



# IET Books and eBooks

## Energy Engineering



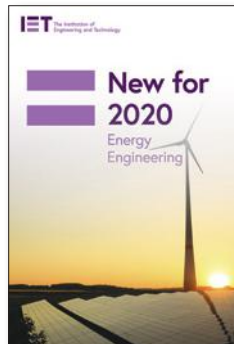
## HIGHLIGHTS

### Advanced Characterization of Thin Film Solar Cells

Editors: Nancy Haegel, National Renewable Energy Laboratory (NREL), USA; Mowafak Al-Jassim, National Renewable Energy Laboratory (NREL), USA

This book provides researchers with a concise overview of the status of thin-film solar cell technology and characterization.

Chapters describe material systems and their properties, and then provide an in-depth look at relevant characterization methods and the learning facilitated by each of these.



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2020 / 300pp / £125 / \$165

Print PBPO1660 / 978-1-83953-023-4

eBook PBPO166E / 978-1-83953-024-1

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### Advanced Dielectric Materials for Electrostatic Capacitors

Editor: Qi Li, Tsinghua University, China

This book provides an overview of key dielectric materials for capacitor technology. It covers preparation and characterization of state-of-the-art dielectric materials including ceramics, polymers and polymer nanocomposites, for popular applications including energy storage, microwave communication and multi-layer ceramic capacitors.



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2020 / 300pp / £125 / \$165

Print PBPO1580 / 978-1-78561-988-5

eBook PBPO158E / 978-1-78561-989-2

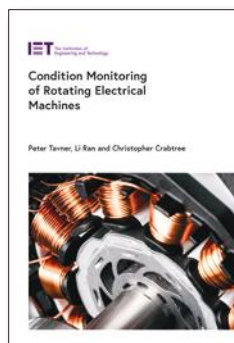
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### Condition Monitoring of Rotating Electrical Machines

3rd Edition

Authors: Peter Tavner, Durham University, UK; Li Ran, University of Warwick, UK; Christopher Crabtree, Durham University, UK

Condition monitoring is now being applied to a range of systems from fault-tolerant drives of a few hundred watts to machinery of a few hundred MW in major plants. This book covers a large range of machines and their condition monitoring. This 3rd edition builds on the 2nd edition through a major revision, update of chapters and a comprehensive list of references & standards. Permanent magnet, switched reluctance and other types of machines are now covered, as well as variable speed drive machines and off-line techniques.



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2020 / 432pp / £125 / \$160

Print PBPO1450 / 978-1-78561-865-9

eBook PBPO145E / 978-1-78561-866-6

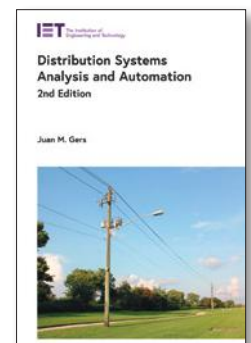
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### Distribution Systems Analysis and Automation

2nd Edition

Author: Juan Gers, GERS, USA

This popular book has been fully updated and revised for this new edition. Coverage includes smart grid, load flow analysis, determination of optimal topology, voltage control and capacitor application, power quality and harmonics in distribution systems, distribution system restoration, numerical relaying and distribution feeder protection, distributed generation and microgrid technology. New material related to renewable energy and microgrids are included, and maturity models and evaluation of smart grid projects are presented, along with material on the transition to the new distribution system technologies.



