3D CFD Modelling of the Airflow and Heat Transfer in Cold Room Filled with Dates

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Abstract : A transient three-dimensional computational fluid dynamics (CFD) model is developed to determine the velocity and temperature distribution in different positions cold room during pre-cooling of dates. The turbulence model used is the k-ω Shear Stress Transport (SST) with the standard wall function, the air. The numerical results obtained show that cooling rate is not uniform inside the room; the product at the medium of room has a slower cooling rate. This cooling heterogeneity has a large effect on the energy consumption during cold storage.