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INVESTIGATIONS OF HOT JET DISSIPATIONS INTO MAIN PIPELINE FLOW

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Abstract:

Having applications in numerous industries the specific mechanisms governing mixing in pipe flow are still under development. The design of the most efficient mixing process is of interest. The temperature and energy of fluids to be brought together in some cases are vital parameters. For such cases the effects of turbulent dissipation rate and downward volume are of most importance. In this study a hot jet is introduced into a main pipe flow and after validating the numerical model, investigations are done for higher to lower velocity ratios for turbulent dissipation rate and turbulent kinetic energy. Observations of simulations, using a CFD package, showed that the convective flow strongly influenced the mixing pattern. Turbulent dissipations affect the flow pattern. Further modifications are proposed in the design on the basis of these results.

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