

VII Congreso Internacional de Envolventes Arquitectónicas Biomimicry in climate adaptative building skins: relevance of applying principles and strategies.

Mario Fernández Cadenas, Francisco Javier Neila González

Departamento de Construcción y Tecnología Arquitectónicas
Universidad Politécnica de Madrid
e-mail: m.fernandez@arquible.com

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Resumen

There is growing interest in scientific literature and in research projects on climate adaptive building skins -CABS-. A large development of this type of building skins is expected, because of the advantages they offer over other skins, such as the improvement of environmental quality and energy efficiency, the adaptability to climate and changing uses of buildings, the ability to use low exergy sources, the potential for integrating architectural design principles with energy efficiency, the possibility of driving the research on new technologies and a greater efficiency in the use of materials. However, this development is not taking place in practice, since most projects either remain on experimental prototypes or are implemented in high budget buildings.

This paper examines the relevance of applying a biomimetic approach to the design of CABS, given the adaptive behavior of both systems.

By studying the correlation between the functional requirements of adaptive building skins and adaptive strategies that can be found in natural organisms, we address the possible overcoming of some limits they face in their development –from design, technological, economic and social-.

The aim is to further the implementation of biomimetic principles and adaptative strategies to enhance adaptive behavior, take advantage of the evolutionary knowledge that nature provides, derive applying principles to achieve best architectural solutions, serve as a driver of innovation in architecture and promote efficiency and sustainability in building skins, using principles such as optimality in resource management, resilience behavior, exchange of information and energy with the environment, complexity by organization of simple elements, or multifunctionality.

Finally, biomimicry has shown to be a suitable approach, which, by putting systematic design processes into practice, yet to achieve, could promote the widespread development of climate adaptative building skins.