

Incompressible turbulent flow in pipes and conical diffusers.

University of Salford - Swirl Flow in Conical Diffusers

ME – 233: Fluid Mechanics – II
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Dimensional analysis of pipe flow

- » Major losses
 - » Assume that the pressure drop should be proportional to the pipe length. This way the J/D term can factored out.
$$\frac{\Delta p}{\rho V^2} = \frac{\ell}{D} \phi \left(\text{Re}, \frac{e}{D} \right)$$
 - » We defined friction factor as:
$$f = \frac{\Delta p}{\rho V^2} \frac{(J/D)^2}{2}$$
 - » Thus for horizontal pipe flow,
$$\Delta p = f \frac{\ell}{D} \frac{\rho V^2}{2}$$
 - » And
 - » For laminar fully developed flow, $f = \frac{64}{\text{Re}}$
 - » For turbulent flow, the functional dependence of the friction factor on the
- $$f = \phi \left(\text{Re}, \frac{e}{D} \right)$$

Description: -

-Incompressible turbulent flow in pipes and conical diffusers.

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D16962/76 Incompressible turbulent flow in pipes and conical diffusers.

Notes: MSc thesis, Mechanical Engineering.

This edition was published in 1975



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Tags: #Experimental #and #Numerical #Investigations #of #a #Turbulent #Flow #Behavior #in #Isolated #and #Nonisolated #Conical #Diffusers

Turbulent flow in a conical diffuser: A review

A GENPLOT file named is created and plotted.

Turbulent flow in a conical diffuser: A review

The velocity distribution for flow of a thin viscous film down an inclined plane surface was developed in Example 5. Will the torque increase or decrease with time? Sketch your expectations for each case.

Experimental and Numerical Investigations of a Turbulent Flow Behavior in Isolated and Nonisolated Conical Diffusers

The inlet pipe diameter is 3 in.

Practice Problems

In an undergraduate laboratory, you have been assigned the task of developing a crude flow meter for measuring the flow in a 45 -mm-diameter water pipe system. Ignoring secondary losses, the loss of energy head which is mainly due to friction is again equal to the difference of levels of the liquids in the two reservoirs.

IHS ESDU: Index PRE

The common grid file is. Determine the required average speed of water in the 2.

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