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NUCL 355

Experiment 5: Turbulence and Vortex Visualization in Vertical Channel

Objectives

To observe the turbulence and vortex formation in the flow caused by a submersed jet through a liquid pool

Experimental Apparatus:

Fully assembled experimental apparatus are showed in Fig.1. The apparatus consist of:

1. Nozzles (two types: ID: o.75” and ID 0.5”)
2. Tank with water pool
3. Pipe with valve to control the flow in the pipe
4. Magnetic flow meter
5. air bubble injector
6. Pump
7. Reservoir

Experiment Procedure:

1. Set up the experiment. Please refer to Fig. 1.
2. Establish flow in the tank and measure the flow rate.
3. Inject air bubble with the jet.
4. Observe flow jet pattern and vortex formation
5. Make sketch of turbulence and vortex as a function of flow rate and nozzle size

Data Analysis

1. Analyze the nozzle size effect on the turbulence and vortex
2. Find the effect of Reynolds number on the turbulence and vortex

Reference

1. Robert W. **Fox,** Alan T. McDonald, *Introduction to Fluid Mechanics*, New York: Wiley, c1998.

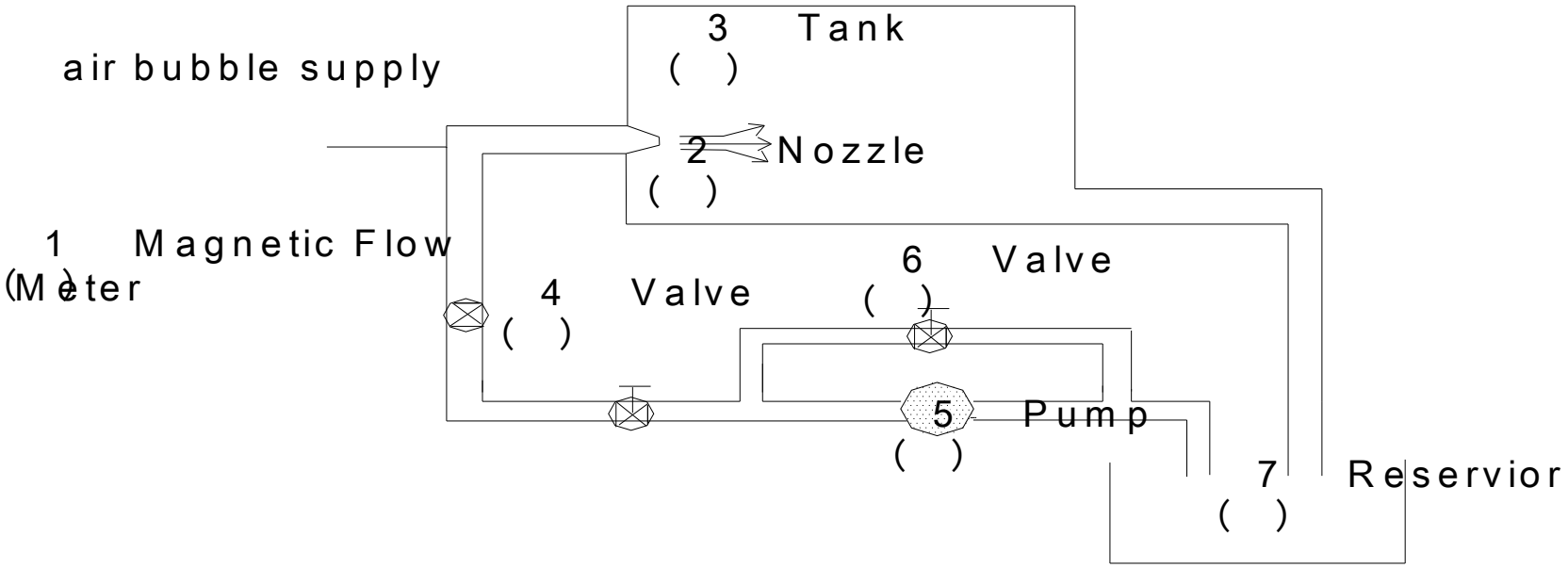

Figure 1. Turbulence and Vortex Visualization Experiment Schematic