

## Heat Transfer Augmentation in a Channel with Delta Winglet Type Vortex Generators at Different Blade Angles

**Authors :** Nirmal Kant Singh, Anshuman Pratap Singh

**Abstract :** In this study the augmentation of heat transfer in a channel with delta winglet type vortex generators is evaluated. Three-dimensional numerical simulations are performed in a rectangular channel with longitudinal triangular vortex generators (LVGs). The span wise averaged Nusselt number and mean temperature are compared with and without vortex generators in the channel. The effect of variation of blade angle (15°, 30°, 45°, and 60°) is studied at a Reynolds number of 10000. The numerical results indicate that the application of LVGs effectively enhances heat transfer in the channel. The Nusselt number and mean outlet temperature were found to be greater using LVGs than in the channel without LVGs. It is observed that heat transfer increases with increase in blade angle at the same Reynolds number.

**Keywords :** heat transfer, rectangular channel, longitudinal vortex generators, effect of blade angle

**Conference Title :** ICMAE 2014 : International Conference on Mechanical and Aerospace Engineering

**Conference Location :** Melbourne, Australia

**Conference Dates :** December 11-12, 2014