IET Inspec Matters

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In **this** issue

www.**theiet**.org/inspec

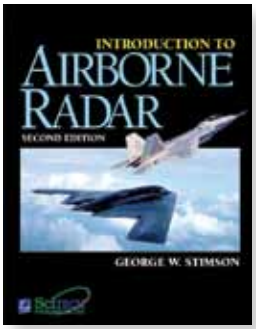
IET acquires SciTech Publishing books portfolio

The IET has acquired the full publication list of SciTech Publishing (Raleigh, NC) which adds more than 70 renowned titles to its current list of 300 books and eBooks. SciTech specialises in references and textbooks in the broad area of electrical engineering/electromagnetics.

SciTech's range of titles in disciplines such as Radar, RF/Microwave Engineering, Electromagnetics, Communications and others provide engineers with practical information that directly affects their performance. The information ranges from fundamentals to highly specific applications and techniques, covering a wide audience from undergraduate and graduate students in electrical engineering to front-line engineers and researchers in defence, industry, academia and government.

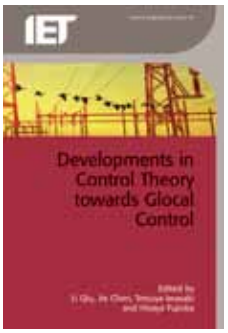
SciTech is the publisher of the world's most widely used radar text and reference, *Introduction to Airborne Radar, 2nd Edition* (by George W. Stimson) as well as the top ranked "Radar 101" textbook, *Principles of Modern Radar: Basic Principles.* Several references and textbooks in the SciTech catalogue are used for training in the defence, intelligence and homeland security industries as well as by each of the U.S. Armed Forces for academic and on-base training.

Universities will find an excellent collection of textbooks for electrical engineering departments including the widely used undergraduate texts, *Fundamentals of Electromagnetics with MATLAB, 2nd Edition* (Lonngren et al) and *Fundamentals of Wave Phenomena, 2nd Edition* (Hirose & Lonngren). Other textbooks include topics such as Microwave & RF Design, Antennas, Radar, Numerical Methods, Integral Equation Methods. SciTech has also recently published a "cross-over" textbook for electrical, mechanical, and biomedical engineering entitled *Introduction to Biomechatronics* (Brooker).



A full list of SciTech titles can be found on **www.theiet.org/books** or **www.scitechpub.com**. Customers in the Americas may order these books via Books International **ietmail@presswarehouse.com** or **+1 (703) 661 1573**. Outside the Americas, customers may order direct from the IET at **sales@theiet.org** or **+44 (1438) 767328.**

Published by the Institution of **Engineering and Technology** ISSN 0266-1616



Developments in Control Theory towards Glocal Control

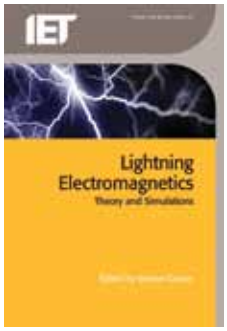
Edited by Li Qiu, Jie Chen, Tetsuya Iwasaki, and Hisaya Fujioka

- laying a solid foundation towards the 'glocal control' theory
- of interest to researchers, PhD students and experienced engineers working in the field of control engineering

Featuring a collection of the latest papers from leading researchers in the field of control engineering, this book honours the life-long, celebrated contributions of Professor Shinji Hara to the developments of numerous control theories. One of the key concepts addressed in this book is 'glocal control', a technical term coined by Prof. Hara which has been gaining much attention in the control engineering community.

List price: £90 / $144
Hardback: 232pp
Product code: PBCE0760
ISBN: 978-1-84919-533-1
Publication date: March 2012

Order your copy online at:
www.theiet.org/books-glocalcontrol



Lightning Electromagnetics

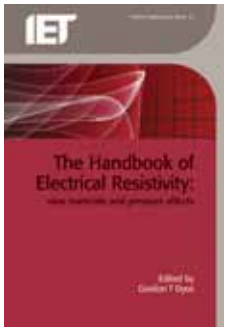
Edited by Vernon Cooray

- provides the theory, mathematics and computational tools to model each and every one of the processes associated with lightning discharges
- directly aimed at undergraduate and postgraduate physics and engineering students

This book aims to provide the theory, mathematics and computational tools that are necessary to model each and every one of the processes associated with lightning discharges. This is essential information for a newcomer to the subject as well as for experienced scientists working in this field. Indeed, it is only through exercising various models and mathematical simulations that one can understand the basic mechanisms associated with the generation and interactions of the electric and magnetic fields of thunderclouds and lightning.

