

عنوان مقاله:

A Performance Analysis on Pressure Loss and Airflow Diffusion in a Chamber with Perforated V-Profile Diffuser
(Designed for Air Handling Units (AHUs)

محل انتشار:

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خلاصه مقاله:

Outlet cross-sectional area of fans used in air handling units is smaller than cross-sectional area of chambers which are located next to the fan. In order to ensure efficiently operating of the air handling units, it is required that the air flows through a perforated diffuser to create a uniform air diffusion from fan outlet to following chamber with a minimum pressure loss and uniform velocity distribution. In this concept, numerical simulations and experiments were performed for the chamber with perforated V-profile diffuser, which is often used in air handling units because of its simple geometry and easy manufacturing. Pressure losses were firstly obtained experimentally for different air velocities in the chamber. Then a performance analysis on the air flow diffusion and pressure losses inside chamber with perforated V-profile diffuser for different geometric parameters such as entry length, apex angle, geometry and pattern of hole, plate thickness, porosity and surface roughness has been carried out numerically. It is seen that the experimental results validated with the numerical turbulence model results.

کلمات کلیدی:

Computational fluid dynamics (CFD), Pressure loss, Air handling units (AHUs), Perforated diffuser, Fan

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