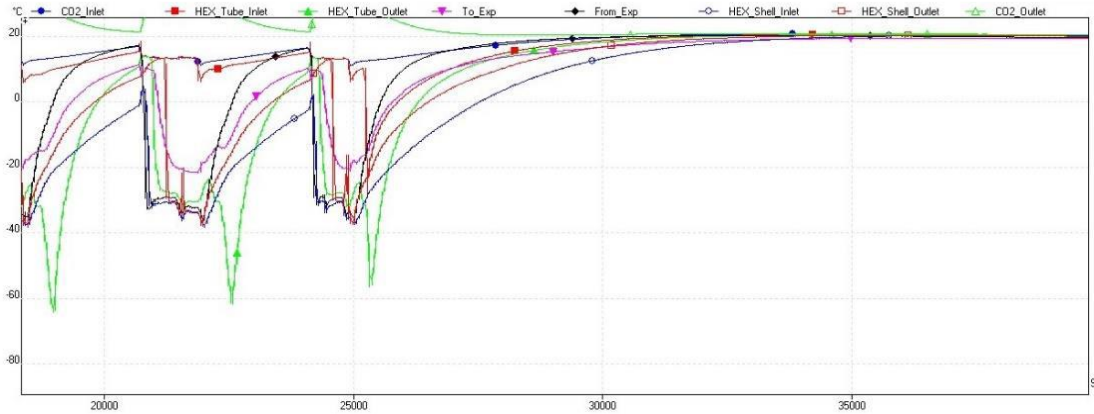


Thermal Cycling Plan in CC

Beka Buadze

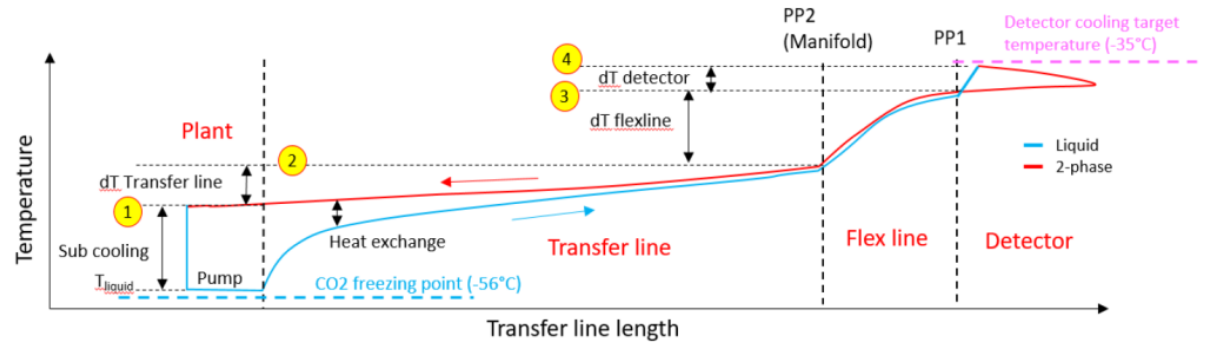
Matteo Beretta

Thermal range and cycles



Minimum cooling temperature during a failure: -55°C
Maximum temperature (integration, transport, ..): $+60^{\circ}\text{C}$

Meaning that assemblies should not suffer damages over the range $-55^{\circ}\text{C} < T < +60^{\circ}\text{C}$ for one cycle



Minimum cooling temperature during operation: -45°C
Thermal cycles during detector life: 100 cycles