List price: £120 / $192
Hardback: c. 976pp
Product code: PBPO0620
ISBN: 978-1-84919-215-6
Publication date: June 2012

Order your copy online at:
www.theiet.org/books-lightning



The Handbook of Electrical Resistivity: new materials and pressure effects

Edited by Gordon T. Dyos

- building upon the author's acclaimed Electrical Resistivity Handbook
- an invaluable source of information for all researchers involved in the passage of electrical current through materials

This book presents advances over the past two decades in the fields of new materials and superconductivity. It emphasises the superconductive properties of materials and the effects of pressure on resistivity, and will be an invaluable reference for researchers requiring baseline data on the passage of electrical current through materials worldwide.

List price: £99 / $158.40
Hardback: c. 700pp
Product code: PBED0130
ISBN: 978-1-84919-149-4
Publication date: July 2012

Order your copy online at:
www.theiet.org/books-resistivity

Offshore Wind Turbines: Reliability, availability and maintenance

Peter Tavner

- describes the problems facing the developers of offshore wind farms and the solutions available to them to raise availability, reduce the cost of energy and improve the through life cost
- valuable resource for academics, students and graduates as well as experienced engineers

This is the first book specifically on offshore wind turbine technology, which addresses wind turbine reliability and availability. The author is one of the principal international contributors to the measurement and improvement of wind turbine reliability and this book will be based upon the author and his colleagues work in the area. The book will guide designers, developers and operators towards minimising the risks associated with wind power generation.

List price: £70 / $112
Hardback: c. 280pp
Product code: PBRN0130
ISBN: 978-1-84919-229-3
Publication date:
August 2012

Order your copy online at:
www.theiet.org/books-offshore

Inspec Training Videos **now on Inspec TV**

Inspec has recently produced thirteen videos showcasing the Inspec database. These videos can be found on the Inspec channel at IET.tv.

There are five introductory videos that deal with:

- What is Inspec /why should you use it / how does it fit in your work / how can you get it
- Content and coverage
- Value added indexing
- Bibliographic fields
- Inspec Archive

In addition, there are four videos that demonstrate how using Inspec's subject indexing may be used to refine and retrieve results that closely match the searcher's requirements. The different search options are reviewed including how to refine your search and use Inspec's keywords, classification codes and IPC (International Patent Classification) codes to produce accurate results. These videos are vendor specific for EBSCOhost, Engineering Village, OvidSP and Web of Knowledge.

Four additional vendor specific videos demonstrate how to carry out effective searches for authors, author affiliations, conference and source information, publication types, language and treatment codes.

The videos which are between five and ten minutes long, can be added to your organisations websites. Click on "more" below each video for the linking information.

The presenters are all IET employees from various parts of the Knowledge Management division. Jenny French is an Indexed Content Coordinator, Bob Beasley is a Project Manager, Charles Martinez is a Customer Relationship Manager for Europe, Helen Dyball is the Executive Editor for Electronics Letters and Micro & Nano Letters and Karen Berryman is the Customer Relationship Manager for the Northeast of the US and Canada. All of the presenters work out of the IET Stevenage office (except Karen who was thrilled at the chance to go the UK office for the filming).

You can watch Karen and the others at **www.theiet.org/inspec-training-videos**

Or from the Inspec main page click on 'Training' and then 'Inspec Training Videos'.

These videos are available in addition to the free training that is offered on-site at your organisation as well as live webinars. There is also a host of help documents available at **www.theiet.org/inspec-training-docs**

Help with Inspec can also be found by contacting your regional office.

Things **you probably don't** learn in library school

I attended the library school at Pratt Institute in Brooklyn, NY in the mid 1970s. For the readers of my generation, this meant that reference work referred to print and cataloguing meant 3X5 cards that had to be typed individually. Online services such as Lockheed Dialog and SDC Orbit were in their infancy and no one I knew had access to them. The personal computer and internet were not on the horizon. Pratt did offer one course in audio/video for the library. The assignment was to produce training videos. The equipment consisted of a SONY Portapack (show pictures) which was an open reel tape deck that recorded the sound and picture. http://experimentaltvcenter.org/sony-av-3400-porta-pak Despite what is shown in the pictures, we needed one person to carry the deck (about 40 pounds), one to aim the camera and another to hold the microphone which was on a boom.

