**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 laws 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 also equipped on.

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

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