

SensorBIM WP6– Test and prototyping

EURAC Research activities

An ongoing experimental campaign within the Façade System Interaction Lab of EURAC Research is aiming at characterizing and testing two adaptive transparent façade prototypes.



Façade System Interaction Lab - DSF on the left and SSF on the right

One prototype (left side of the picture) is a Double Skin Façade (DSF) characterized by different operating openings placed on both skins, at the top and at the bottom of the façade. This allows different airflow configurations (namely Thermal Buffer, Supply/Exhaust Air, Outdoor/Indoor Air Curtain), with direct consequences on the façade and indoor thermal behaviors. Moreover, the cavity of the DSF hosts a venetian blind system, which can be controlled to manage solar radiation. The second prototype (right side of the picture) is a Single Skin Façade (SSF), characterized by the possibility of operating three different active technologies: external venetian blinds (as in the pictures), venetian blinds integrated in an Insulated Glazing Unit and Liquid Crystal (LC) glazing. The Design Of Experiment (DOE) was built considering two phases in the experimental campaign: the first designed to characterize the façade systems (considering all the possible configurations of each adaptive component) and the second aimed at implementing control strategies (from simple Rule Base Control strategies to advanced ones).

Along with the traditional (cabled) sensors used in an experimental, an innovative typology of sensors will be used in the presented activity: RFID sensors. The main advantage will be the possibility of placing sensors where needed without the hassle of having cables jeopardizing the action of some moving part (e.g. the venetian blinds or the operable vents).

Results of the two experimental phases will be crucial for the SensorBIM project: the first part will allow the definition of model-based strategies and a first interaction approach with the BIM environment; the second part will provide the opportunity to implement different (and advanced) control strategies in real-time while monitoring the façade systems performances and the implications on the indoor environment.

The second phase of the experimental campaign is the core activity for the SensorBIM project, since it will allow to implement different (and advanced) control strategies in real-time.



Opened venetian blinds and closed vents in DSF Closed venetian blinds and opened vents in DSF