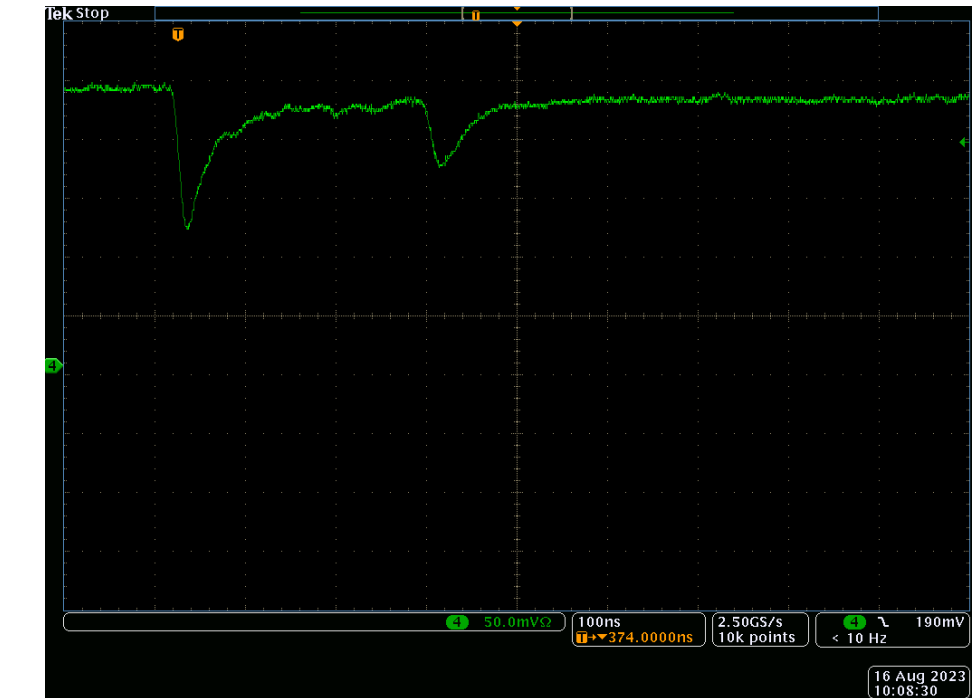


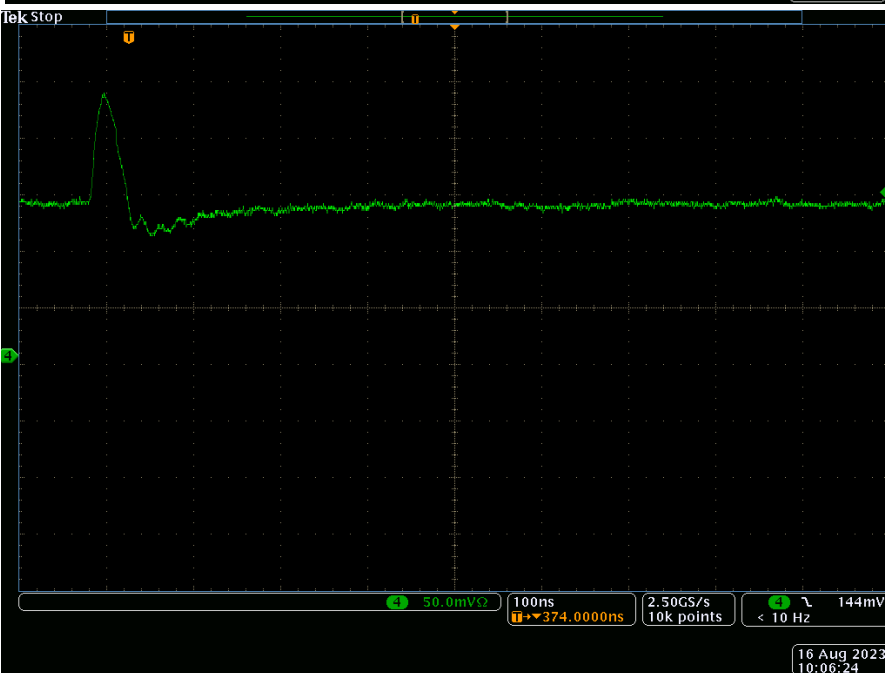
FDC cathode & CDC anode signals

