

RPC current versus Oxygen (Air) inlet to gas supply.

Make the test in 904 on known good standard RPC.

Assume gas flow of 10l/h into RPC chamber, high but just for the calculation and it will assist the technical solution .

Oxygen measured in P5 is 100ppm. Lets assume we will be injecting air. Giving 500ppm of 10l/h

$$= 10\text{l/h} \times 500 \times 10\text{E-}6 = 5\text{E-}3 \text{ [l/h]}$$

$$= 5\text{ml/h} = 0.083\text{ml/min}$$

How to measure low flow into RPC gas mix .

Analogue gauges go to 0.1 [l/min] as a minimum flow, so are at the limit.

Vacuum leak simulator valves (SCEM 18.60.04.130.0 296chf) are good as one turn of the valve is 0.01l/s. The dial is graduated so perhaps 1/100th of a turn can be determined which gives 0.0001[l/s]

$$= 0.006 \text{ [l/min]} = 6\text{ml/min} \quad \text{This is 2 orders of magnitude insufficient !}$$

The MFC from Bronkhorst the EL minimum range is 0 – 0.7ml/min so at 10% of full scale we get the desired 0.07ml/min. We have one of these devices but it is calibrated for Argon 5l/hr which is 0.083l/min, 3 orders of magnitude out. Roberto can get Patrick to calibrate this. However we must decide the priority, GIF recirculation or P5.

The Air can be supplied under pressure with either bottled gas from CERN stores or a diaphragm pump from Gas group on loan or we have one in the tent storage.

Ian 25 July 2016