This brings me to my experience with the Inspec training videos. All the filming took place in a conference room at Michael Faraday House in Stevenage. The introductory videos were filmed using "green screen" technology. I peeked in on Helen Dyball's presentation to see her standing in high heels on a box covered with green cloth in front of a wall also covered in green. I was glad to be wearing flat shoes. The box was later dispensed with. We were all introduced to the teleprompter that covered the camera lens. The vendor specific videos used three cameras, one with the teleprompter, one that was behind us and another that captured what was on the computer screen. For these, we were wearing rather discrete microphones clipped to our clothing.

The IET.tv staff were wonderful - they treated us like movie stars. I insisted that they make me look 30 years younger and 50 pounds lighter (they came close). It could not have been easy for them to get us to read the lines, look where we needed to be looking, remember to smile, sit or stand up straight (but not too rigid) etc. We soon learned that "Let's do that one more time…" meant we were going to be there for another hour. They were good at not making us feel too bad as we produced more and more takes for the blooper reels. We also learned that as you approached the end of what felt like a good take, someone in the hallway would drop a box or laugh or the computer would freeze up and it was back to square one.

Would I volunteer to do this again? You bet.

By Karen Berryman

Science, Engineering and Technology and the OLYMPICS

This year the world's largest sporting event returns to Britain and London for the first time in 64 years.

Back in 1948 the worlds of sport and science hardly interacted whereas these days everything from GPS to biomechanics is used to help sports people achieve the best possible results.

The engineering and technology behind the games has also changed dramatically from 60 years ago. This article will look at the science, engineering and technology behind sport and the Olympics. There are over 1300 records on the Inspec database on the Olympics in general with 90 being on the London 2012 Olympics.

Science

Biomechanics, the study of the structure and function of biological systems by means of the methods of mechanics, is increasingly important to today's sports people. Biomechanics is used to give a greater understanding of athletic performance.

With biomechanics you can work out the optimal angle you should release a javelin at or the exact position a body should be in when diving. Biomechanics can also be used to look at the stresses the human body goes through during sports in order to decrease the likelihood of injury. Prosthetics used by paralympians, such as the "blades" used by Oscar Pistorius, will have had biomechanics used in their design.

Controlled Terms:
biomechanics
prosthetics

Classifications:
a8745 Biomechanics, biorheology, biological fluid dynamics
a8745D Physics of body movements
a8770J Prosthetics and other practical applications
b7520E Prosthetics and orthotics

Materials science, aerodynamics and fluid dynamics are used in the design of many pieces of sporting equipment. Racing bicycle design has for example changed greatly during the years. New lightweight materials such as carbon fibre have meant bicycles have become faster whilst the use of wind tunnels and computer simulations have allowed them to become more aerodynamic, reducing drag (this applies to helmets as well). Canoes and rowing boats have also benefited from the study of fluid dynamics, enabling designs which slide more easily through water.

Controlled Terms:
sports equipment

Classifications:
e1780 Products and commodities
e3690 Other manufacturing industries

Engineering

Building the facilities for the Olympics is a major engineering challenge. Although some existing venues are being used, the main Olympic site including the main stadium has had to be built from scratch. The main site is 2.5 km in size (357 football pitches) and over 46,000 people have worked on the site. Before any construction could begin on site 52 electric pylons had to be removed and the electrical systems rerouted underground. The main stadium took three years to construct and uses 10,000 tonnes of steel.

Controlled Terms:
building
civil engineering
construction industry

Classifications:
b8699 Power applications in other industries
c3330 Control applications in building and civil engineering
c7440 Civil and mechanical engineering computing
d2115 Property market and building industry applications of IT
e3030 Construction industry

It is estimated that there will be over 20 million journeys made by Olympic spectators during the games, with over 3 million happening on the busiest day. This is in addition to the normal journeys made by people working and living within London. There have been numerous transport projects undertaken in preparation for 2012.

