

عنوان مقاله:

Experimental and Numerical Study of a Turbulent Multiple Jets Issued from Lobed Diffusers

محل انتشار:

دوماهنامه مکانیک سیالات کاربردی، دوره 12، شماره 3 (سال: 1398)

تعداد صفحات اصل مقاله: 14

نویسندگان:

W. Medaouar - *Control, Testing, Measurement and Mechanical Simulation laboratory, University Hassiba Benbouali of Chlef, Hay Salem, National Road No. ۱۹, ۰۲۰۰۰, Algeria*

L. Loukarfi - *Control, Testing, Measurement and Mechanical Simulation laboratory, University Hassiba Benbouali of Chlef, Hay Salem, National Road No. ۱۹, ۰۲۰۰۰, Algeria*

M. Braikia - *Control, Testing, Measurement and Mechanical Simulation laboratory, University Hassiba Benbouali of Chlef, Hay Salem, National Road No. ۱۹, ۰۲۰۰۰, Algeria*

A. Khelil - *Control, Testing, Measurement and Mechanical Simulation laboratory, University Hassiba Benbouali of Chlef, Hay Salem, National Road No. ۱۹, ۰۲۰۰۰, Algeria*

H. Naji - *University of Artois, Civil Engineering & Geo-Environment Laboratory (LGCgE- EA ۴۵۱۵), Technoparc Futura, F-۶۲۴۰۰ Béthune, France*

خلاصه مقاله:

A combined experimental and computational study of a turbulent multiple jet from lobed diffusers is performed. The main interest of these multiple lobed jets is to come up with the best configuration that improves the thermal and dynamic homogenization in air diffusion units that can be used for ventilation, heating and air conditioning of residential premises. Herein, the configuration of a central lobed jet surrounded by six equidistant peripheral lobed jets has been investigated. On the experimental level, flow velocities and temperatures were measured by a multifunctional thermo-anemometer. In terms of numerical simulation, the conservation equations of mass, momentum and energy are solved while involving four turbulence models, viz., the k- ϵ model, the k- ω , the shear stress transport (SST) k- ω model and the Reynolds Stress Model (RSM). The findings are compared with thermo-anemometer measurements. It turns out that the SST k- ω model is most appropriate for predicting the average flow characteristics.

کلمات کلیدی:

Lobed jets, Multiple jets, Experimental study, Numerical simulation, Turbulence modelling, RANS

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1369694>