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2020 / 442pp / £125 / \$160

Print PBPO1470 / 978-1-78561-871-0

eBook PBPO147E / 978-1-78561-872-7

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## HIGHLIGHTS

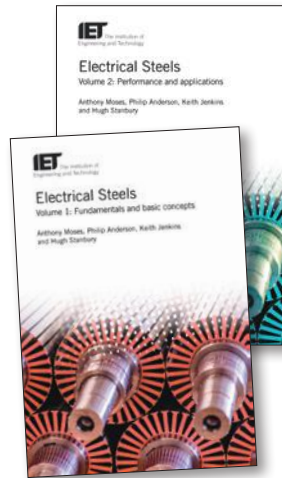
### Electrical Steels

Volume 1: Fundamentals and basic concepts

Volume 2: Performance and applications

**Authors: Anthony Moses, Philip Anderson, Keith Jenkins and Hugh Stanbury, University of Cardiff, UK**

Electrical steels are critical components of magnetic cores used in applications ranging from large rotating machines, including energy generating equipment, and transformers to small instrument transformers and harmonic filters. Presented over two volumes, this comprehensive handbook provides full coverage of the state-of-the-art in electrical steels. Volume 1 covers the fundamentals and basic concepts of electrical steels, including production, differences between alloys and magnetic and mechanic properties. Volume 2 describes performance and outlines applications of electrical steels.



**Vol 1:** 2019 / 584pp / £135 / \$175  
**Print** PBPO157A / 978-1-78561-970-0  
**eBook** PBPO157F / 978-1-78561-971-7

**Vol 2:** 2019 / 664pp / £125 / \$165  
**Print** PBPO157B / 978-1-78561-972-4  
**eBook** PBPO157G / 978-1-78561-973-1

**Set:** 2019 / £210 / \$240  
**Print** PBPO157X / 978-1-78561-974-8

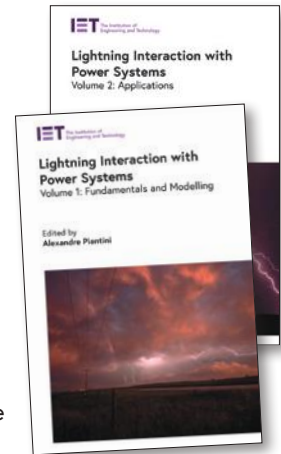
### Lightning Interaction with Power Systems

Volume 1: Fundamentals and Modelling

Volume 2: Applications

**Editor: Alexandre Piantini, University of São Paulo, Brazil**

This two-volume set provides thorough coverage of the lightning phenomenon and its interaction with various power system objects, and covers methods for the effective protection of structures and systems. Volume 1 covers fundamentals and modelling of lightning interaction with power systems; Volume 2 addresses various applications including power substations, transmission lines, overhead distribution systems and networks, smart grids, and wind and photovoltaic systems.



**Vol 1:** 2020 / 456pp / £125 / \$165  
**Print** PBPO172A / 978-1-83953-090-6  
**eBook** PBPO172F / 978-1-83953-091-3

**Vol 2:** 2020 / 496pp / £130 / \$170  
**Print** PBPO172B / 978-1-83953-092-0  
**eBook** PBPO172G / 978-1-83953-093-7

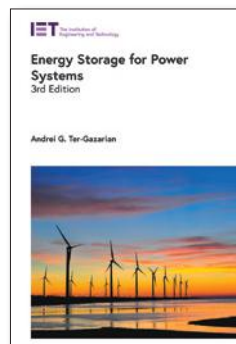
**Set:** 2020 / £205 / \$270  
**Print** PBPO172X / 978-1-83953-094-4

### Energy Storage for Power Systems

3rd Edition

**Author: Andrej Ter-Gazarian, Moscow Power Engineering Institute (MIE), Russia**

The supply of energy from renewables is not constant, and energy storage is essential in enabling higher shares of renewable energy. This 3rd Edition has been thoroughly revised, reviewing different types of renewables and considering possibilities arising from integrating a combination of different storage technologies into a system.

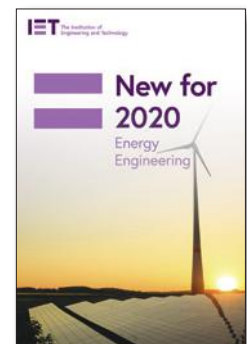


**2020 / 335pp / £115 / \$150**  
**Print** PBPO1460 / 978-1-78561-867-3  
**eBook** PBPO146E / 978-1-78561-868-0

### Lightning-Induced Effects in Electrical and Telecommunication Systems

**Authors: Yoshihiro Baba, Doshisha University, Japan; Vladimir A. Rakov, University of Florida, USA**

Providing an overview of modelling and understanding lightning-related effects on complex power and telecommunications systems, this book explores both traditional transmission-line theory as well as the state-of-the-art finite difference time-domain (FDTD) method. Coverage includes modelling of lightning return strokes and distributed-circuit models.