FDC cathodes negative

CDC anodes



FDC cathodes positive



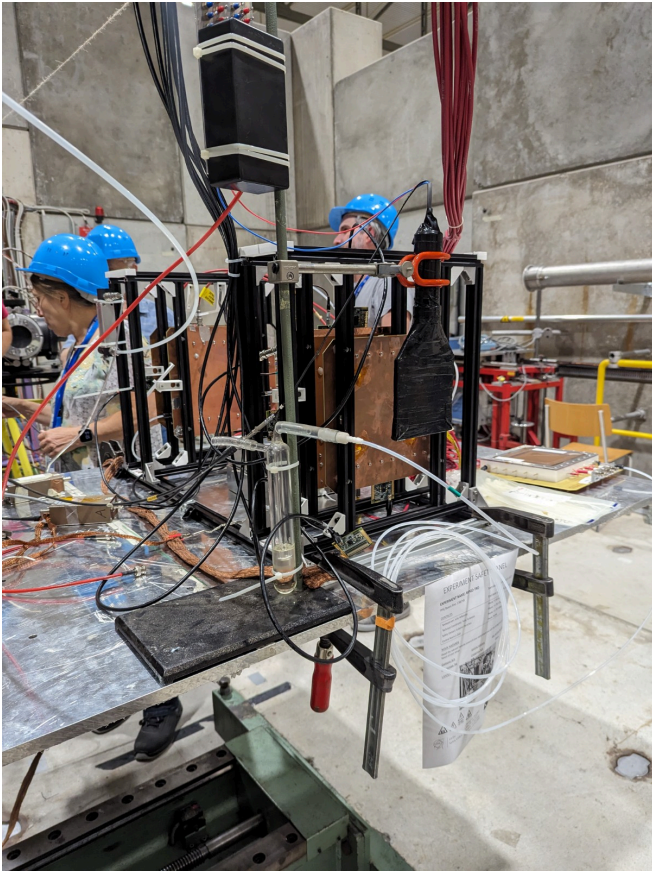
CERN tests



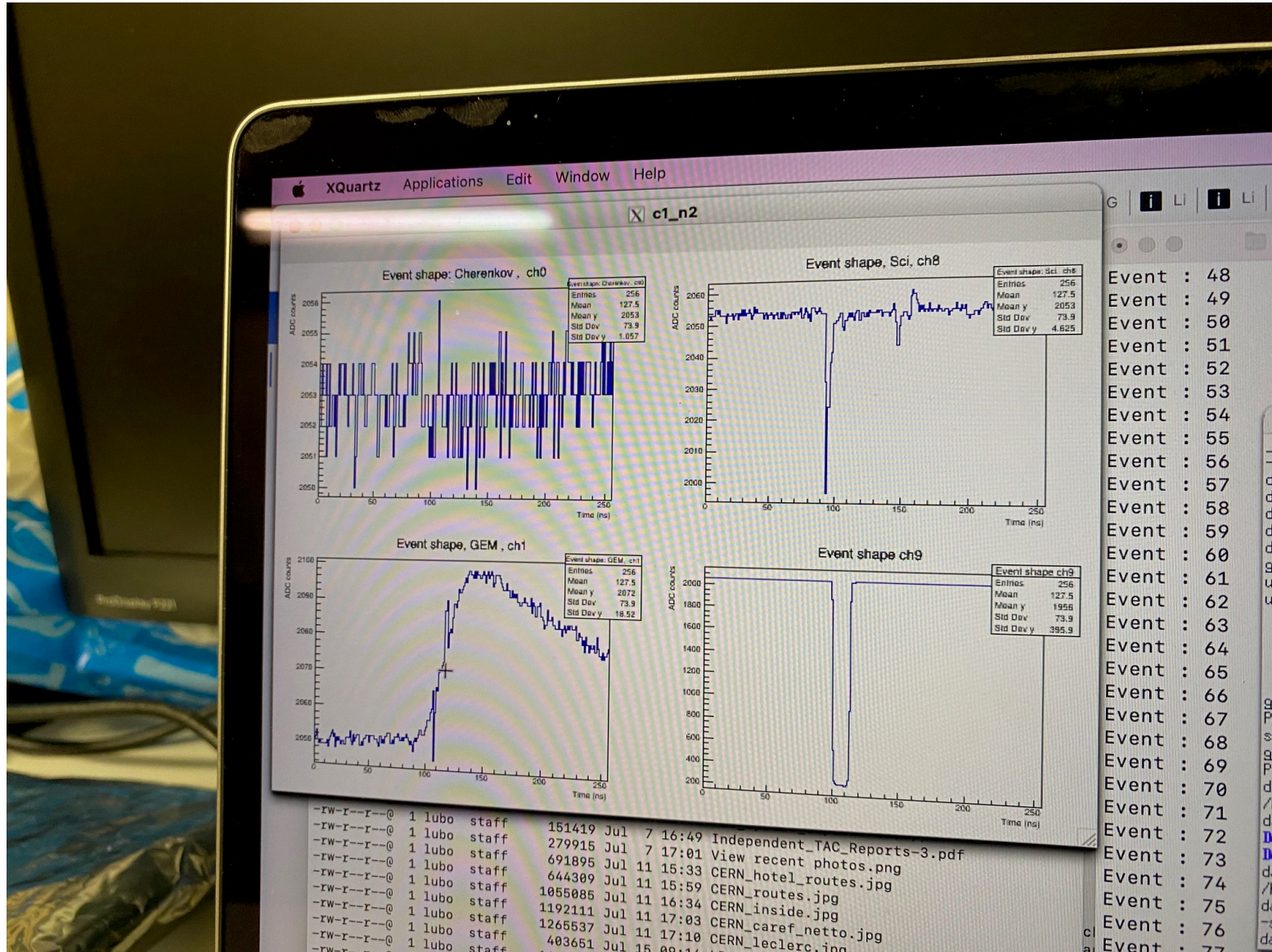
