



FREDERICK UNIVERSITY

Department of Mechanical Engineering

Flow Rate Experiment

Objective:

The flowrate of water in an open channel flow, as shown in the figure, is a function of the water depth and the fluid velocity. The purpose of this experiment is to calculate experimentally the flow rate and compare it with the flowrate obtained from a flow meter.

Theory:

The volumetric flowrate is given by $\dot{V} = u * A$,

where u is the average fluid velocity and A the cross-sectional area. So, for a fixed volumetric flowrate, the product of the velocity and the area should be a constant.

Equipment:

Flow channel with pump and control valve to provide desired flow-rates in the channel; sluice gate; point gage to measure water depth; float; stop watch.



