

Abstract

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Locating Air Conditioning Unit using Computational Fluid Dynamics

An accurate understanding of indoor air distribution with proper velocity and temperature is crucial to the design of HVAC systems in providing thermal comfort and indoor air quality. This paper considers the numerical modeling of room air flows and illustrates the usefulness of computational fluid Dynamics as a design tool of HVAC systems. The computational grid is three-dimensional and uses measured boundary conditions on unstructured mesh generated by the CFD code FLUENT imposed. The airflow model is based on steady state, incompressible, Reynolds – average Navier– stokes equations. The paper investigates air velocity and distribution inside room using different air conditioning units namely (Hi-wall, window and floor types). This was done for two cases, when space is empty and when furniture is located.