**2020 / 280pp / £110 / \$145**  
**Print** PBPO1140 / 978-1-78561-353-1  
**eBook** PBPO114E / 978-1-78561-354-8

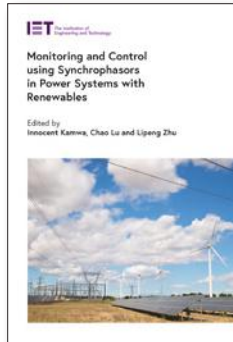
## HIGHLIGHTS

### Monitoring and Control using Synchrophasors in Power Systems with Renewables

**Editors:** Innocent Kamwa, Hydro-Quebec Research Institute, Canada; Professor Chao Lu, Tsinghua University, China; Lipeng Zhu, The University of Hong Kong, China

This book addresses the emerging concepts, methodologies and applications of wide area monitoring, control and protection in power systems with integrated large scale renewables. Chapters cover monitoring, modelling and validation, control, and data mining with an emphasis on synchrophasor technology, and experiences with real power grids.

2020 / 400pp / £125 / \$165  
**Print** PBPO1210 / 978-1-78561-477-4  
**eBook** PBPO121E / 978-1-78561-478-1

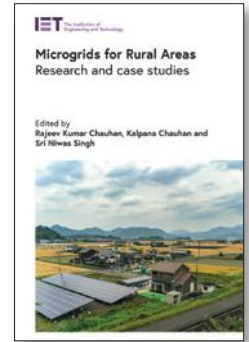


### Microgrids for Rural Areas: Research and case studies

**Editors:** Rajeev Kumar Chauhan, Dayalbagh Educational Institute, India; Kalpana Chauhan, Galgotias College of Engineering and Technology, India; Sri Niwas Singh, Madan Mohan Malaviya University of Technology, India

This book focuses on the challenges of rural electrification, particularly in poorer regions. It covers low voltage DC distribution system for various applications, and explores microgrid architectures, converters, energy storage, control, EV integration, business models and economic scheduling, and the role of blockchain technology. The authors have used case studies to provide illustrative examples of the technologies discussed and solutions proposed.

2020 / 520pp / £140 / \$180  
**Print** PBPO1600 / 978-1-78561-998-4  
**eBook** PBPO160E / 978-1-78561-999-1

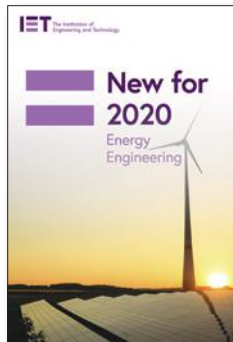


### Power Grids with Renewable Energy: Storage, integration and digitalization

**Authors:** Abdelhay Sallam, Port Said University, Egypt; Om Malik, University of Calgary, Canada

This work provides a systematic overview of a modern power system with renewable energy. Chapters provide concise coverage of renewable energy generation, of storage technologies including chemical, electrostatic and thermal storage systems, and of energy integration, power conditioning systems, economic dispatch and scheduling, EV integration, as well as communications and cyber-security in power systems

2020 / 600pp / £140 / \$180  
**Print** PBPO1670 / 978-1-83953-027-2  
**eBook** PBPO167E / 978-1-83953-028-9

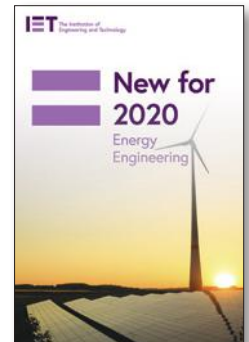


### Power Electronic Devices: Applications, failure mechanisms and reliability

**Editor:** Francesco Iannuzzo, Aalborg University, Denmark

Power devices are key to modern power systems, performing functions such as inverting and changing voltages, buffering and switching. Following a device-centric approach, this book covers power electronic applications, semiconductor physics, materials science, application engineering, and key technologies such as MOSFET, IGBT and WBG