CERN tests



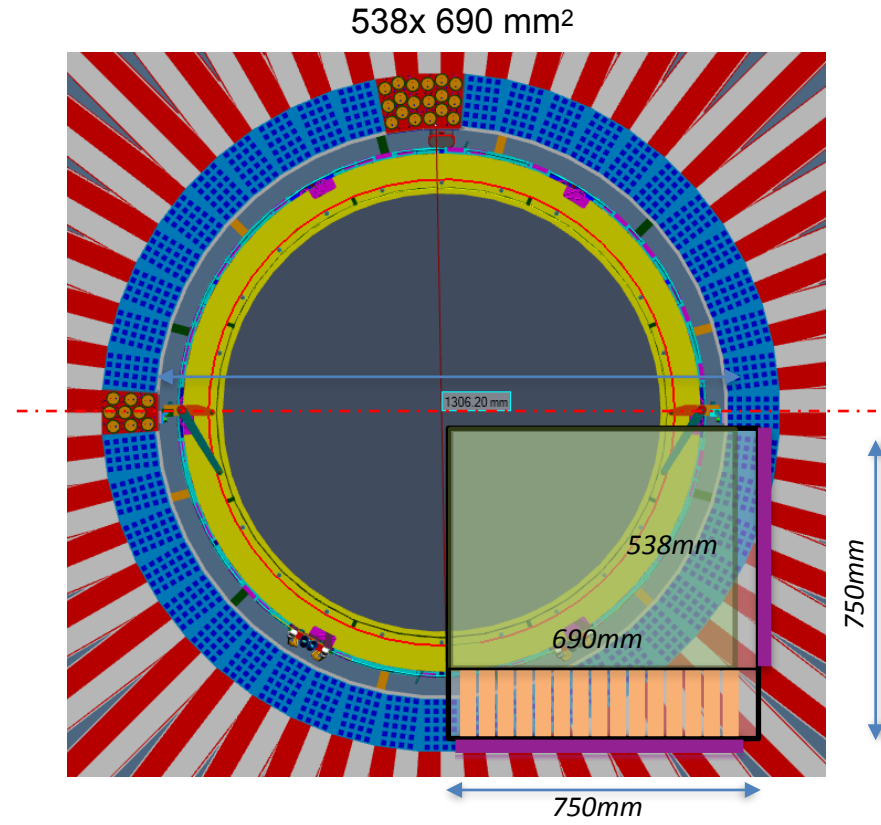
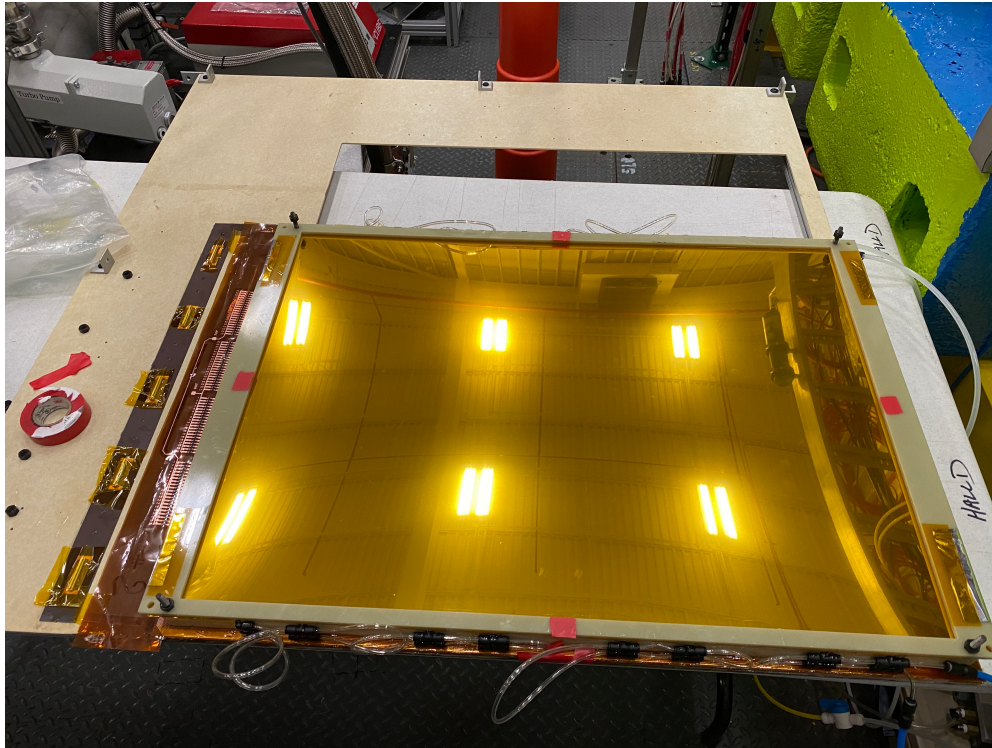
CERN tests



