



ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ - ಬೆಳಗಾವಿ

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PROJECT REPORT ON

**“EXPERIMENTAL INVESTIGATION OF LOCAL HEAT
TRANSFER CHARACTERISTICS IN A SQUARE DUCT WITH
DELTA WING VORTEX GENERATORS”**

UNDER THE GUIDANCE OF

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ABSTRACT

The influence of delta wing vortex generators in a square duct on the heat transfer enhancement performance has been experimentally investigated in the study. The combined effect of geometrical parameters of delta wing and duct aspect ratio on Nusselt number is reported in the Reynolds number based on the duct hydraulic diameter for 5000 and 10000. The Results are reported for Re 5000 and 10000 local heat transfer distribution has been presented for the configuration used in the square duct.

The heat transfer coefficient for the roughened wall increase significantly. The heat transfer coefficients for the smooth wall adjacent to the rough wall also increase significantly. The results have been presented in to the form of Nusselt number of the roughened and smooth surface operating at equal Reynolds numbers. The results are also presented in the form of Thermal Performance parameter defined in the literature as the ratio of heat conductance of the roughened and smooth walls keeping heat transfer area and pumping power constant. It was noticed that, the higher value of N gives higher heat transfer enhancement performance both at constant Reynolds number and constant pumping power. The highest Nusselt number ratio 2.7 based on equal pumping criterion was obtained in the duct

Key words:- Heat Transfer Enhancement, Delta wing, Vortex Generators.