iconic skin

Extended abstract | René Schneider, iconic skin

Latest developments in double-skin façades – iconic skin ISOshade®

The double-skin façade is the result of a global demand for new ways to save and use energy sustainably, in conjunction with the financial running costs of the façade. The advantages of double-skin façades lay in an increased performance of the skin regarding acoustics, individual ventilation and conditioning concepts. An additional benefit is the protection of sunscreens, improving the user comfort especially in high-rise buildings.

Double-skin façades are categorized by three separation concepts between cavity and interior. The concepts differ in a pressure-dependent exchange of the interior and cavity air (exchange systems), an outflow of air into the cavity (extract systems) and a complete separation of the air streams (buffer systems). The air streams within the different separation concepts are driven either mechanically or naturally.

Pressure compensation technology
The necessary technological effort for façade systems like Closed Cavity Façades (CCF) and Self-Conditioning Façades (SCF) can be avoided with a simpler and more modular glazing typology. An insulating glass unit with triple glazing and a sunblind in a cavity using a newly developed, micrometer-sized, filtered pressure compensation technology and buffer technologies for heat and humidity, is called ISOshade® from iconic skin GmbH.

The concept is based on a hermetically sealed cavity fabricated in a clean room. A special pressure compensation system maintains the permissible climate loads in the cavity. This system ensures that, as temperatures fluctuate, the pressure in the cavity is kept at a permissible level. For further protection against condensation, the spacers are filled with a desiccant. The cavity conditions itself via a volume-dependent system.

ISOshade® façade for German museum
A façade for a museum in Augsburg/Germany has been realized with ISOshade® elements. The museum's new glass façade is made up of three elements each nearly 7m high. The exposed, frameless façade in structural glazing look fulfils the highest demands in terms of design and transparency. At the same time, the ISOshade® elements satisfy thermal and sound insulation requirements and provide sun shading that can be varied to protect the sensitive exhibits against UV light.

The necessary technological effort for CCF and the extended design efforts for SCF can be avoided with easy to handle, multilayer glazing typology like ISOshade®. Buffer technologies for humidity as well as enhanced pressure equalizers are used to solve the basic physical challenges.

Next step: Digital monitoring
Nevertheless, local conditions and project demands are specific. Therefore, the methods for the façade design process are improved in industry as well. Product simulations and processed monitoring data are integrated into digital planning tools to support the professional team. Next generations of such planning tools will help to develop the appropriate and most suitable design alternative

faster and more profound. This requires functional models and an interoperability of the essential data between project developers, professional team, specialized contractors and building operators.

Photos:

Caption: Visualization of ISOshade® units using different sun blind typologies © iconic skin

Caption: ISOshade® used for a 7m high museum façade in Augsburg © iconic skin