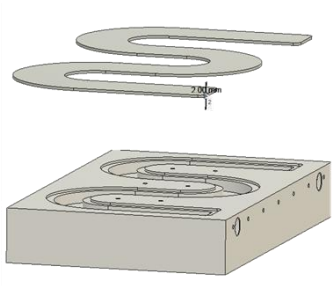
Backward Ecal / EEEMCal

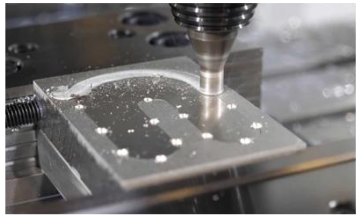
Triple I Engineering Meeting Update (26/01/2025)

Julien Bettane

Prototype External structure – FSW

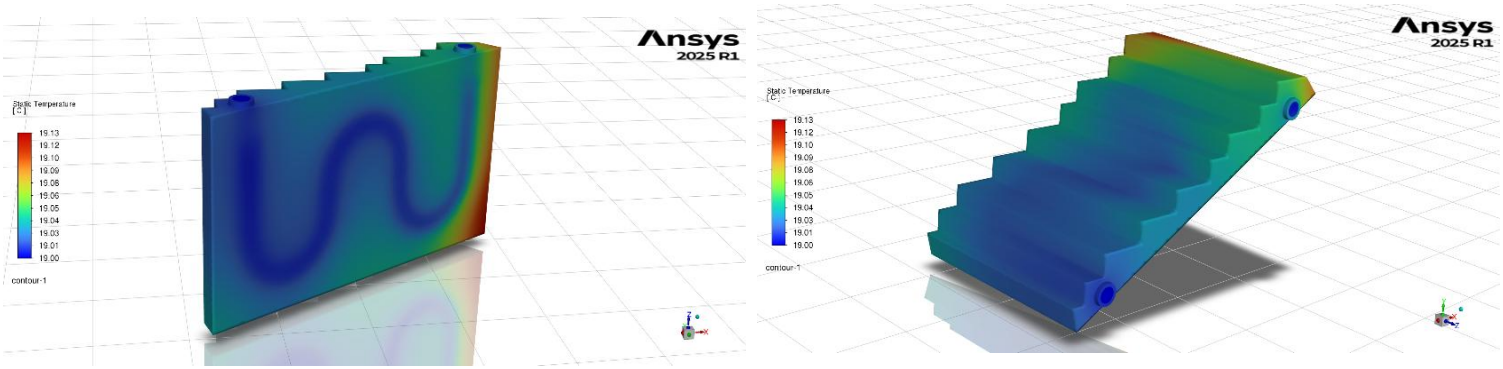


Raw bloc machined

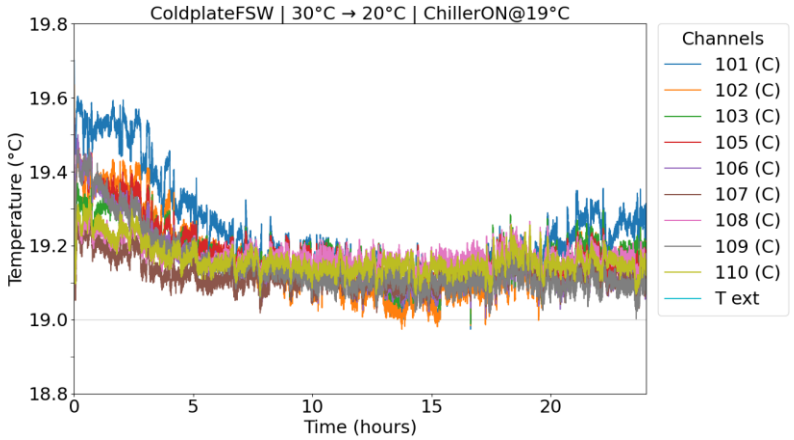


FSW

Dimensional inspection
→ OK (< 0,1 mm)