2020 / 300pp / £115 / \$150  
**Print** PBPO1520 / 978-1-78561-917-5  
**eBook** PBPO152E / 978-1-78561-918-2





## HIGHLIGHTS

### Transforming the Grid Towards Fully Renewable Energy

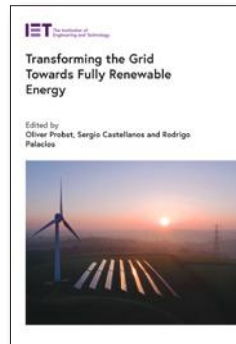
**Editors:** Oliver Probst, Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM), Mexico; Sergio Castellanos, University of California, Berkeley, USA; Rodrigo Palacios, Iniciativa Climática de México

This book provides clarity on the interlinked processes of the transformation towards fully renewable power, taking the reader from the conceptual foundations of a deeply decarbonized electricity sector in Part 1, via insights into essential building blocks (transmission, distributed generation, smart grids, demand response, storage, and forecasting) in Part 2, to new strategies for the renewable energy transition in Part 3.

2020 / 350pp / £120 / \$155

Print PBPO1590 / 978-1-83953-021-0

eBook PBPO159E / 978-1-83953-022-7



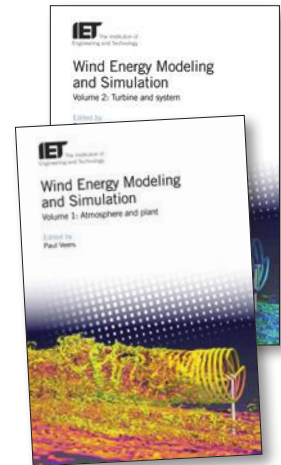
### Wind Energy Modeling and Simulation

Volume 1:  
Atmosphere and Plant

Volume 2:  
Turbine and System

**Editor:** Paul Veers, National Wind Technology Center, NREL, USA

In order to optimise the yield of wind power from existing and future wind plants, the entire breadth of the system of a plant, from the wind field to the turbine components, needs to be modelled in the design process. The modelling and simulation approaches used in each subsystem as well as the system-wide solution methods to optimize across subsystem boundaries are described in this reference. Volume 1 covers the computing challenges in full turbine modelling, then discusses bridging scales in the atmosphere and turbulence modelling, wind forecasting, wind plant flow, and plant level controller design. Volume 2 covers turbine level aerodynamics, aeroelasticity, rotors drivetrains and electrical systems, wind turbine control, offshore foundations, system optimization, and grid modelling.



