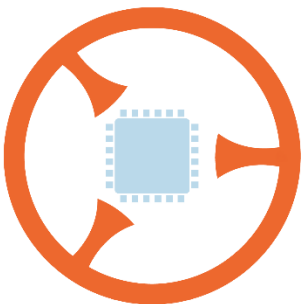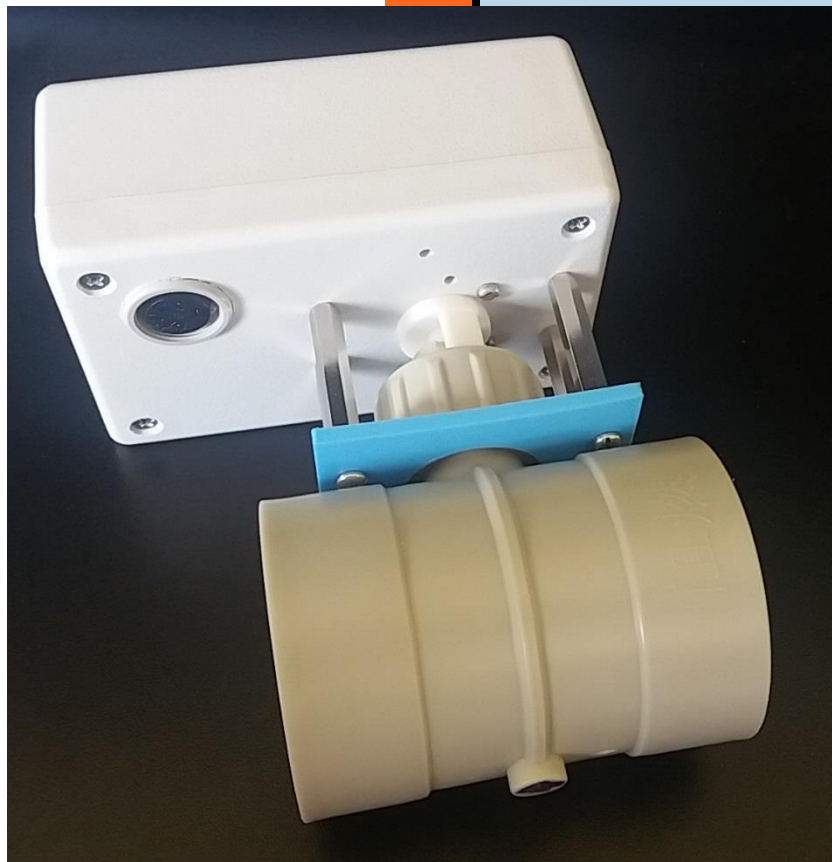# Pressure regulation

SmartFlow-SC1

RG eConcept
Smart Motorsport

rgeconcept.fr

StFw-Reg

1. The test pressure regulation

To offer the possibility of working at constant test pressure RG eConcept introduces a pressure regulation

This is a PID regulator in the SmartFlow software that controls a motorized valve through the FCU, a valve that controls a discharge from the air source and allows the test pressure to be adjusted continuously.

The advantage of such an economical solution is the easy adaptation to all models of air source without affecting the power supply of the source motors. It suffices to mount the valve on a T inserted in the air circuit of the flowmeter.

The complete option consists of the motorized valve, a cable connecting it to the FCU and its 12 V power supply which also connects to the FCU.

It is possible by software to choose the regulation or not.

The test pressure set point range is 5 to 30 "H2O. In a few seconds the pressure is regulated with a static error (deviation from the set point) of +/- 3%

This regulation is only possible if the air source can sustain this pressure over the entire flow range. It is possible that the regulation may only work over a range of valve lift where the flow is sufficient to provide this regulation, i.e. on low lifts and not on the highest lifts.

2. Implementation

Mechanics and pipes

In order to use the regulation, a Tee is required, the dimensions of which will depend on the diameter of the tubing used. The motorized valve has a diameter of 50 mm.

For operation with SmartFlow tubing a 63 mm Male-Female-Female Tee, a 63-50 reducer and a 50 mm tube is used.

