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Editorial

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Editorial

Valentina Serra

Associate Professor, Politecnico di Torino, Turin, Italy

John R. Littlewood

Senior Lecturer, Cardiff Metropolitan University, Cardiff, UK

Alfonso Capozzoli

Associate Professor, Politecnico di Torino, Turin, Italy

The broad topic called sustainability can be described in its various environmental, economic and social implications, and addressed at different scales, thinking both in terms of solutions for the individual building, neighbourhood, conurbation, region, country and of balance at world level.

In this issue of *Engineering Sustainability* this cross-cutting and horizontal approach is clearly reflected in the six papers presented.

The first three papers, constituting an ‘In Focus’ section, have been selected from the international conference Sustainability in Energy and Buildings (SEB) 2016 which took place in Torino, Italy, hosted in Politecnico di Torino and organised in partnership with KES International.

SEB16 invited participation and paper submissions across a broad range of sustainability- and energy-related topics relevant to the main theme of ‘Sustainability in Energy and Buildings’. Applicable areas included sustainable and smart design of buildings, neighbourhoods and cities (built and natural environment); optimisation and modelling techniques; smart energy systems for smart cities; green information communications technology; and a broad range of solar, wind, wave and other renewable-energy topics. The SEB16 conference brought together researchers and government and industry professionals to discuss the future of energy in buildings, neighbourhoods and cities from a theoretical, practical, implementation and simulation perspective.

In the first paper, Bottaccioli *et al.* (2019) face the important issue of introducing optimised planning strategies considering the high penetration of photovoltaic (PV) use in smart grids. To this purpose, the authors present an integrated real-time platform to assess the impact of PV distributed generation by simulating possible scenarios. A case study based on the district of Turin shows that the current configuration of distribution network may not be able to accommodate all the generation capacity that can be installed if all the available rooftop surface is exploited.

Elisa Di Giuseppe (2019), in the second paper, presents a useful tool for supporting building designers in selecting the best design or retrofit solutions considering both energy and economic impacts. To this purpose, the work introduces a tool for performing with low computational effort parametric building energy simulations and life-cycle cost calculations. Furthermore, a probabilistic approach is adopted for the evaluation of global cost by means of the Monte Carlo method. The tool was tested on an existing building for which a number of alternative solutions have been explored. The results proved the effectiveness of the tool in providing useful results with a limited computational time for designers and building owners.

Arman Hashemi (2019), in the third paper, deals with low-income tropical housing in Uganda and explores the effect of alternative simple strategies in mitigating internal thermal conditions. Dynamic simulations were run for typical single-roomed homes, assessing the effect of different options on the comfort temperature. The study is aimed at assisting the population in achieving acceptable thermal comfort in their homes, assuming that so far very little research has been done to assess the impact of climate change in this region, representing one of the most economically deprived countries in the world.

The fourth paper, by Zvonimir Božilović (2019), addresses the issue of radioactivity coming from natural sources in residential buildings. The received radiation dose of radon-222 is investigated in a simulated environment and the role of ventilation is explored, providing through a linear regression an estimation of the required ventilation rate able to keep the radiation dose under control.

The last two papers provide an interesting insight in current Arabian Gulf policies towards sustainability: Jones and Kelly (2019) describe the development of surface water drainage infrastructure to serve Doha, the capital of Qatar; Umar and Egbu (2019) discuss in detail the case of Oman, showing that renewable energy generation can lead to a significant reduction in greenhouse gas emission and also represent an interesting opportunity for business development – so addressing the economic element of sustainability.

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