Vol 1: 2019 / 424pp / £110 / \$145

Print PBPO125A / 978-1-78561-521-4

eBook PBPO125F / 978-1-78561-522-1

Vol 2: 2019 / 416pp / £110 / \$165

Print PBPO125B / 978-1-78561-523-8

eBook PBPO125G / 978-1-78561-524-5

Set: 2019 / £175 / \$230

Print PBPO125X / 978-1-78561-528-3

**FORTHCOMING** - to be published in 2021 and 2022

Title	Author(s)/Editor(s)	Price (£)	Price (\$)	ISBN	eISBN	Product code
<b>Artificial Intelligence for Smarter Power Systems: Fuzzy Logic and Neural Networks</b>	Simoes	£110	\$145	978-1-83953-000-5	978-1-83953-001-2	PBPO161
<b>Control and Optimisation of Microgrids</b>	Pariso & Schiffer (Eds)	£125	\$160	978-1-78561-875-8	978-1-78561-876-5	PBPO149
<b>Cooling of Rotating Electrical Machines: Fundamentals, modelling, testing and design</b>	Staton, Pickering, Boglietti & Chong	£110	\$145	978-1-78561-351-7	978-1-78561-352-4	PBPO109
<b>Cyber Security for Microgrids</b>	Blaabjerg, Sahoo & Dragicovic (Eds)	£110	\$145	978-1-83953-331-0	978-1-83953-332-7	PBPO196
<b>Digital Protection for Power Systems. 2nd Edition</b>	Salman	£115	\$150	978-1-83953-043-2	978-1-83953-044-9	PBPO165
<b>Hydrogen Passivation and Laser Doping for Silicon Solar Cells</b>	Hallam & Chan (Eds)	£110	\$145	978-1-78561-623-5	978-1-78561-624-2	PBPO134
<b>Lightning Electromagnetics. 2nd Edition (2-Volume Set)</b>	Cooray, Rachidi & Rubinstein (Eds)	£200	\$260	978-1-78561-543-6	N/A	PBPO127X
<b>Lightning Electromagnetics. 2nd Edition Volume 1: Electrodynamics</b>	Cooray, Rachidi & Rubinstein (Eds)	£140	\$180	978-1-78561-539-9	978-1-78561-540-5	PBPO127A
<b>Lightning Electromagnetics. 2nd Edition Volume 2: Effects and modeling</b>	Cooray, Rachidi & Rubinstein (Eds)	£145	\$190	978-1-78561-541-2	978-1-78561-542-9	PBPO127B
<b>Lithium-ion Batteries Enabled by Silicon Anodes</b>	Ban & Xu (Eds)	£115	\$150	978-1-78561-955-7	978-1-78561-956-4	PBPO156
<b>Lithium-ion Batteries: Testing, modeling, state estimation and smart battery applications</b>	Stroe, Meng & Teodorescu (Eds)	£115	\$150	978-1-83953-010-4	978-1-83953-011-1	PBPO164
<b>Matrix Converters: A direct AC/AC power electronic converter technology</b>	Wheeler, Clare, Cardenas & Rivera (Eds)	£110	\$145	978-1-78561-648-8	978-1-78561-649-5	PBPO135
<b>Medium Voltage DC System Architectures</b>	Grainger, Kelly-Pitou & Reed (Eds)	£115	\$150	978-1-78561-844-4	978-1-78561-845-1	PBPO143
<b>Modelling and Simulation of Complex Power Systems</b>	Monti & Benigni (Eds)	£125	\$160	978-1-78561-404-0	978-1-78561-405-7	PBPO118