CERN tests

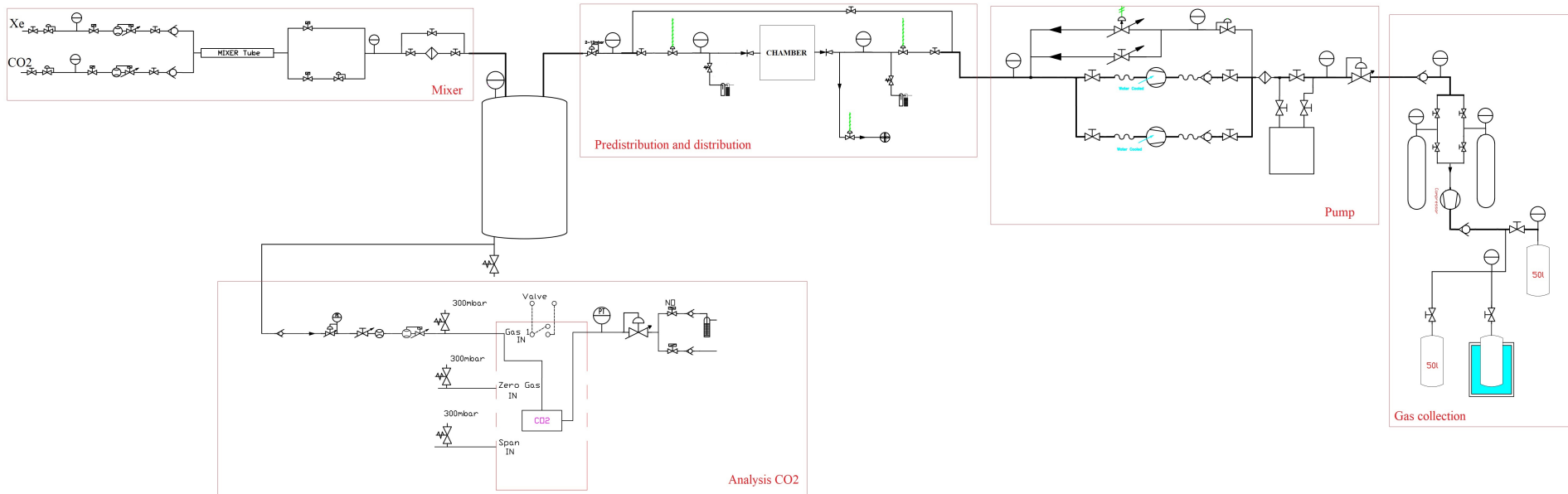


Large-scale GEM-TRD prototype



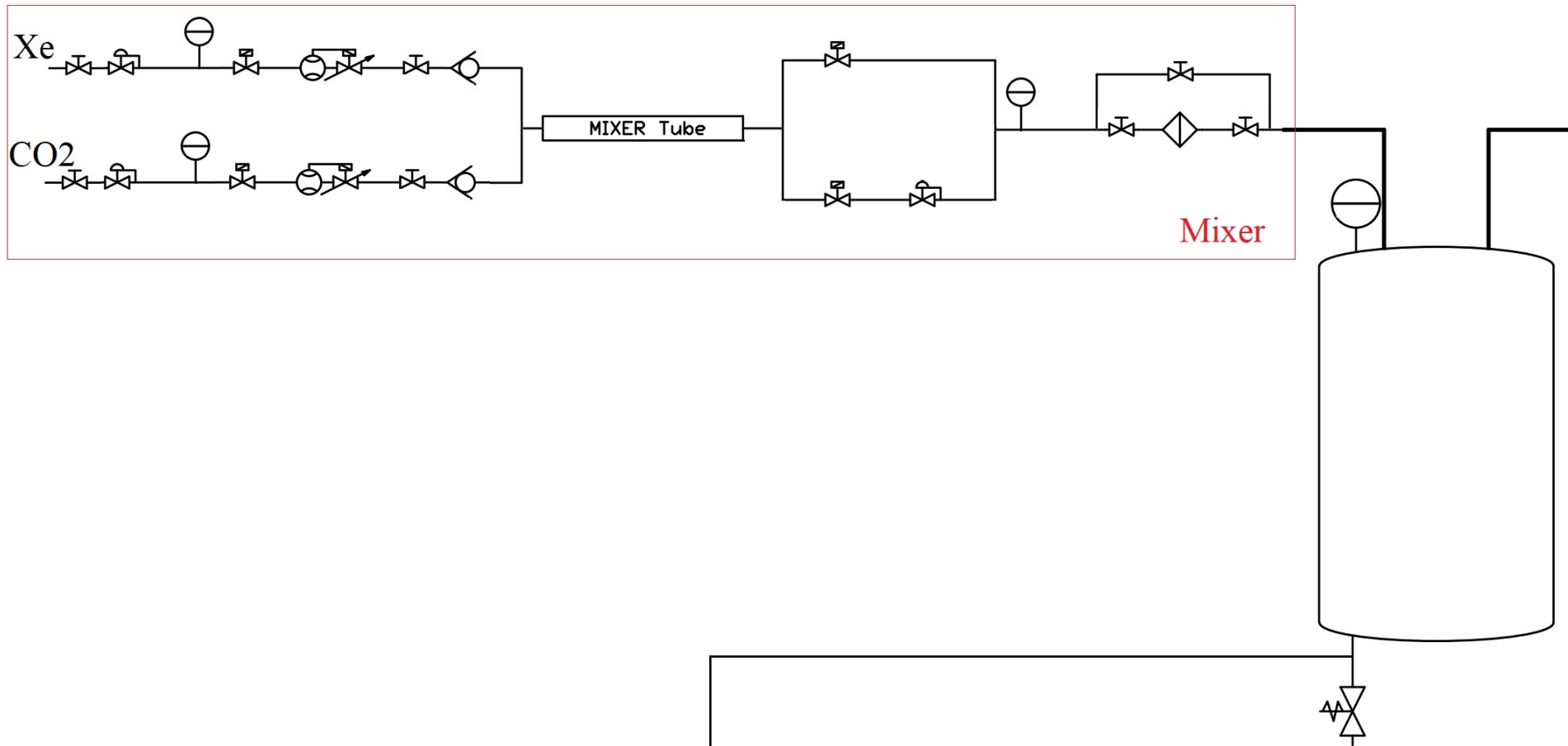
GEM-TRD gas system general parameters

- Collection, purification of Xe gas
- Closed gas system, requires keeping pressure in the detector close to atmospheric: ~ 50 Pa ($\pm 10\%$) above
- Detector gas volume 9 L, flow rate ~ 0.1 L/min
- Subsystems:
 - mixer (exists)
 - pre-distribution and distribution
 - pump
 - Gas collection
 - Purification
 - Gas analysis



GEM-TRD gas subsystems

- Subsystems:
 - mixer (exists?)
 - pre-distribution and distribution
 - pump
 - Gas collection
 - Purification
 - Gas analysis



