Assessment of the capability of available methods of flow field numerical modelling on the example of air flow through a channel with a circular bump

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Abstrak

ABSTRAK
This paper is an attempt at a systematic approach to the flow field analysis in the case of air flowing through a straight channel with a circular bump. The results of the authors own experimental measurements are compared to those obtained by means of both an in house and a commercial CFD code. Apart from the RANS method, which is commonly used in engineering applications, a decision was made to use the URANS and LES methods, which are available both in the in house academic code and in the commercial program. The comparison between the calculation results is performed using what is referred to as the numerical Schlieren image, which for the RANS calculations is compared to the Schlieren image obtained from experimental testing.