There has been an expansion of the London Overground's East London Line and upgrades to the Docklands Light Railway and the North London Line. The high speed Javelin train will travel between St Pancras International station and Ebbsfleet International station, via Stratford International station which is in the Olympic park area. There is also the "Thames Gateway Cable Car" which links the O2 venue on the south of the river with the ExCeL Centre on the north. It will carry up to 2,500 passengers an hour at a height of 50 meters in the air. There are also the improvements to roads and bridges both around the Olympic park and the wider areas.

Controlled Terms:
light rail systems
rapid transport systems
cableways systems
railway industry

Classifications:
a8620A General transportation (energy utilisation)
a8620E Rail transportation (energy utilisation)
a8620F Other transportation (energy utilisation)
b8520 Transportation
c1290H Systems theory applications in transportation
c3360 Transportation system control
c3360H Control of lift and aerial cableway systems
c3360D Rail-traffic system control
c7490 Computing in other engineering fields
d2090 Leisure industry, travel and transport applications of IT
e1830 Goods distribution
e3650 Transportation industry
e3650E Railway industry
e3650Z Other transportation industries

A purpose built energy centre has been set up for the Olympics in order to provide power, heating and cooling across the park for the games and for the new buildings and communities that will develop after 2012. This centre is designed to use renewable and energy-efficient technology. ***Continued overleaf.***

It has a biomass boiler that uses woodchip as fuel to generate heat, and a natural gas powered combined cooling, heat and power plant.

Controlled Terms:
bioenergy conversion
biofuel
renewable energy sources
trigeneration

Classifications:
a8610A Biofuel and biomass resources
a8620H Heating (energy utilisation)
a8620K Refrigeration and cooling (energy utilisation)
a8620Q Buildings (energy utilisation)
b8210 Energy resources
b8230 Thermal power stations and plants
b8460 Other direct energy conversion

Technology

Technology plays a critical part in the way the games have been planned and the way they will be delivered. Video boards, score boards and public announcement systems will be used to inform the public within stadiums. Technology is also instrumental to the business activities of the various organising bodies providing the IT systems and security essential for the smooth running of the games.

Timing for various sports is an important area of technology. In the past stop watches were used whereas nowadays electronically recorded times are the norm. Athletes these days can wear individual transponders that send and receive radio signals in order to get a time. Even this is now outdated with continuous tracking of athletes, even in team sports, possible as the transponders no longer have to be worn by athletes. The timing system is not just the "watch" it is also the contact pads on swimming lanes, the photofinish shots, scoreboards, miles of cables and optical fibers which all go towards giving the public and officials information on how the athletes have performed.

Controlled Terms:
Timing

Scoring for some sports also relies on technology. In taekwondo scoring is based on hitting opponents. In Beijing 2008 scoring was performed by four judges who would press a button to award and deduct points. For a point to register, at least two judges had to press their buttons. This led to several instances where a clean hit was missed and almost led to a lost medal for British competitor Sarah Stevenson. Now the World Taekwondo Federation is testing an electronic scoring system with sensors fitted into players' body armour and socks. Fencing also uses an electronic scoring system although a referee has some input as well.

Controlled Terms:
pressure sensors
sportswear

Classifications:
a0630N Pressure measurement
a0670D Sensing and detecting devices
b7230 Sensing devices and transducers
c3240 Transducers and sensing devices
e1780 Products and commodities
e3608 Clothing industry
e3612 Footwear industry

Many sports these days use Global Positioning System (GPS) data as part of training or analysis of performance. GPS is a space-based satellite navigation system that gives location and time information. GPS has been used in football to track the movements of players, looking at how far they run and the amount of times they receive and pass the ball. This information can then be fed into analysis packages such as prozone which then allow areas that need improvement to be identified. GPS is also obviously useful to runners, cyclists and open water swimmers.

