Numerical Study of an Impinging Jet in a Coflow Stream

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Abstract : The present study treats different phenomena taking place in a configuration of air jet impinging on a flat surface in a coflow stream. A Computational Fluid Dynamics study is performed using the Reynolds-averaged Navier-Stokes equations by means of the Reynolds Stress Model (RSM) second order turbulent closure model. The results include mean and turbulent velocities and quantify the large effects of the coflow stream on an impinging air jet. The study of the jet in a no-directed coflow stream shows the presence of a phenomenon of recirculation near the flat plate. The influence of the coflow velocity ratio on the behavior of an impinging plane jet was also numerically investigated. The coflow stream imposed noticeable restrictions on the spreading of the impinging jet. The results show that the coflow stream decreases considerably the entrainment of air jet. **Keywords :** turbulent jet, turbulence models, coflow stream, velocity ratio

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