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## **REDUCTION OF BUILDING ENERGY CONSUMPTION USING VENTILATED FAÇADES**

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### **Abstract**

Rehabilitation of old buildings that have a low thermal protection is one of the main concerns of European countries for reducing overall energy consumption and the environmental impact in the building industry. Due to the large impact exerted in overall heat loss in virtue of their significant area, the exterior walls are considered to be the main focus of the rehabilitation works. One of the strategies considered consists in the application of an external layer to the existing envelope with a naturally ventilated air space between. The air flow, due to effect of buoyancy, decreases the summer thermal load on buildings because heat is eliminated through the outlet openings. In winter, this constructive system can lead to a decrease in heating energy demand due to the thermal insulation effect of the air layer. The design of the ventilated systems in the temperate climates, characterized by hot summers and cold winters, should consider a balance between heating and cooling energy reduction that can be achieved with an optimum channel configuration. In this article, an element for investigating heat removal capacity for different geometries of the channel and different types of the outer cladding is presented with some compared results regarding air velocities, temperature distributions and heat flows.

*Key words:* energy savings, environmental protection, full scale testing, heat removal, ventilated façades

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