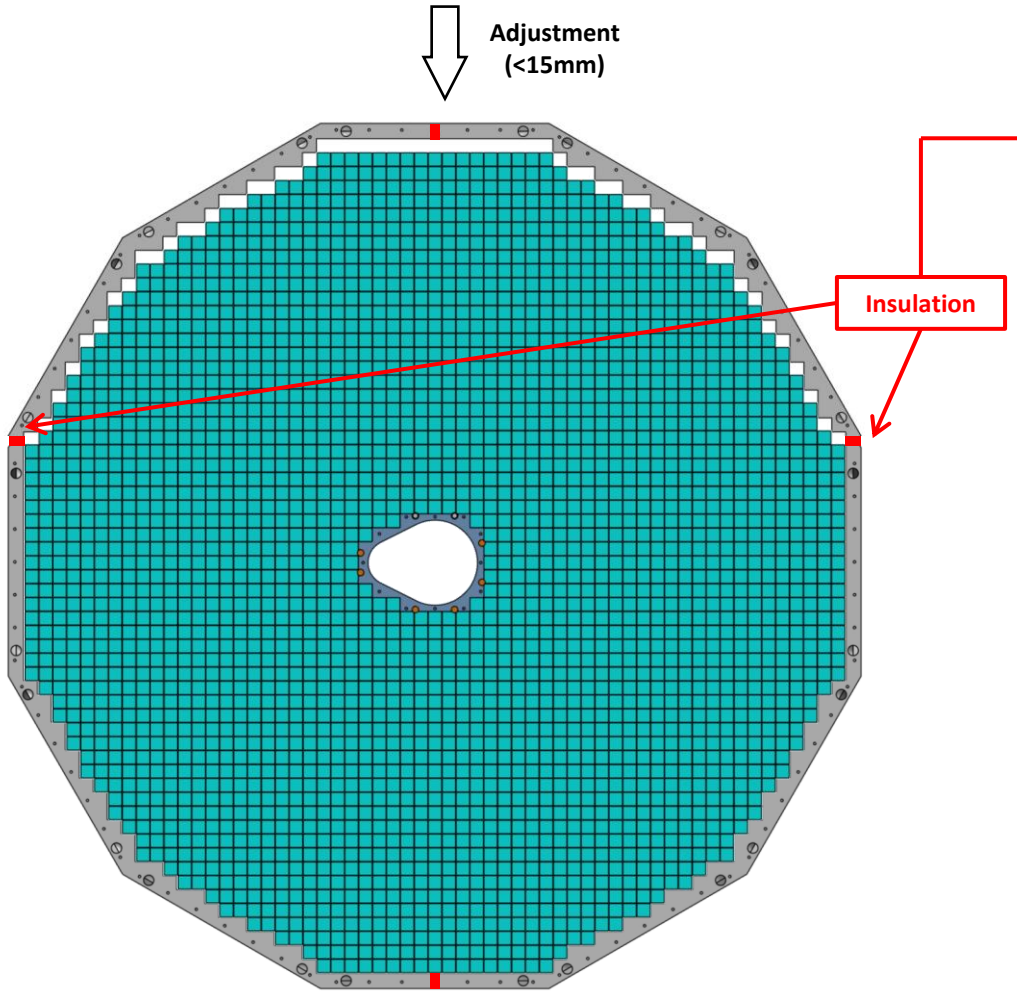


Fluent simulation (Water= 19°C / T ext = 23°C)



