Preliminary Draft

Application for opening a special session in ECRES 2019 (VII European Conference on Renewable Energy Systems), 10-12 June 2019, Madrid, Spain

Session title
Achieving nearly Zero Energy Buildings with Water Flow Glazing facades

Conveners
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Overview
During the last two decades, all international initiatives have been aimed at reducing energy consumption as well as diminishing global warming. Energy consumption in buildings represents, worldwide, approximately one third of the total energy consumption. This percentage varies depending on the location and the systems used, such as building enclosure, where glazing has strengthened its position as an essential construction material in low energy buildings. This session focuses on Water Flow Glazing façades as an active solution for achieving nearly zero energy consumption in buildings with maximum functionality and aesthetic benefits. Water Flow Glazing façades strategically take advantage of the energy exchange between indoors and outdoors, allowing energy harvesting or energy rejection strategies. Water Flow Glazing envelopes are able to adapt to the building usage as well as the climatic conditions of its environment to achieve maximum energy efficiency together with high levels of comfort for its users.

The goal of this session is to attract building energy experts, researchers and industrialists to present and discuss their recent works on water-flow glazing facades and the related technologies, referring to (but not limited to) the scope outlined below.

Scope of the session
- Theoretical heat and fluid flow analysis in water flow glazing (WFG)
- WFG materials selection and optical properties
- Solar engineering, energy storage and services system integration
- WFG product and system design optimization
- Architectural design, prefabrication and site installation matters
- Long-term reliability and life-cycle analysis
- Operation, maintenance, and services management
- Industrial applications and demonstration projects
- Social and technological barriers on WFG applications

Abstract submission
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Potential paper topics / titles

Presentation of the main results of the European Project “Industrial Development of Water Flow Glazing Systems (InDeWaG)”. Proposal number: 680441

- Software Tool for solving the spectral and thermal problem of Water Flow Glazing and energy balance.
- Architectural description of the Water Flow Glazing modular unit: glazing module, circulator and aluminum framing.

Plus presentations of the Chinese government funded projects on the following topics:

- Numerical modelling and experimental verification of water-flow window system behaviour
- Performance evaluation of solar-absorbing liquid-filled window systems in Asian countries