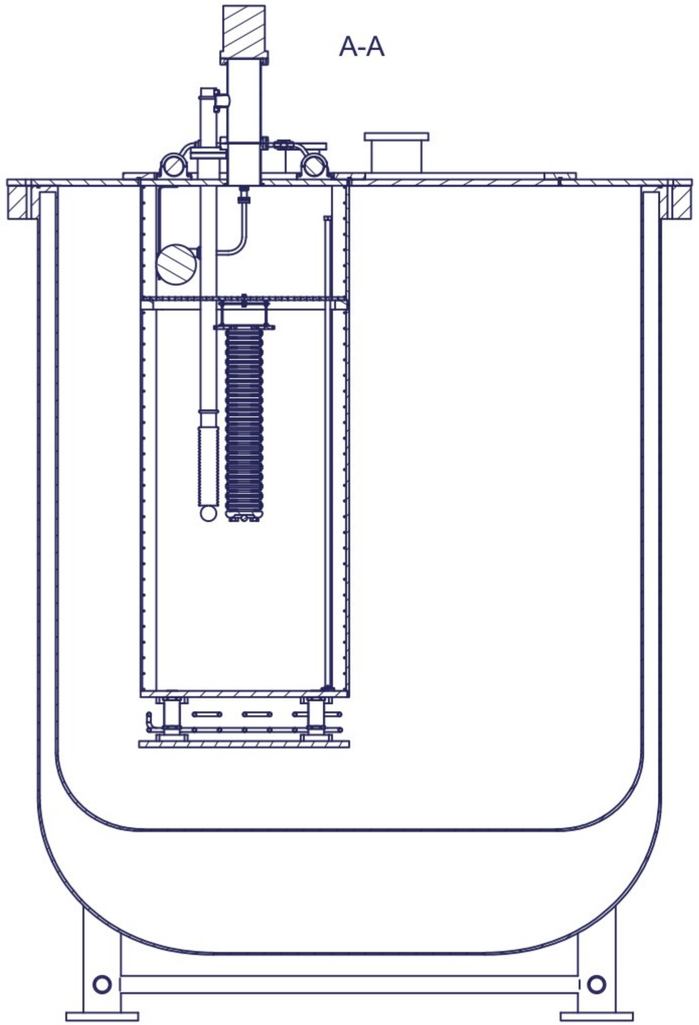
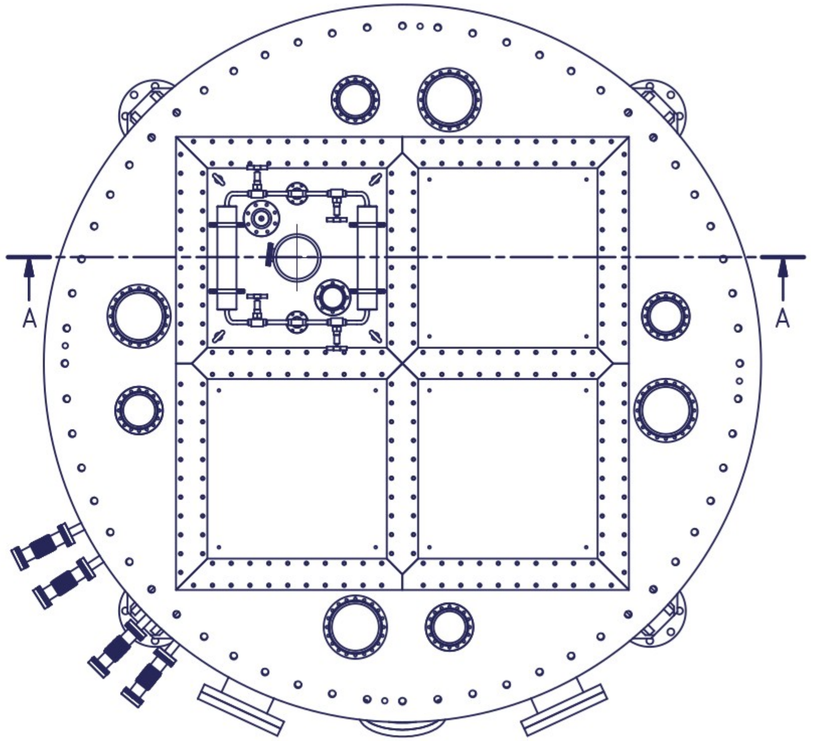
Cryogenic Components ArC 2x2 Purity Demonstrator





