## Robert J. Howlett · Lakhmi C. Jain · Shaun H. Lee (Eds.) Sustainability in Energy and Buildings

This volume represents the proceedings of the First International Conference on Sustainability in Energy and Buildings, SEB'09, held in the City of Brighton and Hove in the United Kingdom, organised by KES International with the assistance of the World Renewable Energy Congress/Network, and hosted by the University of Brighton.

KES International is a knowledge transfer organisation, which for over a decade has provided high-quality conference events and publishing opportunities for researchers in the area of Knowledge Based and Intelligent information and Engineering Systems. KES International is a community consisting of several thousand research scientists and engineers who participate in KES activities. Now KES is starting to make a contribution in the area of Sustainability and Renewable Energy with this first conference in a series dedicated to renewable energy and its application to domestic and other buildings.

In addition to featuring papers from a range of Renewable Energy and Sustainability related topics, SEB'09 was intended to explore two innovative themes:

- The application of intelligent sensing, control, optimisation and modelling techniques to sustainability;
- The technology of sustainable buildings.

This volume contains 43 papers selected from a much larger number of submissions after reviews by experts in the field. The papers are grouped in the themes under which they were presented, namely Smart Sustainability, Solar and Wind Energy, Technologies for Sustainable Buildings, Clean and Renewable Energy, Engineering Intelligence and Energy Technologies, Building Energy Efficiency and Performance and Novel Techniques for Energy Efficiency.

We believe these proceedings will form a record of recent research results, useful for engineers, students, professionals, managers and many others working in this leading-edge field.

ISBN 978-3-642-03453-4



> springer.com

Howlett Jain Lee (Eds.)





Sustainability in Energy and Buildings

Robert J. Howlett Lakhmi C. Jain Shaun H. Lee Editors



## Sustainability in Energy and Buildings

Proceedings of the First International Conference in Sustainability in Energy and Buildings (SEB'09)



