ABSTRACT
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Double skin façades (DSF) is nowadays a widespread solution in architecture building design. Furthermore, by means of such a façade configuration it is possible to allow exterior light to get in the building whilst it is being insulated in order to avoid heat loss. However, this technology requires to be used having a broad knowledge, otherwise it might be incurring in an inefficient design. This would be the case of a DSF implanted in a building located within a Mediterranean climate. In this case, heat gains might be accumulated inside the building causing a sort of greenhouse effect which would lead to increment of the cooling costs in such a manner that the implantation of the glazed system might not be economically viable.
Overheating problem should be dealt with installing a ventilation system in the space between the exterior and interior glazing. Previous studies have shown the efficiency in using Nozzles based in the Coandă effect in order to generate a sort of forced ventilation within the air cavity. Likewise, the aim of this project is to achieve the installation of a shading system inside the DSF; this is a broadly known solution to avoid direct solar radiation to pass through the glazing and, it acquires a key role in such a constructions placed in Mediterranean zones, where to consider the daily solar gains becomes a special relevant matter.
Venetian blinds (VB) are a spread out shading system and a deep study of its performance is required prior to the construction stage due to the negative effects produced by means of an inadequate design. This way, taking advantage of employing the CFD (Computer Fluid Dynamics) software Fluent® 6.3., An optimization of a horizontal VB system has been made paying attention to the influence in the reduction of solar load gains through the DSF. This has been achieved by changing the value of several VB construction parameters as: solar absorptivity (α_s) , infrared emissivity (ε_i), louver shape factor (D), louver distance to outer glass (R) and the mass flow rate ratio ($\dot{m}_r$).