.stp file: https://drive.google.com/open?id=1r7-Udy9KrcLOBbCP25dJmi15CpE-ibCZ

Cryostat

6 mm SS inner vessel, 10 mm Al (possibly 1/2”, US made…)

Super insulation: 6 layers of RUAG COOLCAT 2NW 6 µm (https://www.ruag.com/sites/default/files/2016-12/150622_Broschuere_Thermal_Jun2015_single-low.pdf)

Cooling: LN2 cooling lines welded to inner vessel, capable >1000l/day

Vacuum:

Roots roughing pump

Pfeifer Hi Cube turbo pump, maintaining 10^{-6} mbar

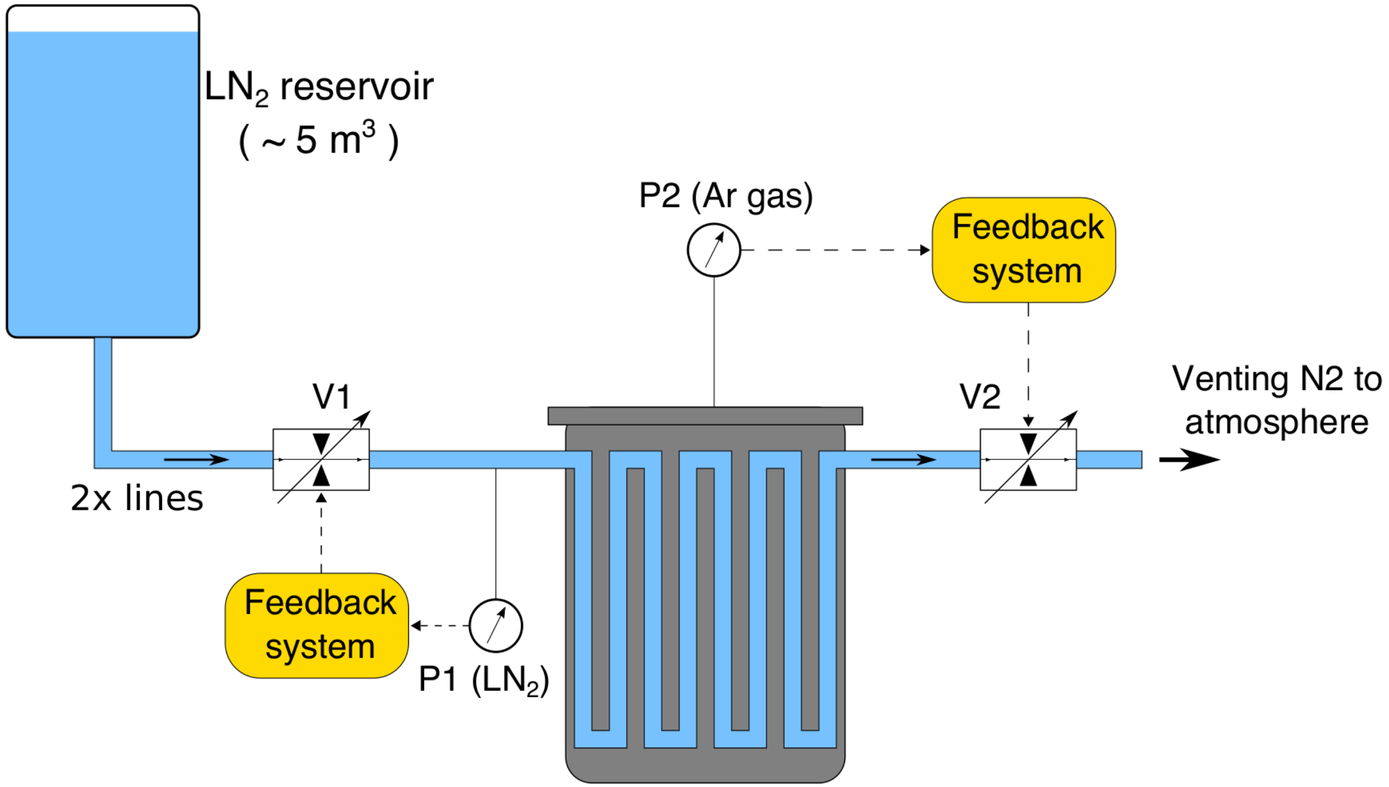
Closed-normal shutoff valve

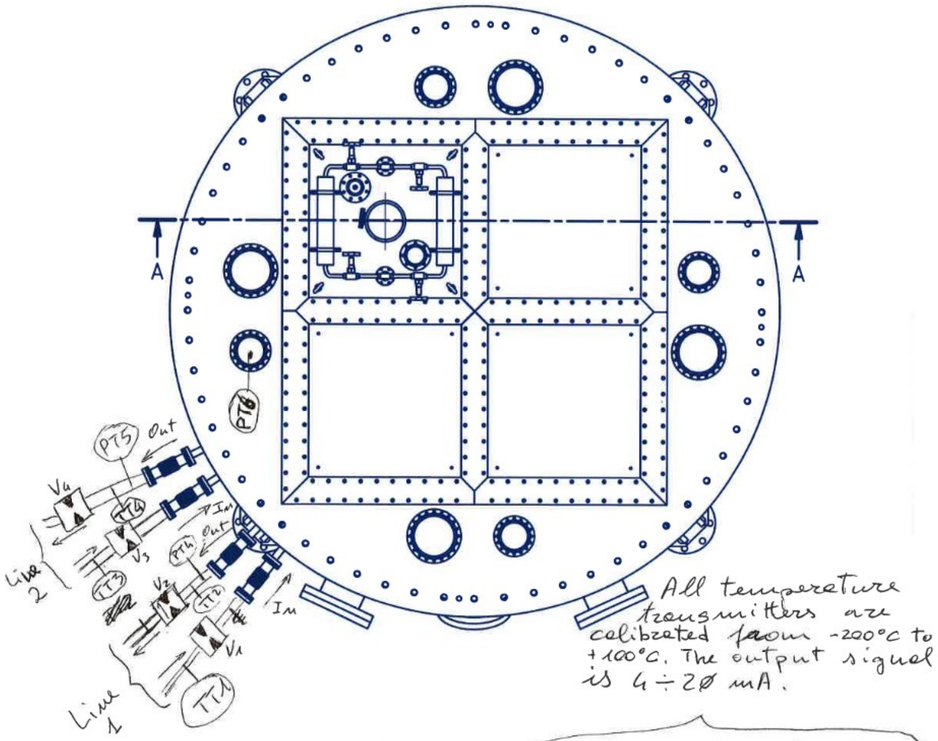
1.2 bar over pressure relief valve

LN2 cooling

V1: pneumatic valve; inlet of LN2 cooling line 1. Normally closed.
V2: pneumatic valve; outlet of LN2 cooling line 1. Normally open.
V3: pneumatic valve: inlet of LN2 cooling line 2. Normally closed.
V4: pneumatic valve; outlet of LN2 cooling line 2. Normally open.

All the valves are controlled by a 4÷20 mA input.
- 4 mA level corresponds to 0% opening
- 20 mA level corresponds to 100% opening.





All temperature transmitters are calibrated from -200°C to +100°C. The output signal is 4÷20 mA.

PT4: pressure of cooling line 1. Sensed downstream, before V2 (absolute 0÷10 bar; output 4÷20 mA).
PT5: pressure of cooling line 2. Sensed downstream, before V4 (absolute 0÷10 bar; output 4÷20 mA)
PT6: pressure inside cryostat of gas Ar (absolute 0÷5 bar; 4÷20 mA)

TT1: temperature of cooling line 1; sensed upstream before V1.
TT2: temperature of cooling line 1 sensed downstream, before V2
TT3: temperature of cooling line 2; sensed upstream, before V3.
TT4: temperature of cooling line 2; sensed downstream, before V4.

Module

2 x LAr filter (activated copper + silica gel)

Barber Nichols submerged pump

2 x Generant hydro-static inlet check valve, ~0 mbar (gravity)

2 x Generant hydro-static outlet check valve, 1 mbar