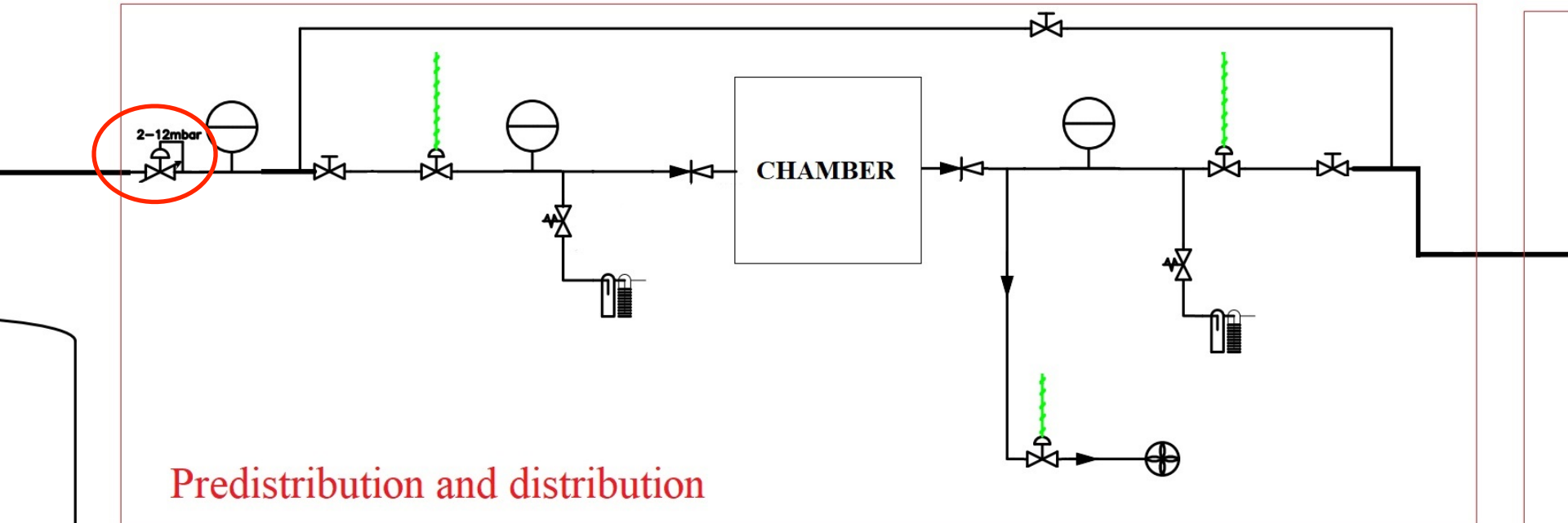
GEM-TRD gas subsystems

- Subsystems:

- mixer (exists?)
- pre-distribution and distribution
- pump
- Gas collection
- Purification
- Gas analysis



Low-pressure regulator



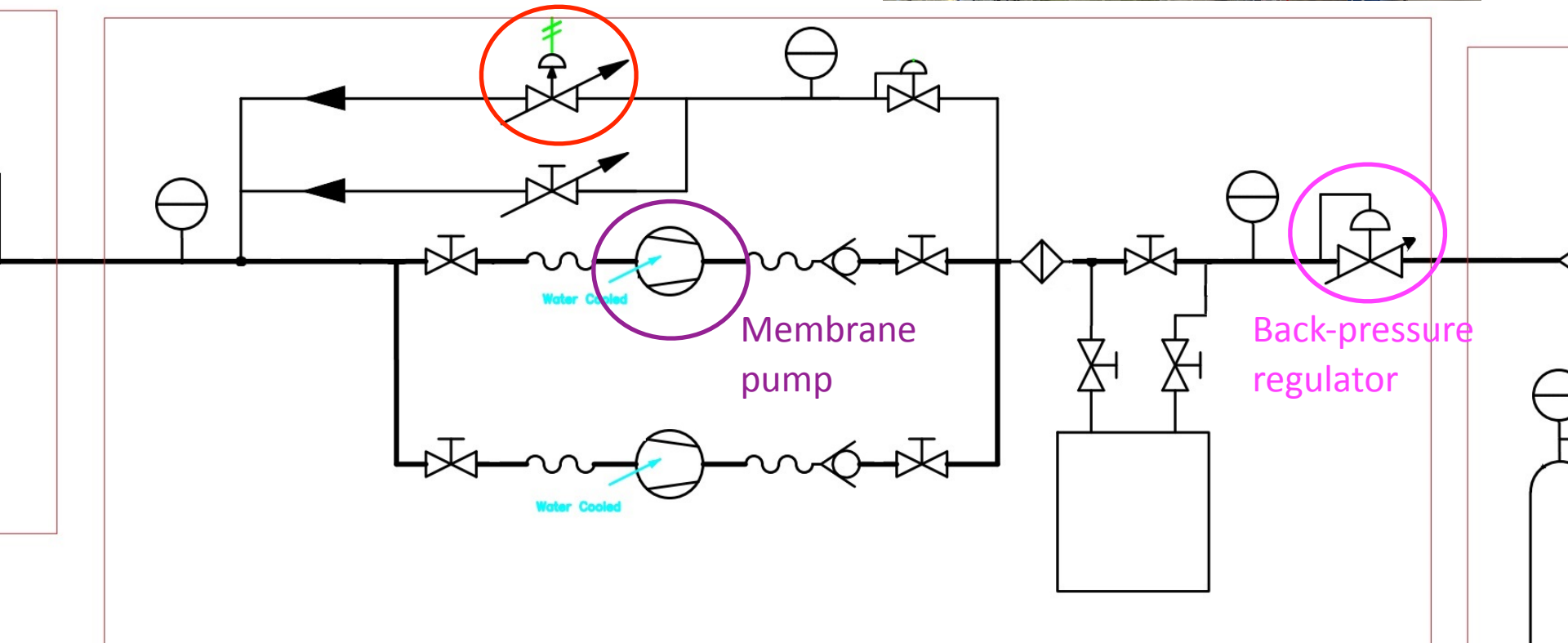
GEM-TRD gas subsystems

- Subsystems:

- mixer (exists?)
- pre-distribution and distribution
- **pump**
- Gas collection
- Purification
- Gas analysis



