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Numerical Study of the Dynamic Behavior of an Air Conditioning with a Muti Confined Swirling Jet

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Abstract : The objective of this study is to know the dynamic behavior of a multi swirling jet used for air conditioning inside a room. To conduct this study, we designed a facility to ensure proper conditions of confinement in which we placed five air blowing devices with adjustable vanes, providing multiple swirling turbulent jets. The jets were issued in the same direction and the same spacing defined between them. This study concerned the numerical simulation of the dynamic mixing of confined swirling multi-jets, and examined the influence of important parameters of a swirl diffuser system on the dynamic performance characteristics. The CFD investigations are carried out by a hybrid mesh to discretize the computational domain. In this work, the simulations have been performed using the finite volume method and FLUENT solver, in which the standard k-ε RNG turbulence model was used for turbulence computations.

Keywords : simulation, dynamic behavior, swirl, turbulent jet
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