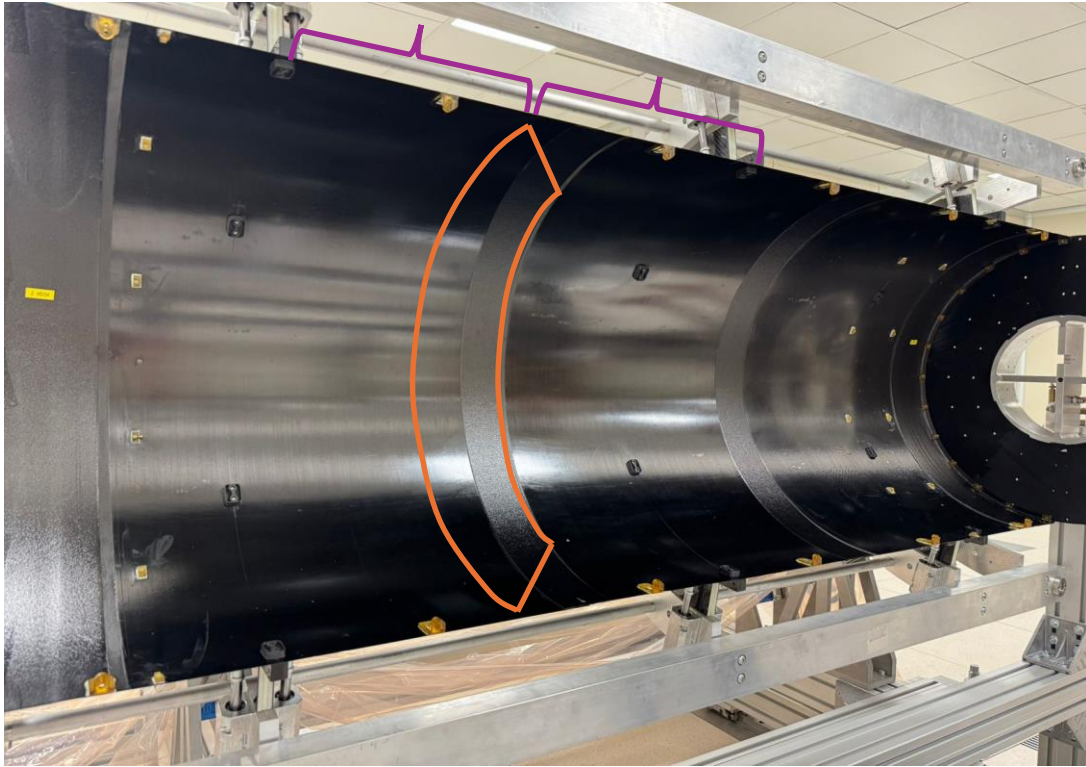
The operational temperature ranges should then be $-45^{\circ}\text{C} < T < 40^{\circ}\text{C}$ for 100 cycles

D.Giugni

During the detector operation, it is thermally stable and thermal deformations do not affect the detector, but during the detector operation, cooling and heating occurs (cycle), which occurs 100 times during the detector life is 100 cycles. The temperature range during the cycle is $-45^{\circ}\text{C} < T < 40^{\circ}\text{C}$ so thermal deformations caused by thermal expansion can be critical for the proper functioning of the detector.

Preparation for the Test

- Our colleague from Milan Mauro will perform a modeling of the half-shell to understand where to place the sensors for the best measurement.
- Mauro suggests putting the half-rings in the half-shell so that it is between the holders



