**Experiments for the hydraulic bench**

Experiment n°1: head losses

The purpose of this experiment is to show the effect of head losses on the mass flow ratio. For the experiment, student have to open a single pipe and measure the head losses for different mass flow rate

Experiment n°2: laminar and turbulent flow for the mass flow

The purpose of this experiment is to show the effect of the flow regime on the mass flow. Students have to use a least two pipe with different diameters in order to have in one pipe a laminar flow and in the other a turbulent flow (a third pipe for a transition flow can be added), students then should measure the flow ration in each case.

Experiment n°3: flowmeter comparison

The purpose of this one is to compare different flowmeter, head losses will be measure for each flowmeter (rotameter, venturi tube, orifice plate)

Experiment n°4: head losses comparison experiment/simulation

Compare each low for head losses to the experiment.

Experiment n°5: head losses comparison of different technical solution for pipe

On the circuit pipe, compare each section (the u like, the v like and the n like sections) conclude on the efficiency of each part.

Experiment n°6: balancing of a circuit

Change the head losses of the two valve (blue and yellow) in order to balance the flow rate between the two pipes.

Experiment n°7: head losses for laminar and turbulent flow

Measure the head losses for different flow.

Experiment n°8: check of the venturi effect

Check the theory of the venturi effect and Bernoulli equation with the venturi tube equipped on the bench and the orifice plate.

Experiment n°9a: observation of the cavitation effect in the venturi tube

Experiment n°10: evaluation of the critical Reynold’s number