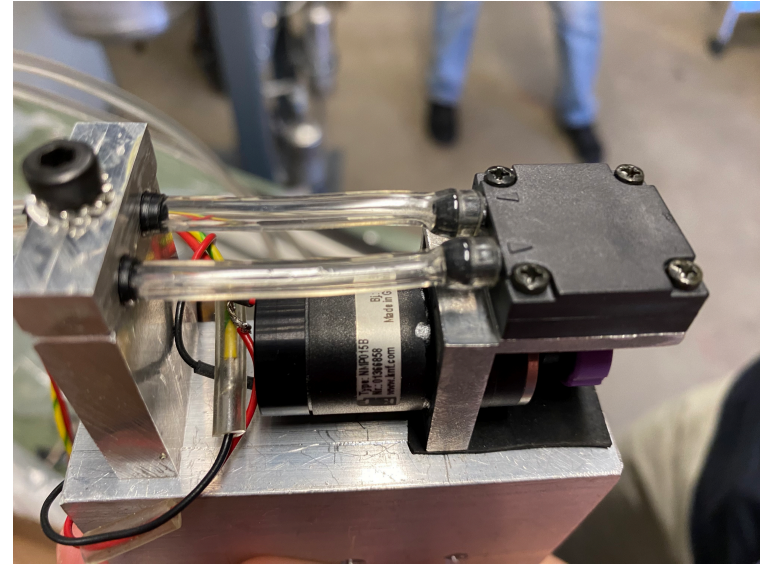
Pneumatic regulation valve (pump by-pass)



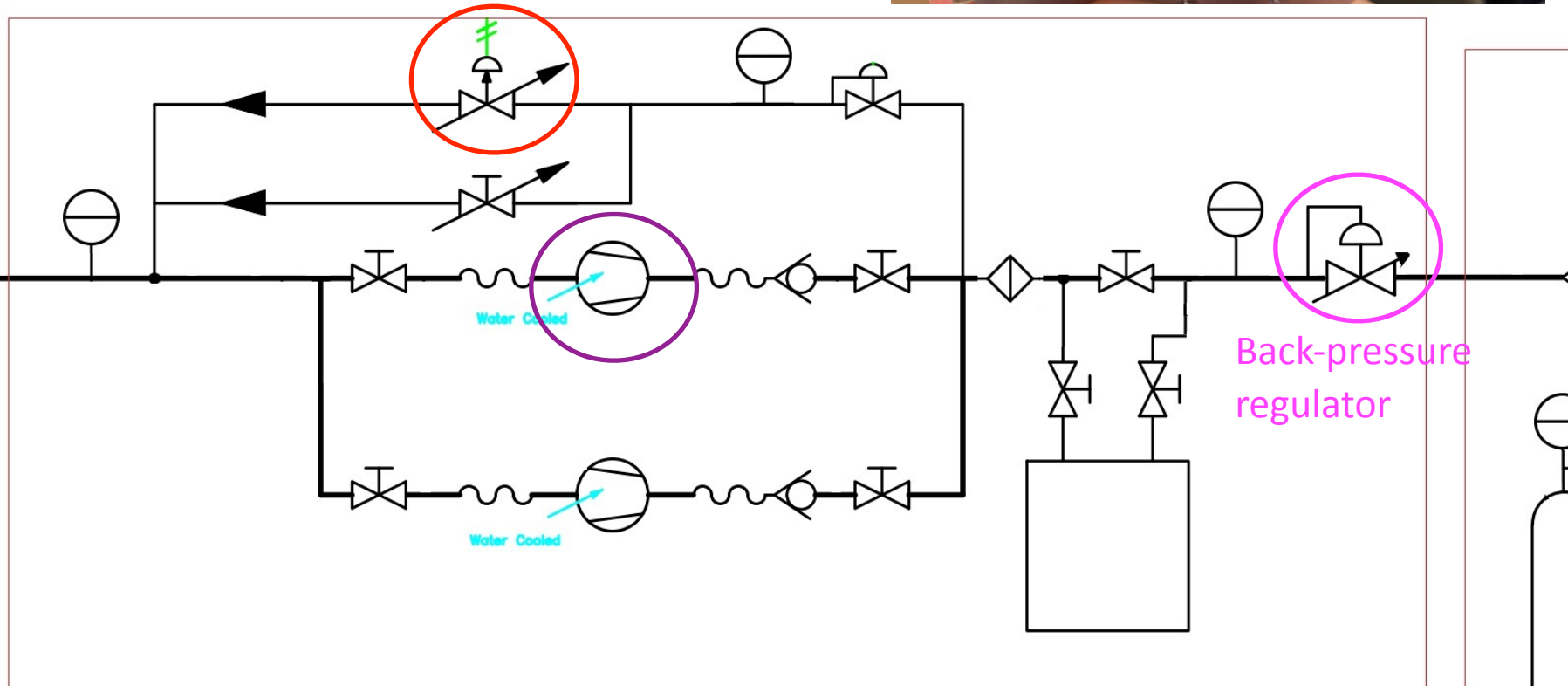
GEM-TRD gas subsystems

- Subsystems:

- mixer (exists?)
- pre-distribution and distribution
- **pump**
- Gas collection
- Purification
- Gas analysis



