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THE EFFECTS OF EXHAUST AIR VENT LOCATION ON THERMAL COMFORT INSIDE A RESIDENTIAL BUILDING EQUIPPED WITH AN EVAPORATIVE COOLING SYSTEM

by

Samir Moujaes, Ph.D, P.E.

Professor of Mechanical Engineering, University of Nevada, Las Vegas, USA

Bio

Samir Moujaes, a dedicated full-time professor in Mechanical Engineering at the University of Nevada, Las Vegas, USA, boasts 40 years of extensive academic experience. For the past 5 years, he adeptly managed post-doctoral researchers while significantly contributing to the academic realm. His scholarly endeavors encompass the publication of approximately 110 articles across esteemed journals, conferences, and a book chapter.
Moreover, Samir has demonstrated exceptional grant acquisition prowess, securing nearly $2 million for funded research initiatives. His commitment extends beyond research, actively guiding and mentoring graduate students, thereby facilitating their successful graduation. Notably, he holds registration as a Mechanical Engineer in the state of Nevada.
Samir Moujaes specializes in diverse domains, primarily focusing on energy conservation, HVAC systems simulation, high-level nuclear waste canister thermal issues, transmutation energy research, high-temperature hydrogen production utilizing nuclear/solar energy, and residential air duct leakage methodologies, emphasizing their measurement and characterization.

Abstract

The location of exhaust air vents of an evaporative cooling system can have significant effects on providing thermal comfort and controlling humidity, temperature and air distribution in buildings. In the current study, four different strategies have been evaluated for exhaust air vent locations to provide the optimum thermal comfort inside a typical residential house. This study provides a numerical solution for temperature and relative humidity profiles in the residential house and within the living space in each room typically at a height of 1.8 m or less. By evaluating different exhaust air vent locations in a room, the best strategy(ies) to provide more appropriate thermal comfort condition and obtained and as a conclusion, the exhaust vents should be located on furthest wall away from the entrance of the room and in the middle. The results provided in the current study can eventually be applied in the design of evaporative cooler exhaust vent systems in residential buildings and lead to improve the performance of these systems.

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