

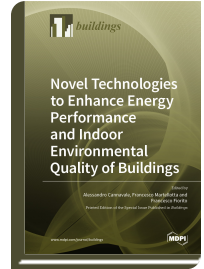


Special Issue Reprint

Novel Technologies to Enhance Energy Performance and Indoor Environmental Quality of Buildings

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This SI aims at reporting current investigations on emerging materials and devices taking up the challenge of pursuing a significant improvement in the energy performance of buildings and indoor comfort. What is the contribution of innovative technologies in the epochal transition to low environmental impact buildings? This is the question addressed in this SI, in order to offer a wide and heterogeneous amount of data to readers, along with results of high scientific impact concerning the application of innovative technologies in construction. The 2015 Paris Agreement on climate change following the COP 21 Conference on Climate Change, organized by United Nations, required the States to reduce carbon emissions in the building stock. In the European Union, almost 50% of final energy consumption is used for heating and cooling; out of this huge amount, 80% is used in buildings. It makes sense, then, that the Union’s goals are inherently linked to the real effort to renovate the building stock. To do this, in the EU and worldwide, the priority is to enhance energy efficiency, by deploying low-cost renewable energies and innovative technologies, especially those derived from recent achievements in the field of nanomaterials research, with special reference to building integration of novel technologies, spanning from chromogenics to semitransparent photovoltaics, super-insulating materials, and phase change materials. Articles here proposed deal with every construction or plant component of the building taking advantage of novel technologies to improve their performance, from the structures, HVAC, and other technical systems, as well as indoor climate buildings and indoor environmental quality (IEQ), as well as visual comfort indoors.



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