This allows the Tee to be inserted between the elbow outlet of the flowmeter and the 63-40 adapter to the vacuum cleaner. The valve comes into the 2nd female part via the reducer and the 50 mm tube.

Electrical connections

The DIN-DIN cable is used to connect the motorized box to the FCU on its rear side. A Jack Power socket on the rear panel of the FCU receives the 12 volt power supply. The diagram below shows these connections.
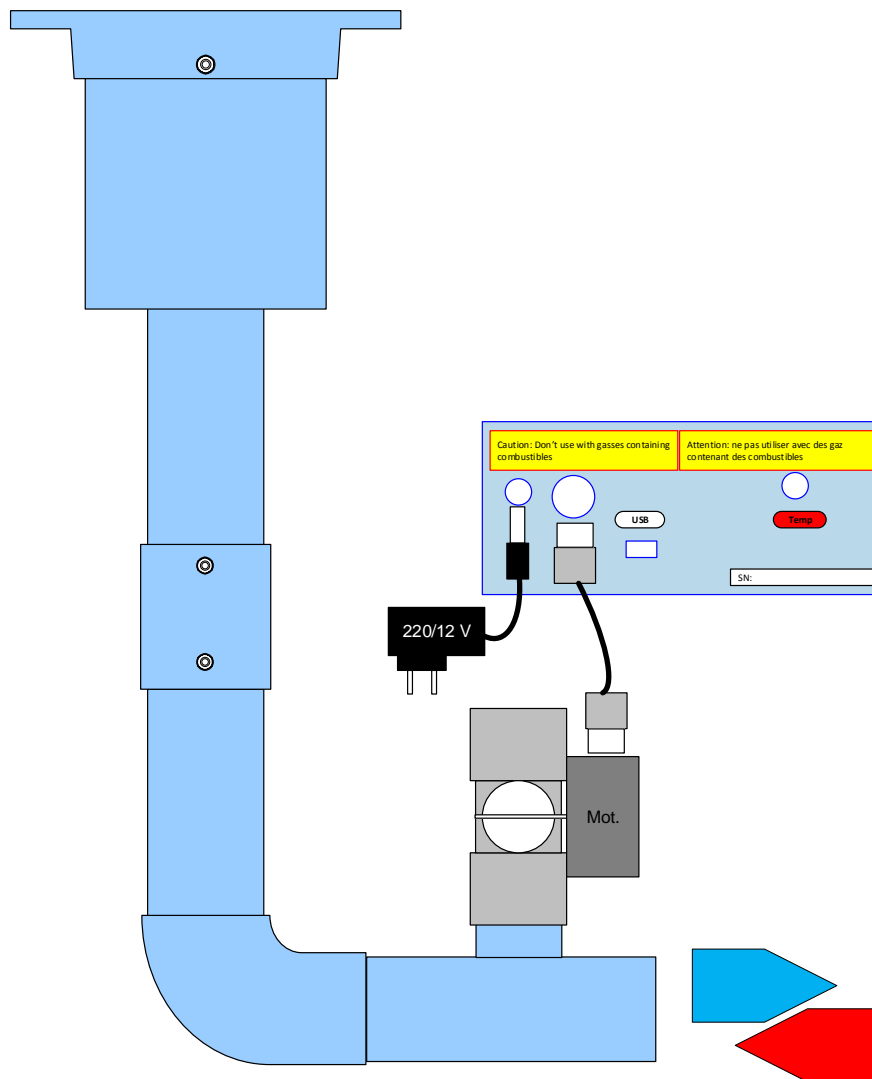
The software

To enable the function, use the "Test pressure regulation" button in the "Configuration" tab. The pressure setpoint (expressed in inches of water) can be set in the "Regulation setpoint (''H2O)" field.

Note: A "LED" is displayed in the test pressure display, this allows you to see the action of the motor: red, closing the valve, green, opening.

The software will close or open the valve if it is at the stop. When the "Run Stop" command for flow measurement is issued, the valve will open. Then it will be activated by the PID control in order to maintain the pressure value at the indicated setpoint. If a stop is reached then the motor is stopped and restart from a configuration where the test pressure is possible to achieve (e.g. if the valve is closed but the pressure is still too low. If the valve is open but the pressure is too high).