

Abstract Submitted
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Secondary Vortex Structures in Vortex Generator Induced Flow

CLARA VELTE, VALERY OKULOV, MARTIN HANSEN, DTU — Passive rectangular vane actuators can induce a longitudinal vortex that redistributes the momentum in the boundary layer to control the flow. Recent experiments [1] as well as previous studies [2] have shown that a secondary vortex of opposite sign is generated along with the primary one, supposedly from local separation of the boundary layer due to the primary vortex. 2D flow visualizations of a vortex in the vicinity of a boundary support this hypothesis [3]. These secondary vortices are studied for various configurations – single generator, counter- and co-rotating cascades. The objective is to study their removal through cancelation in cascades using Stereoscopic Particle Image Velocimetry and flow visualization.

- [1] Velte, Hansen and Okulov, *J. Fluid Mech.* **619**, 2009.
- [2] Zhang, *Int. J. Heat Fluid Flow* **21** 2000.
- [3] Harris, Miller and Williamson, APS abstract 2009.

Clara Velte
DTU

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