

Abstract Submitted  
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**Vortex statistics in a bluff body wake with varying inlet conditions**<sup>1</sup> BENGT E.G. FALLENIOUS, JENS H.M. FRANSSON, Linne Flow Centre, KTH — For many years the flow in the wake behind bluff bodies have been the subject of extensive studies. One reason is the interesting flow phenomena that occur therein, such as the von Kármán vortex shedding. Another is the reduced pressure that contributes highly to the drag force. Learning how to control the vortices and increasing the pressure in the wake can lead to reduction of noise and vibrations in structures as well as improved energy efficiency for vehicles. This study investigates experimentally how changes of the boundary layer on the bluff body, i.e. the inlet condition for the wake flow, affects the vortex structures in the wake. The bluff body boundary layer is modulated by applying varying strengths of continuous suction or blowing through the surface of the bluff body, which is made of a permeable material. A high number of instantaneous velocity fields of the wake flow have been acquired by means of particle image velocimetry. Each velocity field has then been processed by a computer program, developed in order to detect, analyze and store information about the characteristics of small-scale vortices. Statistics for the vortex structures in the bluff body wake have then been compared for different inlet conditions.

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