

Editorial

This special issue is linked to the conference FAÇADE 2018 – Adaptive!, the fifth conference that has been organised by Lucerne University of Applied Science and Arts within the framework of the European Façade Network, EFN. FAÇADE 2018 is also the final conference of the COST Action TU1403 ‘Adaptive façades network’ (www.tu1403.eu) and dedicated to multifunctional, adaptive, and dynamic building envelopes.

Approximately one third of all energy consumed by end-users in Europe today is for space heating& cooling, ventilation, and lighting of buildings. Therefore, the energy performance of future building envelopes will play a key role in meeting the EU’s climate and energy sustainability targets. While most of our façades today are passive systems and are largely exhausted from an energetic point of view, multifunctional, adaptive, and dynamic façades can be considered as the next big milestone in façade technology. Adaptive building envelopes are able to interact with the environment and the user by reacting to external influences and adapting their behaviour and functionality accordingly: the building envelope insulates only when necessary, it produces energy when possible, and it shades or ventilates when the indoor comfort so demands. Nevertheless, the development and realisation of adaptive building envelopes is still in the initial stages.

In order to advance the development and application of adaptive façades, COST Action TU1403 ‘Adaptive Façades Network’ was initiated in 2014. The COST Action, which started in 2015 and will end in late 2018, is a European research project with the objective to support trans-national cooperation between researchers and industry through science and technology networks. Over four years, more than 210 participants from 27 countries were involved in numerous COST networking activities: 15 meetings, two training schools, two industry workshops, 31 short term scientific missions, and two conferences.

The main objectives of the COST Action were to:

- increase knowledge sharing between the various European research centres and between these centres and the industry;
- foster the development of novel concepts and technologies and/or new combinations of existing technologies for adaptive façades;
- foster the development of effective evaluation tools, methods, and metrics for adaptive façades.

The work was managed in four working groups:

- WG1. Adaptive technologies and products
- WG2. Component performance and characterisation methods
- WG3. Whole building integration and whole-life evaluation methods of adaptive façades
- WG4. Dissemination and future research

The more than 60 presentations and proceeding contributions at the conference FAÇADE 2018 are the result of COST TU 1403 and give an overview of the state of the art in adaptive façade technology. The thirteen articles in this Special Issue FAÇADE 2018 – Adaptive! were proposed by the guest editors, who are working group (WG) leaders, and the scientific committee to undergo the double-blind peer review process of JFDE. The criteria for the selection of papers from proceeding contributions were the completeness of work and the scientific relevance, so that the special issue constitutes a representation of the work executed by the Action's working groups.

As guest editor, I would like to thank the authors and reviewers for their significant contributions to this special issue. Moreover, I sincerely thank Susanne Gosztonyi and Stephanie Ly-Ky for their great assistance during the whole process. I also want to thank COST (European Cooperation in Science and Technology). This special issue is based upon work from COST Action Tu1403, supported by COST. Last but not least, constructive comments and great help of the JFDE editor Thaleia Konstantinou, and Editors in Chief, Ulrich Knaack and Tillmann Klein, are gratefully acknowledged.

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