<b>Modelling and Simulation of HVDC Transmission</b>	Han & Gole (Eds)	£115	\$145	978-1-78561-380-7	978-1-78561-381-4	PBPO116
<b>Modular Multilevel Converters for Power Systems</b>	Prieto-Araujo, Gomis-Bellmunt, Ferreria, Junyent-Ferré & Schönleber	£125	\$165	978-1-78561-741-6	978-1-78561-742-3	PBPO140
<b>Offshore Wind Power: Reliability, availability and maintenance. 2nd Edition</b>	Tavner	£125	\$160	978-1-83953-333-4	978-1-83953-334-1	PBPO194
<b>Photovoltaic Technology for Hot and Arid Environments</b>	Tabet (Ed)	£110	\$145	978-1-78561-911-3	978-1-78561-912-0	PBPO144
<b>Polymeric Insulations for High Voltage Cables</b>	He, Zhou & Li	£115	\$150	978-1-78561-909-0	978-1-78561-910-6	PBPO150
<b>Reliability of Power Electronics Converters for Grid Connected Photovoltaics</b>	Blaabjerg, Haque, Wang & Jaffery (Eds)	£125	\$160	978-1-83953-116-3	978-1-83953-117-0	PBPO170
<b>Second and Third Generation Photovoltaics: Research and manufacturing for CIGSse, CdTe and perovskite tandem solar cells</b>	Alberts (Ed)	£115	\$150	978-1-83953-327-3	978-1-83953-328-0	PBPO195
<b>SiC Power Module Design: Performance, robustness and reliability</b>	Castellazzi & Irace (Eds)	£115	\$150	978-1-78561-907-6	978-1-78561-908-3	PBPO151
<b>Signal Processing for Fault Detection and Diagnosis in Electric Machines and Systems</b>	Benbouzid (Ed)	£115	\$150	978-1-78561-957-1	978-1-78561-958-8	PBPO153
<b>Silicon Solar Cell Metallization and Module Technology</b>	Dullweber & Tous (Eds)	£115	\$150	978-1-83953-155-2	978-1-83953-156-9	PBPO174
<b>Understanding and Managing Power Quality Issues</b>	Agarwal, George & Sebastian	£130	\$170	978-1-83953-337-2	978-1-83953-338-9	PBPO189
<b>Utility-Scale Wind Turbines and Wind Farms</b>	Vasel-Be-Hagh & Ting (Eds)	£110	\$145	978-1-83953-099-9	978-1-83953-100-2	PBPO171
<b>Wide Bandgap Semiconductors and their Applications in Power Electronics</b>	Mawby & Ran (Eds)	£115	\$150	978-1-78561-743-0	978-1-78561-744-7	PBPO138
<b>Wind Turbine System Design (2-volume set)</b>	Wenske (Ed)	£200	\$255	978-1-78561-864-2	N/A	PBPO142X
<b>Wind Turbine System Design: Vol. 1: Nacelles, Drive Trains and Verification</b>	Wenske (Ed)	£125	\$160	978-1-78561-856-7	978-1-78561-857-4	PBPO142A
<b>Wind Turbine System Design: Vol. 2: Electrical Systems, Grid Integration, Control and Monitoring</b>	Wenske (Ed)	£125	\$160	978-1-78561-858-1	978-1-78561-859-8	PBPO142B

