

JFDE Special ICAE2018 – Envelope 4.0

Dear Scientists, Engineers, and Designers,

With this new edition we continue the collaboration with our funding member Tecnia and the International Congress on Architectural Envelopes (www.icae2018.eu), which they organise every 3 years in San Sebastian (Basque Country, Spain).

The eleven articles found in this new issue were carefully selected from 50 abstracts that will be presented during the scientific section of the congress. The final selected papers were subjected to the regular double-blind review process of the journal.

With this selection of papers, we want to give an overview of the traditional technologies that are normally discussed in the context of façades, while also making some mention of new technologies, which, some time ago, existed only in the realm of the laboratory but which have begun to appear in real buildings and construction in recent years. In fact, the main topic of the conference this year is the Envelope 4.0, and consequently the aim of the magazine. Under this title, the aim is to unify two elements: the architectural envelope, due to it being the main reason for holding the conference, and the term “Industry 4.0” as a representation of the need to improve the manufacturing, assembly, distribution, and installation processes of many of the products included in today’s envelopes in order to be competitive in the market.

We hope that with this selection we can provide you with new ideas and possibilities.

An interesting set of approaches to new technologies is demonstrated (using robotics systems to install façades), new materials for the envelope (biocomposites, smart and multifunctional materials, and new types of membranes), use of BIM from design to manufacturing, 3D printed façades for thermal regulation, solar heating and cooling technologies in the envelope, characterisation of the thermal performance in roof solutions, and numerical and experimental performance assessment of structural thermal bridges.

In conclusion, we want to thank our special editors, Julen Astudillo and Jose Antonio Chica from Tecnia, for their effort in making this partnership happen.

The editors of this special edition,

Julen Astudillo
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Ulrich Knaack
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