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ABSTRACTS

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Content

THE IMPACT OF ALIGNING THREE OR MORE OPENINGS IN A DWELLING: AN ENGINEERING PERCEPTION USING FLUID DYNAMICS

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Abstract – In spite of the fact that this is an era with significant innovations in building construction, the shadows of customs and beliefs of building construction are still followed in various levels. These beliefs play a major role in residential and mini-commercial building construction, mostly in countries like Sri Lanka, India and China. In this study, a selected belief in building construction, "Not having three or more aligned openings along same row" was investigated and the engineering significance of the belief was investigated by means of fluid dynamics simulations carried out with Autodesk Flow Design, Computational Fluid Dynamics (CFD) software. The results of CFD simulation showed that, the wind entered the house in one end, moved through aligned openings as a rapid flow making the air distribution to other parts of house less than 15% of total flow, but when the openings were not aligned (staggered openings) there was adequate air circulation to other spaces of the house. Finally, it was proven that the concept, "Not having three or more aligned openings along same row" is technically rational and there is an Engineering significance of it.

Keywords– residential buildings, mini commercial buildings, customs and beliefs, computational fluid dynamics.