



# Evolutionary Optimisation of Façade Design: A New Approach for the Design of Building Envelopes (Green Energy and Technology)

By Giovanni Zemella, Andrea Faraguna

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Optimization techniques offer immense potential for the improvement of performance-driven design, since they allow the adoption of an holistic approach. This can lead to great advantages: optimal design solutions can be properly identified only if all criteria are considered at the same time, rather than separately. There are two barriers which obstruct optimization from being applied to building design: a technological barrier (applying the algorithms is not easy and can be quite time-consuming) and a cultural one (architects and engineers are required to change their perspectives as the design process has to be handled in a new way). This book explores these barriers from the perspective of both engineers and architects, and proposes a change in the attitudes of these two “actors”: an engineer and an architect develop a dialog which helps them understand each other’s perspective; in this way they find how they must both make a step forward.

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About the Author

I (Giovanni Zemella) am a façade engineer at Arup. I specialize in analyzing the energy performance of façades and the effect they have on the overall behavior of buildings. During my PhD and my experience as a research fellow at the University, I studied evolutionary optimization procedures and applied them to the façade design.

I (Andrea Faraguna) am an architect working in Italy and Germany. My practice is addressed to projects of different scale within the city. My research is focused on the historical study of the design process and the relation between technique and architecture.

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