

Building Envelop Design, Engineering and Fabrication as a means of Sustainable Construction

Chairs:

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This invited session aspires to explore the buildings' outer shells – building envelopes – as a dynamic living skin of the building which not only plays key roles in building performance pertinent to its internal environment but also can proactively contribute to its broader context ranging from its immediate ecosystem up to the global environmental profile of the planet.

It is a known fact that buildings account for 30-35% of total global final energy use and approximately one-third of carbon emissions and one-eighth to one-third of F-gas emissions, depending partially on the accounting convention used worldwide. 6.02 Gt of GHG emissions are indirect CO₂ emissions from electricity use in buildings. Improvements to building façades are arguably one of the most effective strategies to reduce energy consumption and mitigate emissions of a building for refurbishment while new technologies are being widely developed, adopted and adapted and used in façade design and engineering to also minimise the environmental footprint of new buildings.

This invited track focuses on the outer shell or envelop of buildings, where the tools, techniques, materials, technologies, solutions and approaches can be utilised to improve the existing practice in design, engineering and fabrication of building envelopes. Design strategies, hard technological solutions, e.g. novel engineered materials, building components as well as soft technological solutions such as expert systems, Artificial Intelligence, Deep and Machine Learning which can be utilised to better design, fabricate or operate building envelopes are just to name but a few areas this session will cover.

This session invites contribution from academics, practitioners, researchers and scientists in all areas pertaining to the abovementioned issues and topics. Submissions from the research and practice communities are welcomed to help improve our collective knowledge, understanding and perceptions of buildings and the built environment and the way they interact with the natural environment as an integrated and active player as opposed to an imposed artefacts with potential detrimental impacts on the environment.