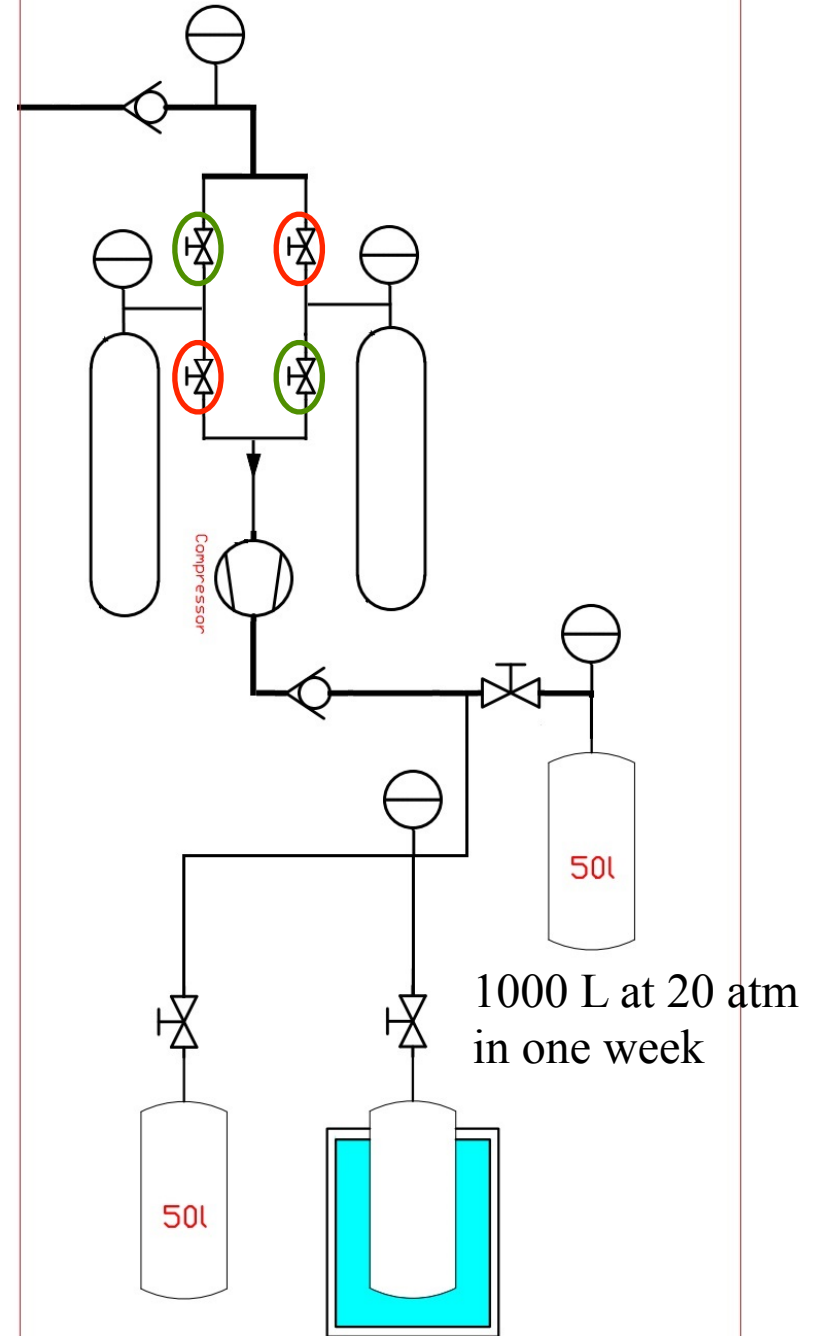
Membrane pump



GEM-TRD gas subsystems

- Subsystems:

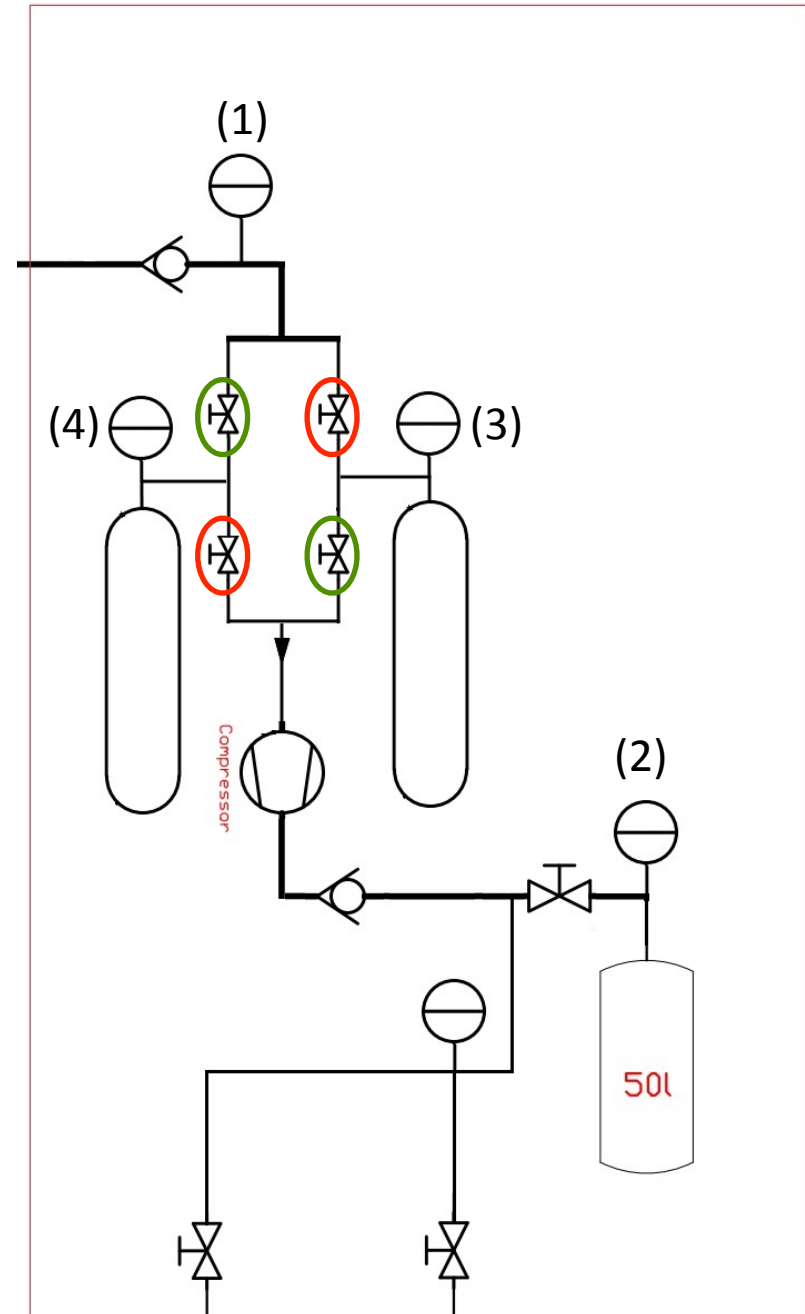
- mixer (exists?)
- pre-distribution and distribution
- pump
- Gas collection
- Purification
- Gas analysis