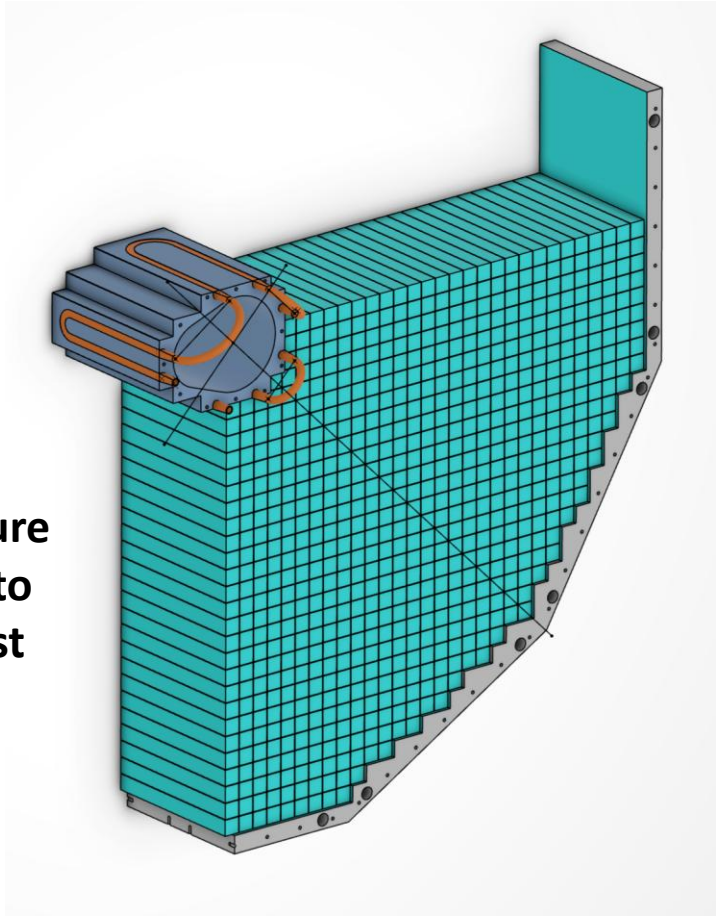
Thermal sensors on the cold plate

Prototype External structure – FSW

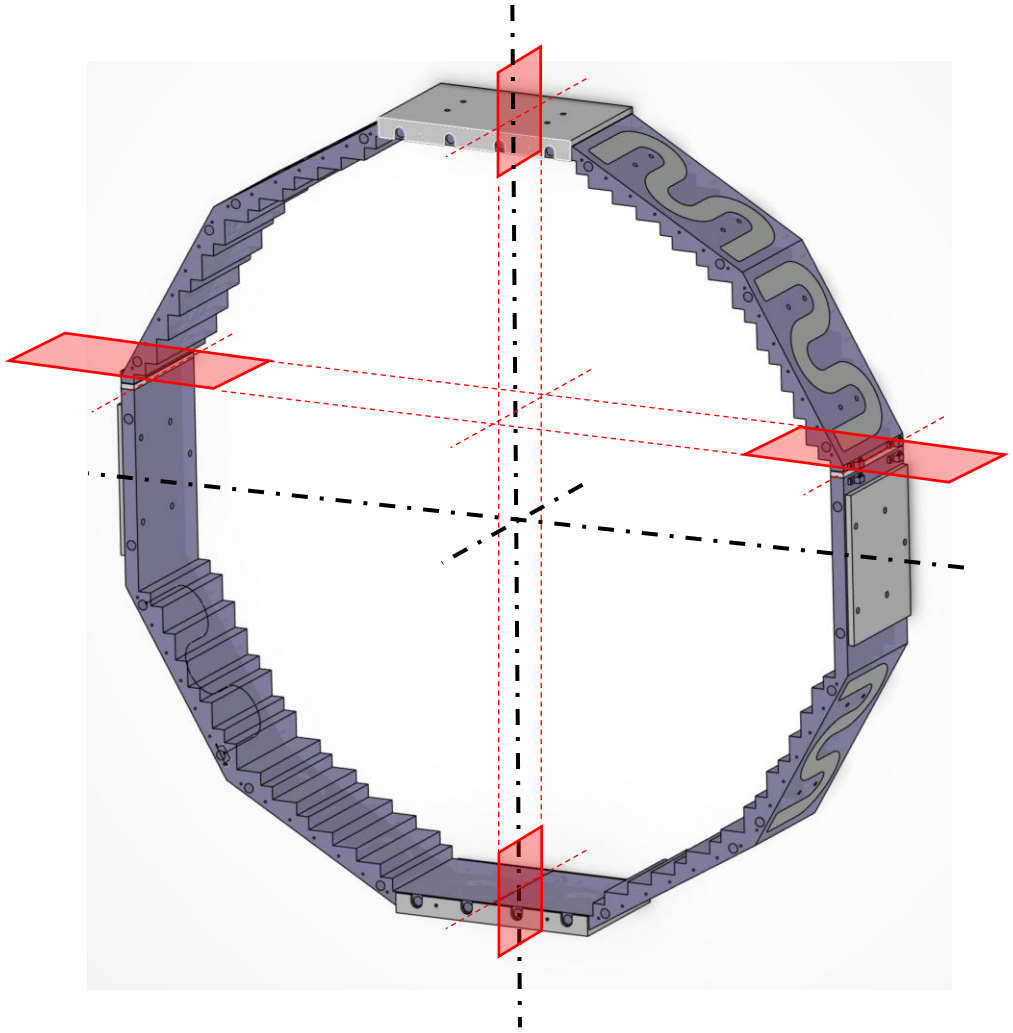


- External structure not machined in one block