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## RECENT

Title	Author(s)/Editor(s)	Price (£)	Price (\$)	ISBN	eISBN	Product code	Year
Advanced Characterization of Thin Film Solar Cells	Al-Jassim & Haegel (Eds)	£125	\$165	978-1-83953-023-4	978-1-83953-024-1	PBPO166	2020
Advanced Dielectric Materials for Electrostatic Capacitors	Li (Ed)	£125	\$165	978-1-78561-988-5	978-1-78561-989-2	PBPO158	2020
Condition Monitoring of Rotating Electrical Machines. 3rd Edition	Tavner, Ran & Crabtree	£125	\$160	978-1-78561-865-9	978-1-78561-866-6	PBPO145	2020
Distribution Systems Analysis and Automation. 2nd Edition	Gers	£125	\$160	978-1-78561-871-0	978-1-78561-872-7	PBPO147	2020
Energy Storage for Power Systems. 3rd Edition	Ter-Gazarian	£115	\$150	978-1-78561-867-3	978-1-78561-868-0	PBPO146	2020
Lightning Interaction with Power Systems (2-volume set)	Piantini (Ed)	£205	\$270	978-1-83953-094-4	N/A	PBPO172X	2020
Lightning Interaction with Power Systems: Volume 1: Fundamentals and Modelling	Piantini (Ed)	£125	\$165	978-1-83953-090-6	978-1-83953-091-3	PBPO172A	2020
Lightning Interaction with Power Systems: Volume 2: Applications	Piantini (Ed)	£130	\$170	978-1-83953-092-0	978-1-83953-093-7	PBPO172B	2020
Lightning-Induced Effects in Electrical and Telecommunication Systems	Baba & Rakov	£110	\$145	978-1-78561-353-1	978-1-78561-354-8	PBPO114	2020
Microgrids for Rural Areas: Research and case studies	Chauhan, Chauhan & Singh (Eds)	£140	\$180	978-1-78561-998-4	978-1-78561-999-1	PBPO160	2020
Monitoring and Control using Synchrophasors in Power Systems with Renewables	Kamwa & Lu (Eds)	£125	\$165	978-1-78561-477-4	978-1-78561-478-1	PBPO121	2020
Power Electronic Devices: Applications, failure mechanisms and reliability	Iannuzzo (Ed)	£115	\$150	978-1-78561-917-5	978-1-78561-918-2	PBPO152	2020
Power Grids with Renewable Energy: Storage, integration and digitalization	Sallam & Malik	£140	\$180	978-1-83953-027-2	978-1-83953-028-9	PBPO167	2020
Transforming the Grid Towards Fully Renewable Energy	Probst, Palacios & Castellanos (Eds)	£120	\$155	978-1-83953-021-0	978-1-83953-022-7	PBPO159	2020
Electrical Steels (2-volume set)	Moses, Jenkins, Anderson & Stanbury	£210	\$240	978-1-78561-974-8	N/A	PBPO157X	2019
Electrical Steels Volume 1: Fundamentals and basic concepts	Moses, Jenkins, Anderson & Stanbury	£135	\$175	978-1-78561-970-0	978-1-78561-971-7	PBPO157A	2019
Electrical Steels Volume 2: Performance and applications	Moses, Jenkins, Anderson & Stanbury	£125	\$165	978-1-78561-972-4	978-1-78561-973-1	PBPO157B	2019
Energy Generation and Efficiency Technologies for Green Residential Buildings	Ting & Carriveau (Eds)	£115	\$150	978-1-78561-947-2	978-1-78561-948-9	PBPO155	2019
Renewable Energy from the Oceans: From wave, tidal and gradient systems to offshore wind and solar	Sant & Coiro (Eds)	£125	\$165	978-1-78561-766-9	978-1-78561-767-6	PBPO129	2019
Variability, Scalability and Stability of Microgrids	Muyeen, Islam & Blaabjerg (Eds)	£140	\$185	978-1-78561-693-8	978-1-78561-694-5	PBPO139	2019
Wind Energy Modeling and Simulation: Volume 1: Atmosphere and Plant	Veers (Ed)	£110	\$145	978-1-78561-521-4	978-1-78561-522-1	PBPO125A	2019
Wind Energy Modeling and Simulation: Volume 2: Turbine and System	Veers (Ed)	£110	\$145	978-1-78561-523-8	978-1-78561-524-5	PBPO125B	2019
Bifacial Photovoltaics: Technology, applications and economics	Kopecek & Libal (Eds)	£115	\$150	978-1-78561-274-9	978-1-78561-275-6	PBPO107	2018
Characterization of Wide Bandgap Power Semiconductor Devices	Wang, Zhang & Jones	£120	\$155	978-1-78561-491-0	978-1-78561-492-7	PBPO128	2018
DC Distribution Systems and Microgrids	Dragičević, Blaabjerg & Wheeler (Eds)	£125	\$160	978-1-78561-382-1	978-1-78561-383-8	PBPO115	2018
Diagnosis and Fault Tolerance of Electrical Machines, Power Electronics and Drives	Cardoso (Ed)	£120	\$155	978-1-78561-531-3	978-1-78561-532-0	PBPO126	2018
Energy Storage at Different Voltage Levels: Technology, integration, and market aspects	Zobam Ribeiro, Aleem & Afifi (Eds)	£115	\$150	978-1-78561-349-4	978-1-78561-350-0	PBPO111	2018

Continued...

