Abstract Submitted
for the DFD13 Meeting of
The American Physical Society

Investigation of Flow around Cylinder with Parallel Slit in a Circular Pipe using Flow Visualization Approach ARUMURU VENUGOPAL, LAVISH ORDIA, AMIT AGRAWAL, S.V. PRABHU, Indian Institute of Technology Bombay — Flow visualization experiments behind a cylinder with parallel slit placed inside a circular pipe are carried out with water as the working medium. Dye injection technique is employed to visualize the complex vortex formation mechanism behind the bluff bodies. Various wake parameters like Strouhal Number, wake width and the Vortex formation length are calculated from the recorded images with the help of commercial software MATLAB. Three different slit widths with s/d values of 0.1, 0.2 and 0.4 were chosen to study the effect on vortex formation mechanism and the corresponding wake parameters. The dual body character is expected to creep in at higher slit widths. Vortex formation both from the outer and the inner surfaces is observed. Symmetric vortex formation from the outer surface is observed. A separation bubble from each of the inner surface is formed that detaches itself from the bluff body to form a vortex at higher Reynolds. The separation bubble is sensitive to disturbance which is observed in the changing biasness on either side which also results in the transition from symmetric to alternate primary vortices. Their interaction with the outer vortices is observed to effect the strength of the outer primary vortices.

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Date submitted: 01 Aug 2013 Electronic form version 1.4