Controlled Terms:
Global Positioning System

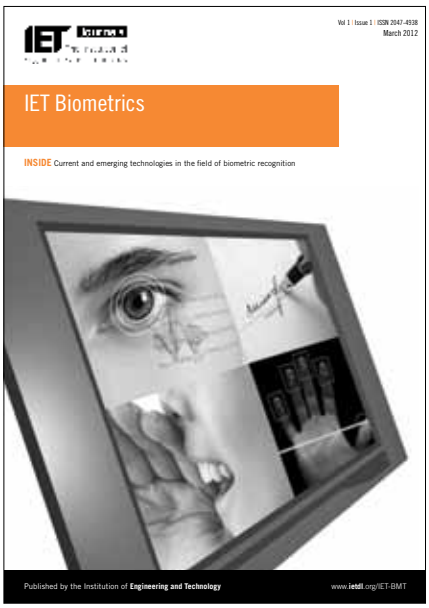
Classifications:
b6330 Radionavigation and direction finding
b6250G Satellite communication systems

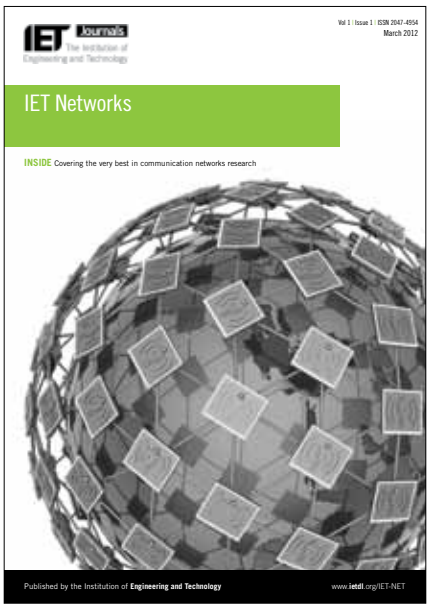
Video motion analysis through the use of slow motion video is important to sportspeople both in training, to look at exact body position (aided with biomechanics) and for analysis of actual performance. Slow motion is also an obvious tool for broadcasters to use during the Olympics to provide the public with a clear picture of what happens during events. This is especially the case for fast moving events such as sprints, hockey, etc. Slow motion video works by capturing each film frame at a rate much faster than it will be played back out.

Controlled Terms:
image motion analysis
video signal processing

Classifications:
a4230V Image processing and restoration
b6135 Optical, image and video signal processing
c1250M Image recognition
c5260B Computer vision and image processing techniques
c5260D Video signal processing

Matt Gibson / Shutterstock.com





IET Biometrics and IET Networks

now launched on the IET Digital Library

Two new journals were launched by the Institution of Engineering and Technology in April 2012 – *IET Biometrics* and *IET Networks*.

Under the Editorship of Professor Michael Fairhurst, University of Kent, *IET Biometrics* covers an increasingly important and broad subject which is closely aligned to security in the modern world.

Biometrics - the automated recognition of individuals by means of the measurement of physiological or behavioural characteristics - has now reached a level of maturity where viable practical applications are both possible and increasingly available, with commercial systems now to be found across a wide range of market sectors.

IET Biometrics will be an essential resource to update industry and academia on developments in the field, and will provide a natural home for innovative and influential work which the biometrics community is producing.

Professor Fairhurst recently took part in a roundtable discussion with representatives in the field of biometrics from academic and industry where they discussed the future for biometrics. Watch the footage online at **http://tv.theiet.org/channels/news/13759.cfm**

Access the first and second issue free of charge at www.ietdl.org/IET-BMT

IET Networks, under the editorship of Professor Han-Chieh Chao of the National Ilan University, Taiwan, will cover the fundamental developments and advancing methodologies to achieve higher performance, optimised and dependable future networks.

New network protocols and technologies are in great demand to enable seamless access to data services everywhere and this demand is expected to increase even more in the future. For this reason, we are sure that *IET Networks* will draw a lot of attention from both the academic and industry sectors.

Access the first and second issue free of charge wwwietdl.org/IET-NET.

Coming Soon

The new IET Digital Library

The IET Digital Library is currently being redeveloped ready for launch in the summer of 2012. Housing the full text online versions of IET journals, eBooks, magazines and conference content dating as far back as 1872, the new digital library will offer all customers an improved user experience with better discoverability and search capabilities on the platform.

The launch in the summer will be the first of a number of improvements that the IET plan in the coming months in order to ensure that all content is available as and when our customers need it. Access the IET Digital Library at **www.ietdl.org.**

IET on the road

Come and visit us at the following events:

IFLA 2012
Helsinki, Finland
11-17 August 2012

ISA Automation Week
Orlando, FL, USA
24-27 September 2012

Patent Information Conference 2012
Hamburg, Germany
6-8 November 2012

Frankfurt Book Fair
Frankfurt, Germany
10-14 October 2012

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