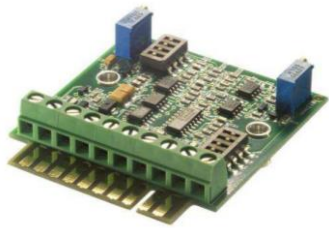
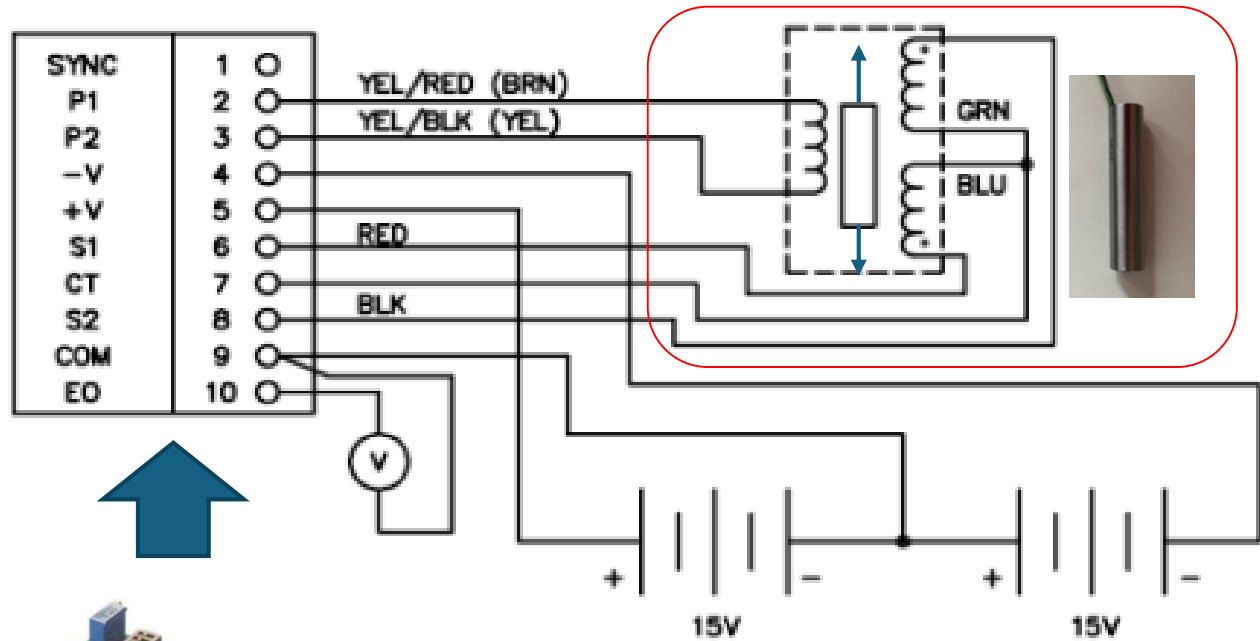
1. The idea is to put lvdt sensors on the Half-shell, each half-shell 9 sensor
2. Matteo have designed holder for Sensor
3. Also testing the performance of the lvdt sensor in the small climate chamber



- We want to 3D print some parts to fit the half rings.

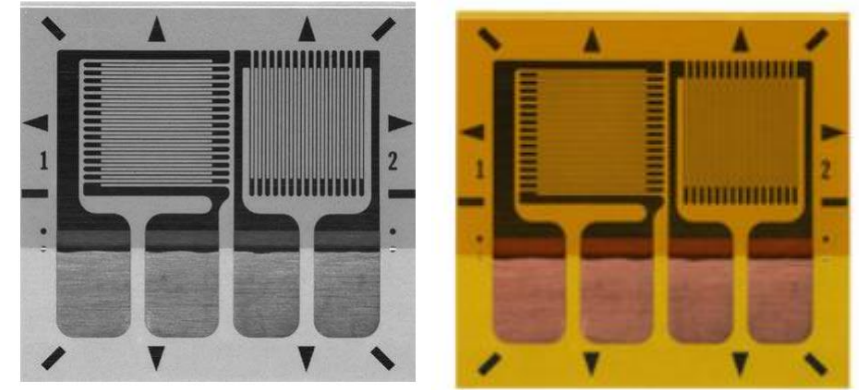
SENSORS

PCA-375 Linear Sensor "lvdt"



LVM-110
LVDT Signal Conditioning Module

Strain Gages



- Create a sensor reading electronics
- Where to put (Mauro)
- For compensation thermal affects, we use 2 sensors, one sensor fixed on the surface and the other sensor will be free (Marianna, Matteo)

All the sensors will be controlled by Grafana.(Thanks, Zaza Chubindze)

summary

Plans for the near future

- create sensors riding electronica
- Test the sensors in a small climate chamber
- 3D printing holders for half-shell
- Explore the possibility of using other types of sensors

Thank you for your attention