Gas collection mockup

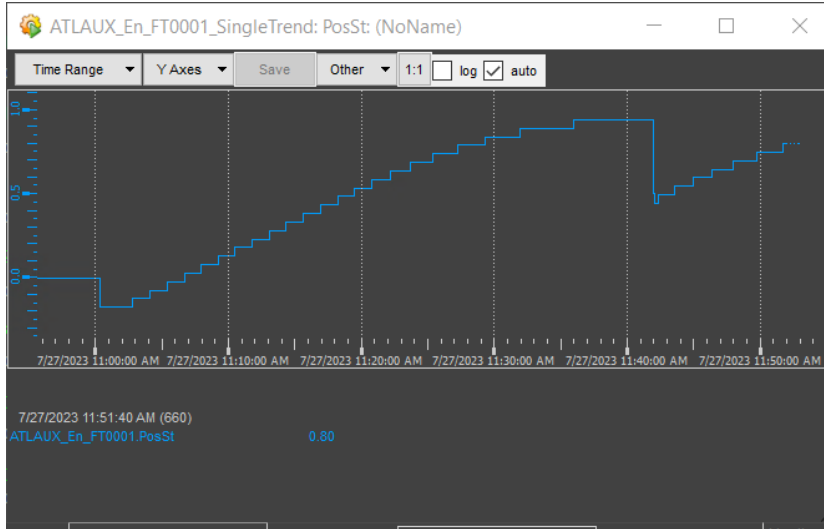
- Subsystems:

- mixer (exists?)
- pre-distribution and distribution
- pump
- Gas collection
- Purification
- Gas analysis

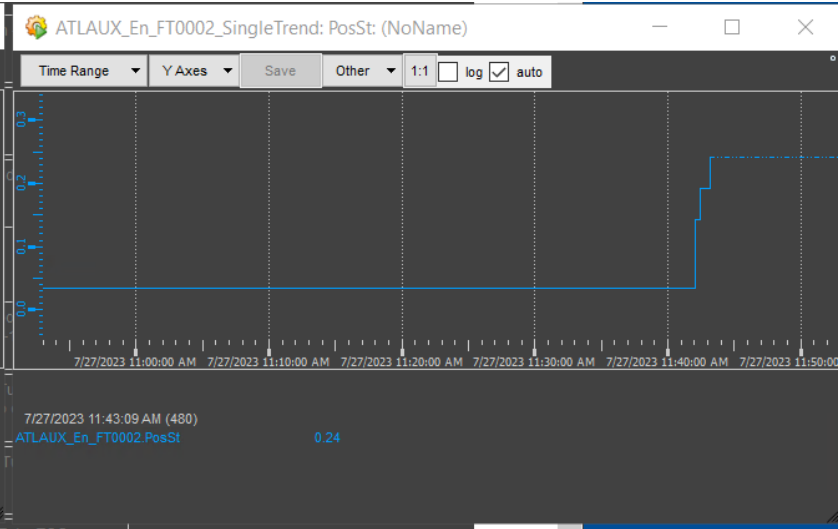


Gas collection mockup

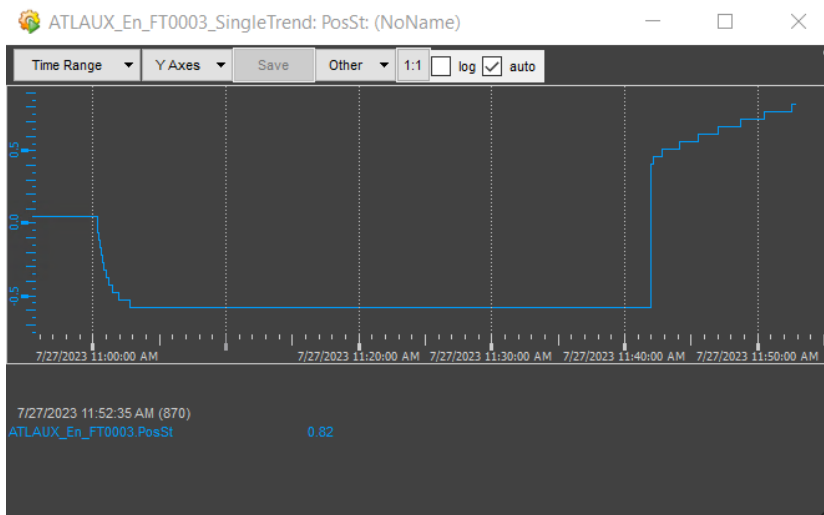
(1)



(2)



(3)



(4)

