

Experimental Study of the Flow Field Behind a Cylindrical Model with Semispherical Head Using Different Measuring Methods¹

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Abstract

This paper presents the measurements results of the velocity field of a flow with vortical character behind a cylindrical model with a semispherical head. Three different measuring methods have been used, i.e.: Laser – Doppler – Anemometer (LDA), Hotwire – Anemometer and Five – Hole – Pressure -Probe.

A comparison between the obtained experimental results has been made aiming to specify the accuracy and reliability of the velocity values, measured by means of the a. m. three methods, and accordingly to determine the reliable measurement range of each of these methods, taking into consideration that the LDA – measurements results are the more accurate and reliable ones, since LDA does not create any disturbances of the flow field.

It is worthy to note that the experimental results of the velocity field, presented in this paper, constitute only a part of many and different experimental results, including the measurements of the values of the turbulent kinetic energy, the components of angular velocity, the vortical (eddy) shear stresses and others.

¹For the paper in Arabic see Pages (169-199).

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