ABSTRACT

User control of adaptive façades is based on prioritising one of the following objectives: thermal comfort, visual comfort or energy saving. One of these objectives can be prioritised depending on the nature of the adaptive façade technology, user activity, comfort requirements, and energy use. In practice, this causes conflicts and results in low user satisfaction. Despite the importance of interactive user feedback, most control strategies rely on regulated feedback based on temperature or illuminance sensors and model-based control strategies. There are almost no practical approaches to balance thermal and visual comfort and, at the same time, empower
users, allowing them to personalise the control of adaptive facades. To understand this gap, this presentation shows observations from different case studies with dynamic solar shading, chromogenic glazing and solar-active façades. Results from different post-occupancy evaluations are collected and analysed in office buildings to define and compare the common control strategies and evaluate the users’ perception of comfort.

The presentation proposes a framework to balance thermal and comfort requirements while allowing for overriding occupant feedback. The presentation provides recommendations collected from occupants who participated in field studies in which measurements of physical environmental conditions were cross-linked to the participants’ assessment of visual and thermal comfort sensations.