A HYBRID NUMERICAL EXPERIMENTAL ANALYSIS OF THE HEAT FLUX DISTRIBUTION BY A JET IMPINGEMENT ON A FLAT PLATE

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The present study describes the hybrid numerical-experimental analysis to determine the non-uniform heat flux distribution exerted by an impingement jet on a flat solid plate. A mathematical model was proposed and numerically solved by finite volume; the numerical program was written in FORTRAN 90. A torch of propane was the source of the impingement jet. Although the intensity of the jet impingement was assumed to be constant, however the solid plate experienced a transient heating process. The solid plate was cooled down by natural convection and radiative effects at the back side of the plate. It was found a good agreement between the experimental versus the numerical data.