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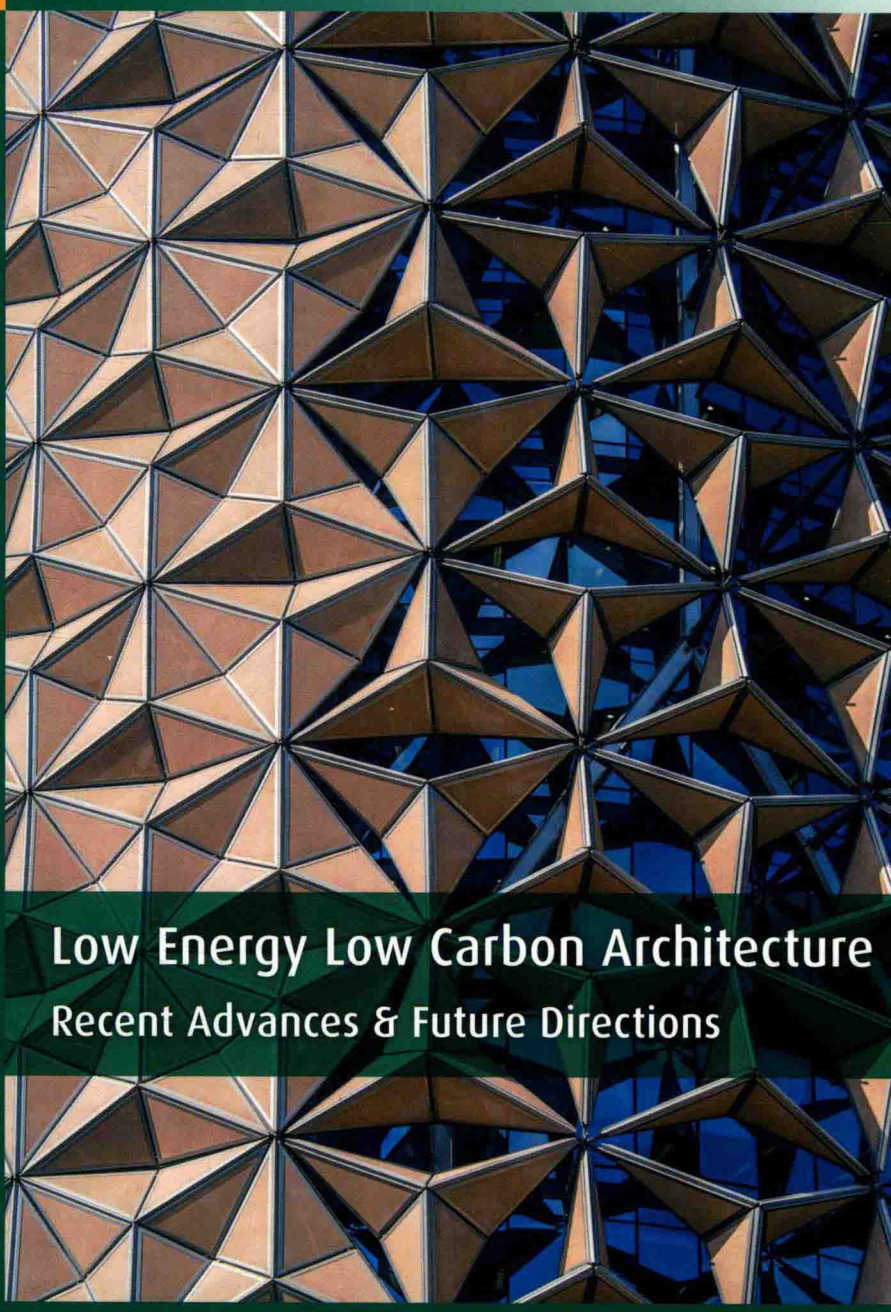

Low Energy Low Carbon Architecture

Recent Advances & Future Directions

Khaled A. Al-Sallal

CRC Press
Taylor & Francis Group
A BALKEMA BOOK

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Editor

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Cover photo

Al Bahr Towers in Abu Dhabi (The book cover photo is a courtesy of professional photographer Ali Jamal, 2016). The most distinguishing feature of the iconic Al Bahr towers in Abu Dhabi is its world's largest sun-responsive façade shades. Each tower is protected by a shading skin of umbrella-like elements that automatically open and close depending on the intensity of sunlight. The design concept was inspired by the "mashrabiya", geometrically-designed wooden lattice screens that have been used to fill windows of traditional Arabic architecture. This intelligent façade is dynamically controlled by a building management system. The adjustable shades help achieve 50% less solar gain than a comparable tower, with zero compromises in natural lighting. Al Bahr Towers is designed by AHR (formerly Aedas UK), in accordance with the US Green Building Council LEED rating system, targeted for Silver rating. The development was placed second at the Emporis Skyscraper Award in 2012 and was featured on the CTBUH's "Innovative 20" list of buildings that "challenge the typology of tall buildings in the 21st century".

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LOW ENERGY LOW CARBON ARCHITECTURE:
RECENT ADVANCES & FUTURE DIRECTIONS

Sustainable Energy Developments

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Volume 12

About the book series

Renewable energy sources and sustainable policies, including the promotion of energy efficiency and energy conservation, offer substantial long-term benefits to industrialized, developing, and transitional countries. They provide access to clean and domestically available energy and lead to a decreased dependence on fossil fuel imports and a reduction in greenhouse gas emissions.

Replacing fossil fuels with renewable resources affords a solution to the increased scarcity and price of fossil fuels. Additionally, it helps to reduce anthropogenic emission of greenhouse gases and their impacts on climate change. In the energy sector, fossil fuels can be replaced by renewable energy sources. In the chemistry sector, petroleum chemistry can be replaced by sustainable or green chemistry. In agriculture, sustainable methods can be used that enable soils to act as carbon dioxide sinks. In the construction sector, sustainable building practice and green construction can be used, replacing, for example, steel-enforced concrete by textile-reinforced concrete. Research and development and capital investments in all these sectors will not only contribute to climate protection but will also stimulate economic growth and create millions of new jobs.

This book series will serve as a multidisciplinary resource. It links the use of renewable energy and renewable raw materials, such as sustainably grown plants, with the needs of human society. The series addresses the rapidly growing worldwide interest in sustainable solutions. These solutions foster development and economic growth while providing a secure supply of energy. They make society less dependent on petroleum by substituting alternative compounds for fossil-fuelbased goods. All these contribute to minimize our impacts on climate change. The series covers all fields of renewable energy sources and materials. It addresses possible applications not only from a technical point of view, but also from economic, financial, social, and political viewpoints. Legislative and regulatory aspects, key issues for implementing sustainable measures, are of particular interest.

This book series aims to become a state-of-the-art resource for a broad group of readers including a diversity of stakeholders and professionals. Readers will include members of governmental and non-governmental organizations, international funding agencies, universities, public energy institutions, the renewable industry sector, the green chemistry sector, organic farmers and farming industry, public health and other relevant institutions, and the broader public. It is designed to increase awareness and understanding of renewable energy sources and the use of sustainable materials. It also aims to accelerate their development and deployment worldwide, bringing their use into the mainstream over the next few decades while systematically replacing fossil and nuclear fuels.

The objective of this book series is to focus on practical solutions in the implementation of sustainable energy and climate protection projects. Not moving forward with these efforts could have serious social and economic impacts. This book series will help to consolidate international findings on sustainable solutions. It includes books authored and edited by world-renowned scientists and engineers and by leading authorities in economics and politics. It will provide a valuable reference work to help surmount our existing global challenges.

Jochen Bundschuh
(Series Editor)

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