  - *Better for the Eddy current*
  - *Better for the contact with crystals on the top (cooling)*
- Better for the adjustments

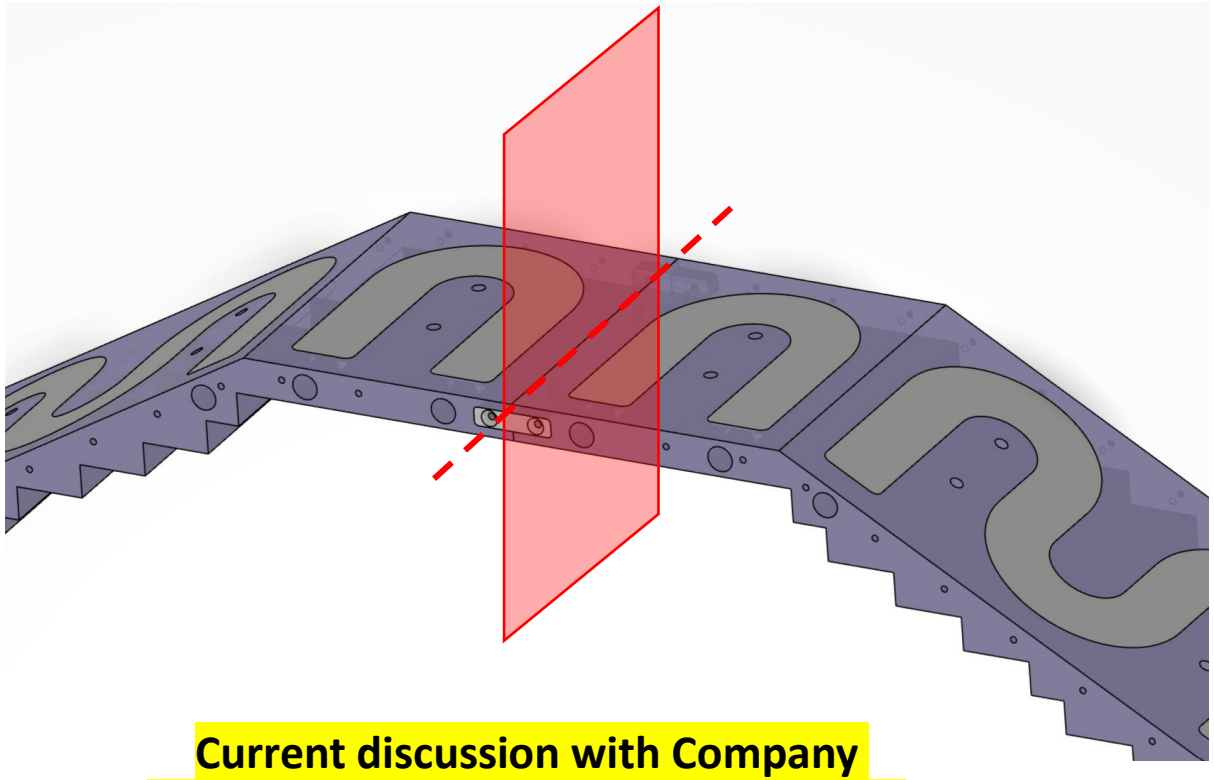
External structure in four blocks to reduce the cost