## RECENT

Title	Author(s)/Editor(s)	Price (£)	Price (\$)	ISBN	eISBN	Product code	Year
Fault Diagnosis for Robust Inverter Power Drives	Ginart (Ed)	£115	\$150	978-1-78561-410-1	978-1-78561-411-8	PBPO120	2018
High Voltage Power Network Construction	Harker	£130	\$210	978-1-78561-423-1	978-1-78561-424-8	PBPO110	2018
Industrial Power Systems with Distributed and Embedded Generation	Belu	£140	\$180	978-1-78561-152-0	978-1-78561-153-7	PBPO096	2018
Metaheuristic Optimization in Power Engineering	Radosavljević	£135	\$175	978-1-78561-546-7	978-1-78561-547-4	PBPO131	2018
Power Line Communication Systems for Smart Grids	Casella & Anpalagan (Eds)	£125	\$165	978-1-78561-550-4	978-1-78561-551-1	PBPO132	2018
Power Market Transformation: Reducing emissions and empowering consumers	Murray	£100	\$160	978-1-78561-481-1	978-1-78561-482-8	PBPO124	2018
Power Systems Electromagnetic Transients Simulation. 2nd Edition	Watson	£135	\$175	978-1-78561-499-6	978-1-78561-500-9	PBPO123	2018
Power Transformer Condition Monitoring and Diagnosis	Abu-Siada (Ed)	£115	\$150	978-1-78561-254-1	978-1-78561-255-8	PBPO104	2018
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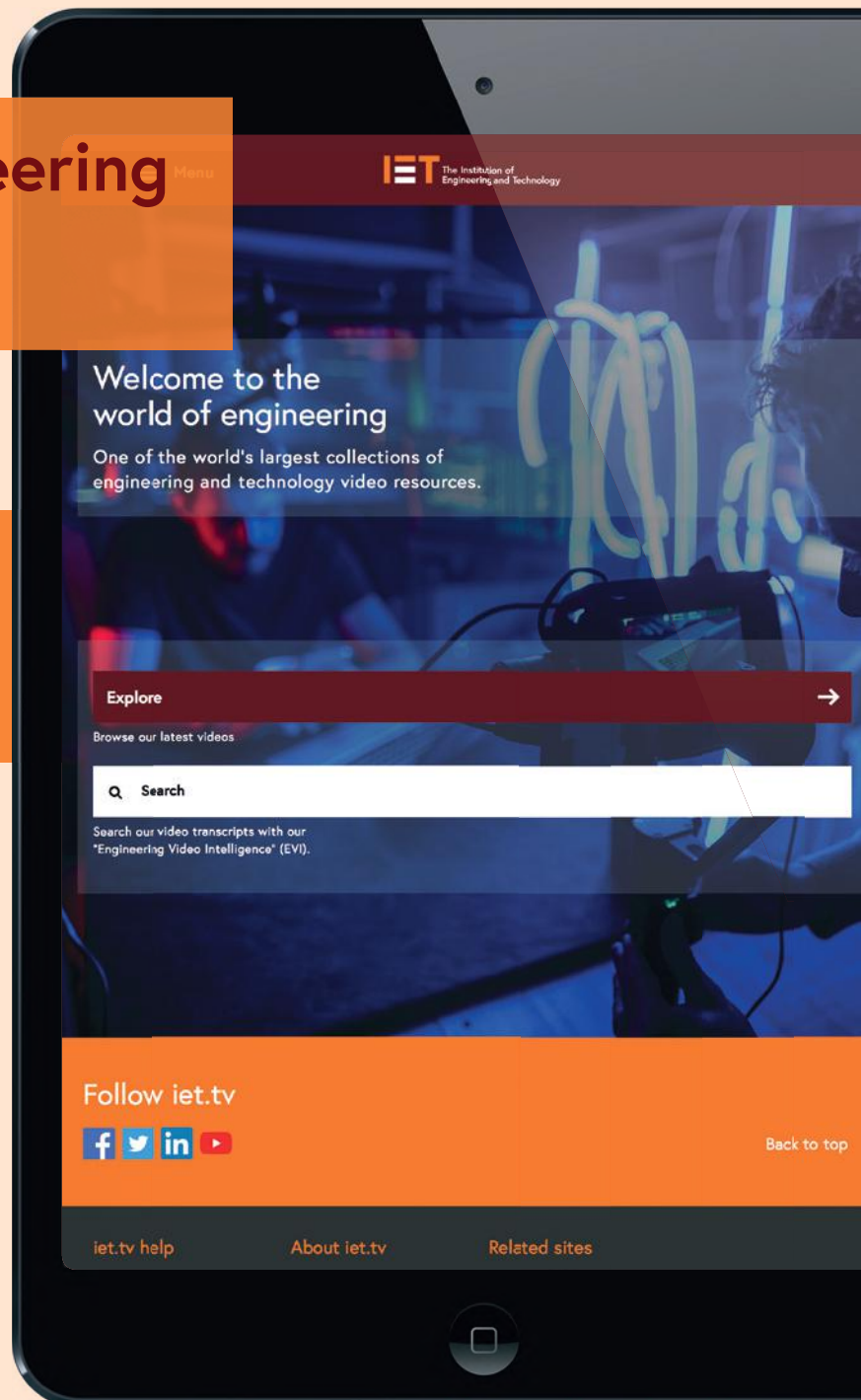
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