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Thermo-Aeraulic Studies of a Multizone Building Influence of the Compactness Index

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Abstract : Most codes of building energy simulation neglect the humidity or well represent it with a very simplified method. It is for this reason that we have developed a new approach to the description and modeling of multizone buildings in Saharan climate. The thermal nodal method was used to apprehend thermoaeraulic behavior of air subjected to varied solicitations. In this contribution, analyzing the building geometry introduced the concept of index compactness as "quotient of external walls area and volume of the building". Physical phenomena that we have described in this paper, allow to build the model of the coupled thermoaeraulic behavior. The comparison shows that the found results are to some extent satisfactory. The result proves that temperature and specific humidity depending on compactness and geometric shape. Proper use of compactness index and building geometry parameters will noticeably minimize building energy.

Keywords : multizone model, nodal method, compactness index, specific humidity, temperature
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