Prototype External structure – FSW

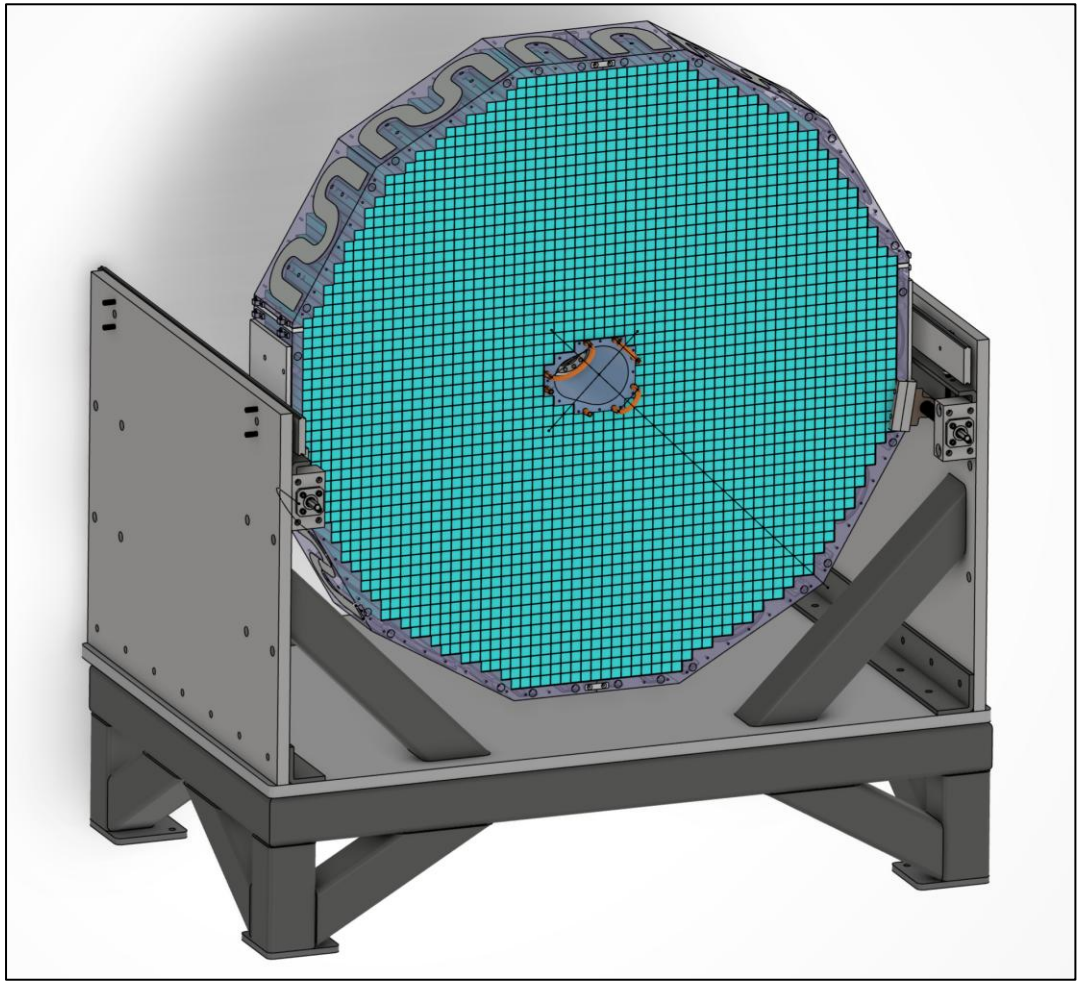


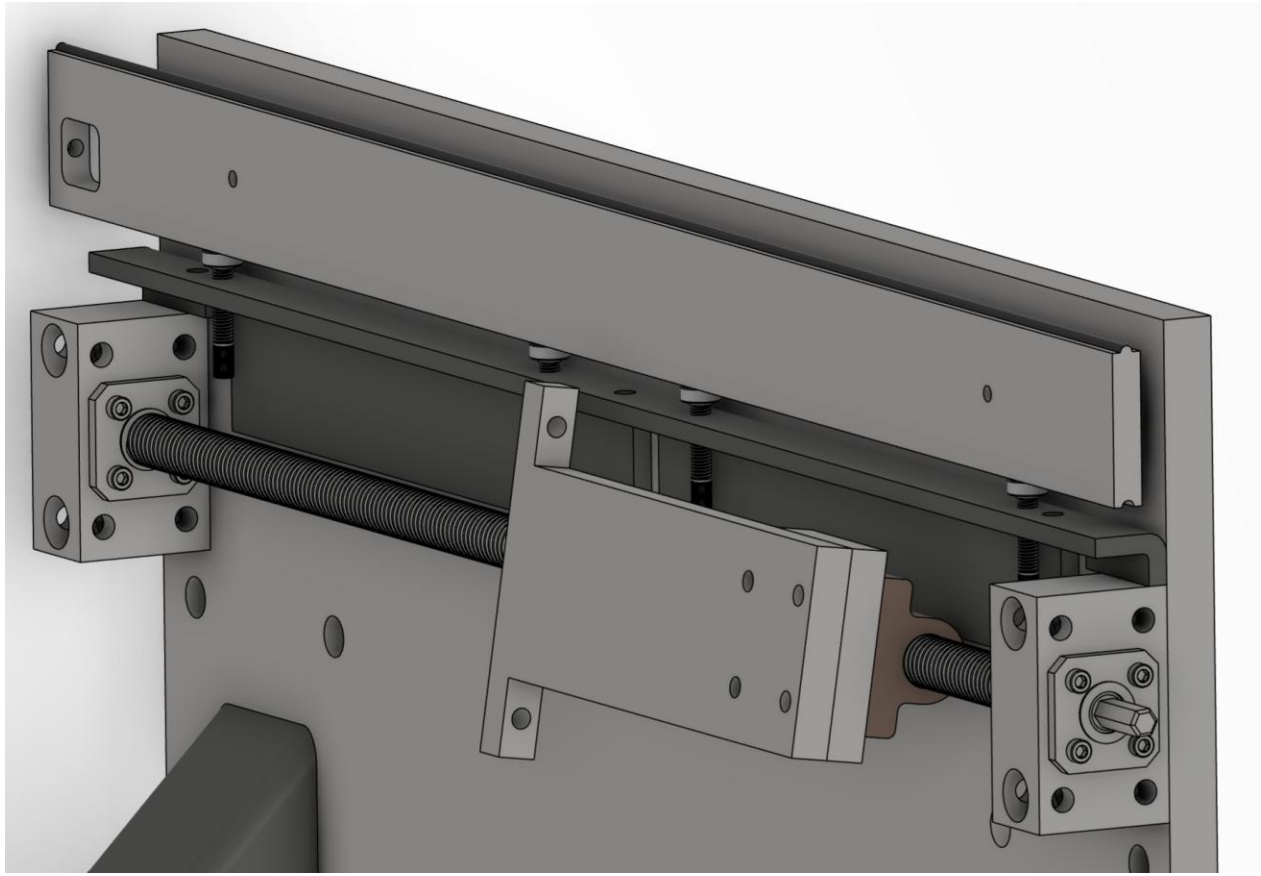
Mechanical structure with cover plate (5mm) on the top and the bottom → FEA in progress



Current discussion with Company (quotes with other companies planed)

