
deteriorate; eventually
the ability of the
apparatus to function
properly is destroyed.*

*In the modern world of
"green energy", the
equipment providing
clean, electrical energy
needs to be properly
maintained in order to
prevent premature*

failure. The book's purpose is to help find the proper ways to slow down the aging of electrical apparatus, improve its performance, and extend the life of

Catalog

*power generation,
transmission, and
distribution equipment.
This book focuses on
various challenges,
solutions, and emerging
technologies in the*

*operation, control,
design, optimization,
and protection of
microgrids in the
presence of hybrid
renewable energy sources
and electric vehicles.*

This book provides an insight into the potential applications and recent development of different types of renewable energy systems including AC/DC

Catalog

microgrids, RES

*integration issues with
the grid, electric
vehicle technology, etc.
The book serves as an
interdisciplinary
platform for the*

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*audience working in the
focused area to access
information related to
energy management,
modeling, and control.
It covers fundamental
knowledge, design,*

*mathematical modeling,
applications, and
practical issues with
sufficient design
problems and case
studies with detailed
planning aspects. This*

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*book will serve as a
guide for researchers,
academicians, practicing
engineers,
professionals, and
scientists, as well as
for graduate and*

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*postgraduate students
working in the area of
various applications of
RES, Electric Vehicles,
and AC/DC Microgrid. .
This book presents
numerical and*

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*experimental research in
the field of wind energy
exploitation in urban
environments. It
comprises a selection of
the best papers from the
international colloquium*

*“Research and Innovation
on Wind Energy
Exploitation in Urban
Environment” (TUrbWind),
held in Riva del Garda,
Italy in September 2018.
The book includes*

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*contributions from
different research
fields in urban wind
resources, wind energy
conversion systems, and
urban integration,
mainly focusing on the*

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*following topics: ·
turbine concepts for
urban and sub-urban
environment; · measuring
and modelling wind
resource; · rotor
aerodynamics, wakes and*

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*noise; · design, loads,
and supporting
structures; · novel
shapes and materials; ·
building concepts for
wind energy
exploitation; · planning*

*approaches for wind
exploitation in urban
areas. It is a valuable
resource for researchers
and practitioners
interested in the
integration of wind*

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*energy systems and
turbines in urban areas.
This book reveals key
challenges to ensuring
the secure and
sustainable production
and use of energy*

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*resources, and provides
corresponding solutions.
It discusses the latest
advances in renewable
energy generation, and
includes studies on
climate change and*

social sustainability.
In turn, the book goes
beyond theory and
describes practical
challenges and solutions
associated with energy
and sustainability. In

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*particular, it
addresses: · renewable
energy conversion
technologies; ·
transmission, storage
and consumption; · green
buildings and the green*

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Catalog

economy; and . waste and recycling. The book presents the current state of knowledge on renewable energy and sustainability, supported by detailed

examples and case studies, making it not only a cutting-edge source of information for experts and researchers in the field, but also an

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*educational tool for
related undergraduate
and graduate courses.*

*Advances in Soft
Computing*

*Assessment of Renewable
Energy Resources with*

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Remote Sensing

Gas Insulated

Substations

Energia eólica

Programme and The Book

of Abstracts / Twentieth

Annual Conference

Page 229/253

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*YUCOMAT 2018, Herceg
Novi, September 3-7,
2018*

*Proceedings of the
International Conference
on Advanced Technologies
for Societal*

Page 230/253

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Applications

This volume originates
from the proceedings of a
multidisciplinary
conference, Techno-
Societal 2016 in

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Maharashtra, India, that brings together faculty members of various engineering colleges to solve Indian regional relevant problems under the guidance of eminent

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researchers from various
reputed organizations. The
focus is on technologies
that help develop and
improve society, in
particular on issues such
as the betterment of

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differently abled people,
environment impact,
livelihood, rural
employment, agriculture,
healthcare, energy,
transport, sanitation,
water, education. This

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conference aims to help innovators to share their best practices or products developed to solve specific local problems which in turn may help the other researchers to take

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inspiration to solve
problems in their region.

On the other hand,
technologies proposed by
expert researchers may
find applications in
different regions. This

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back and forth process for
local-global interaction
will help in solving local
problems by global
approach and help in
solving global problems by
improving local

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conditions.

This book presents the
proceedings of the 1st
International Congress on
Innovation and Research –
A Driving Force for Socio-
Econo-Technological

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Development (CI3 2020).
CI3 was held on June
18–19, 2020. It was
organized by the Instituto
Tecnológico Superior
Rumiñahui and GDEON, in co-
organization with Higher

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Institutes: Libertad,
Bolivariano, Vida Nueva,
Espíritu Santo,
Sudamericano Loja, Central
Técnico and sponsored by
the Universidad Nacional
Mayor de San Marcos

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(Perú), the Federal
University of Goiás
(Brazil) and
HOSTOS—Community
University of New York
(USA). CI3 aims to promote
the development of

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research activities in
Higher Education
Institutions and the
relationship between the
productive and scientific
sector of Ecuador,
supporting the fulfilment

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of the National
Development Plan "Toda una
vida 2017-2021".

Trends in Maritime
Technology and Engineering
comprises the papers
presented at the 6th

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International Conference
on Maritime Technology and
Engineering (MARTECH 2022)
that was held in Lisbon,
Portugal, from 24-26 May
2022. The Conference has
evolved from the series of

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biennial national
conferences in Portugal,
which have become an
international event, and
which reflect the
internationalization of
the maritime sector and

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its activities. MARTECH 2022 is the sixth of this new series of biennial conferences. The book covers all aspects of maritime activity, including in Volume 1:

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Structures, Hydrodynamics,
Machinery, Control and
Design. In Volume 2:
Maritime Transportation
and Ports, Maritime
Traffic, Safety,
Environmental Conditions,

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Renewable Energy, Oil &
Gas, and Fisheries and
Aquaculture. Trends in
Maritime Technology and
Engineering aims at
academics and
professionals in the above

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mentioned fields.

This book offers an introduction to the meteorological boundary conditions for power generation from wind – both onshore and offshore,

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and provides meteorological information for the planning and running of this important renewable energy source. It includes the derivation of wind laws and wind-

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profile descriptions,
especially those above the
logarithmic surface layer,
and discusses winds over
complex terrains and
nocturnal low-level jets.
This updated and expanded

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second edition features
new chapters devoted to
the efficiency of large
wind parks and their wakes
and to offshore wind
energy.

Proceedings of the 4th

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International Conference
on Renewable Energies
Offshore (RENEW 2020, 12 -
15 October 2020, Lisbon,
Portugal)