BioClimatic Double-Skin Facades
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A building exterior facade will characterize the building's ability to optimize the building's benefits on energy use, outside to inside noise control, and ability to provide fresh air year-around, among others. This book on Bioclimatic Double-Skin Facades provides a comprehensive review of the benefits of double-skin facades and the required technology that goes into the design of such modern buildings. The book also reviews various applications of buildings with double-skin facades and walks the reader through the history in the development and use of such building technology.

The book contains multiple photographs and drawings of double-skin facade examples and provides a comprehensive guide regarding the type and function of double-skin facades. Double-skin facades introduce complexity and increased building cost but provide some intrinsic benefits in the design to achieve ecofriendly, sustainable building designs. Double-skin facades can reduce energy consumption and improve overall building comfort. The book distinguishes the benefits of the double-skin facade over the single-skin facade especially as it applies to climatic requirements. Double-skin facade designs are inspired by nature, with designs adapted based on the climatic requirements. With the introduction of double facade concepts, open fresh air can be enjoyed year-round, instead, as in the case of single-skin facades, being limited to certain months of the years due to seasonal constraints. The book contains a discussion of the alternative types of design, and the designs are categorized into four major classifications. Buildings with a double-skin facade have an impact on energy use as well as improvement on the impact on the environment (carbon footprint) and most often provides a healthier interior environment for the occupants.

The book outlines how double-skin facades come from a long history of implementation, although certainly the history and use have been influenced by social contexts and building technologies. Early in history, the design of buildings with double-skin facades was limited, but by the early 2000, the strong emphasis in certain areas of the world on ecofriendly building designs and the push for sustainable energy systems contributed to a more prevalent double-skin facade buildings design. The increased use of double-skin facades was certainly helped by the added improvement in building technology.

As for the acoustics or noise control engineering content, the book is really not focused on acoustics or building noise control. The book does touch on the benefits of double-skin facades on the noise characteristics of the building. Overall, the book may have 5 to 10 pages dedicated to building acoustics and most are on presenting the fundamentals of what are the typical parameters used to describe the acoustic performance of building elements. The book does present some of the controlling characteristics of double-skin facades for noise control, specifically the impact on the outside-to-inside noise reduction due to the double-skin design. The benefits of noise control due to the presence of the double-skin facade are listed together with the other energy benefits as the reason to justify the increased design complexity and cost of a double-skin facade over a single-skin facade.

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