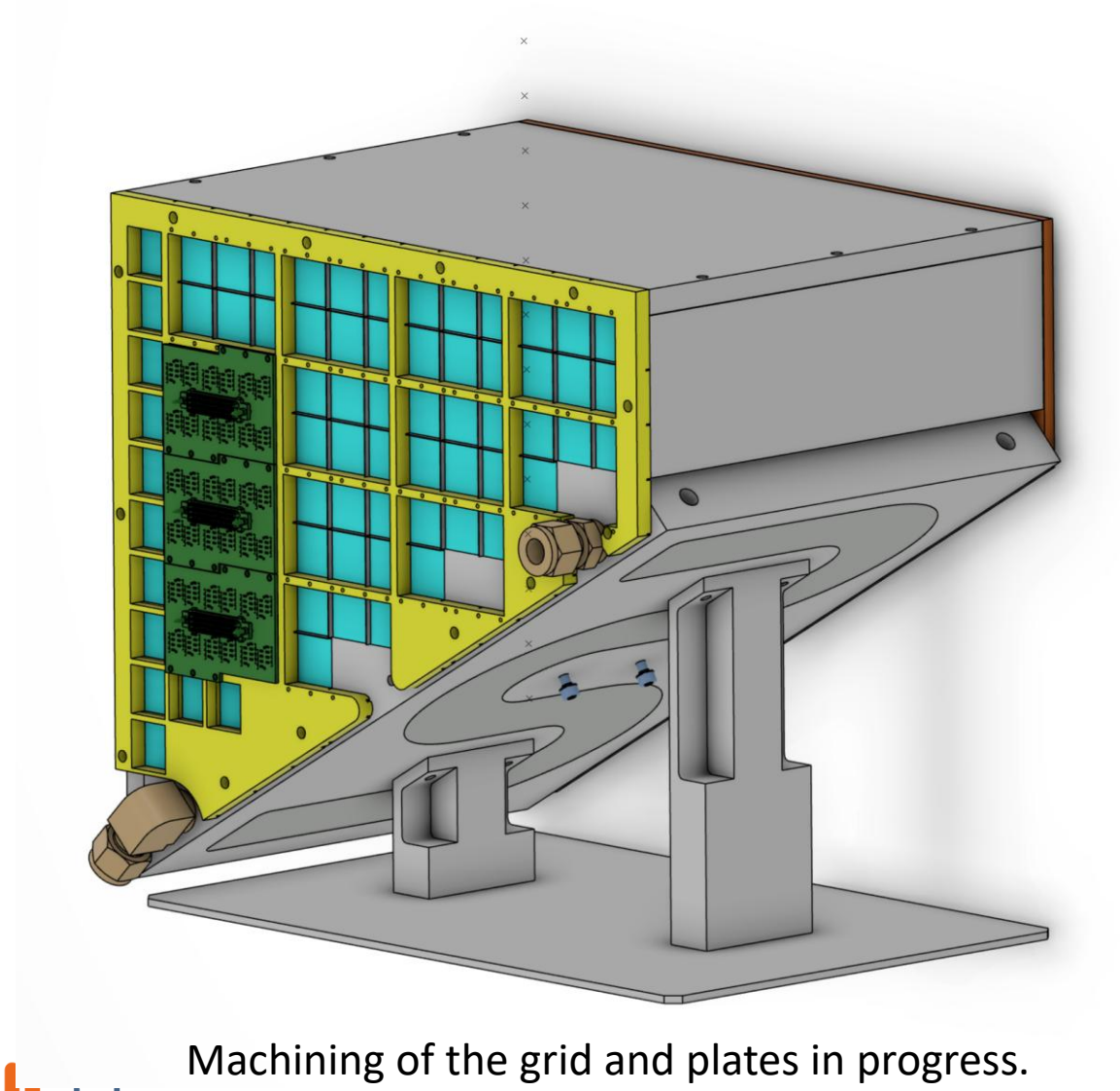
Tooling assembly

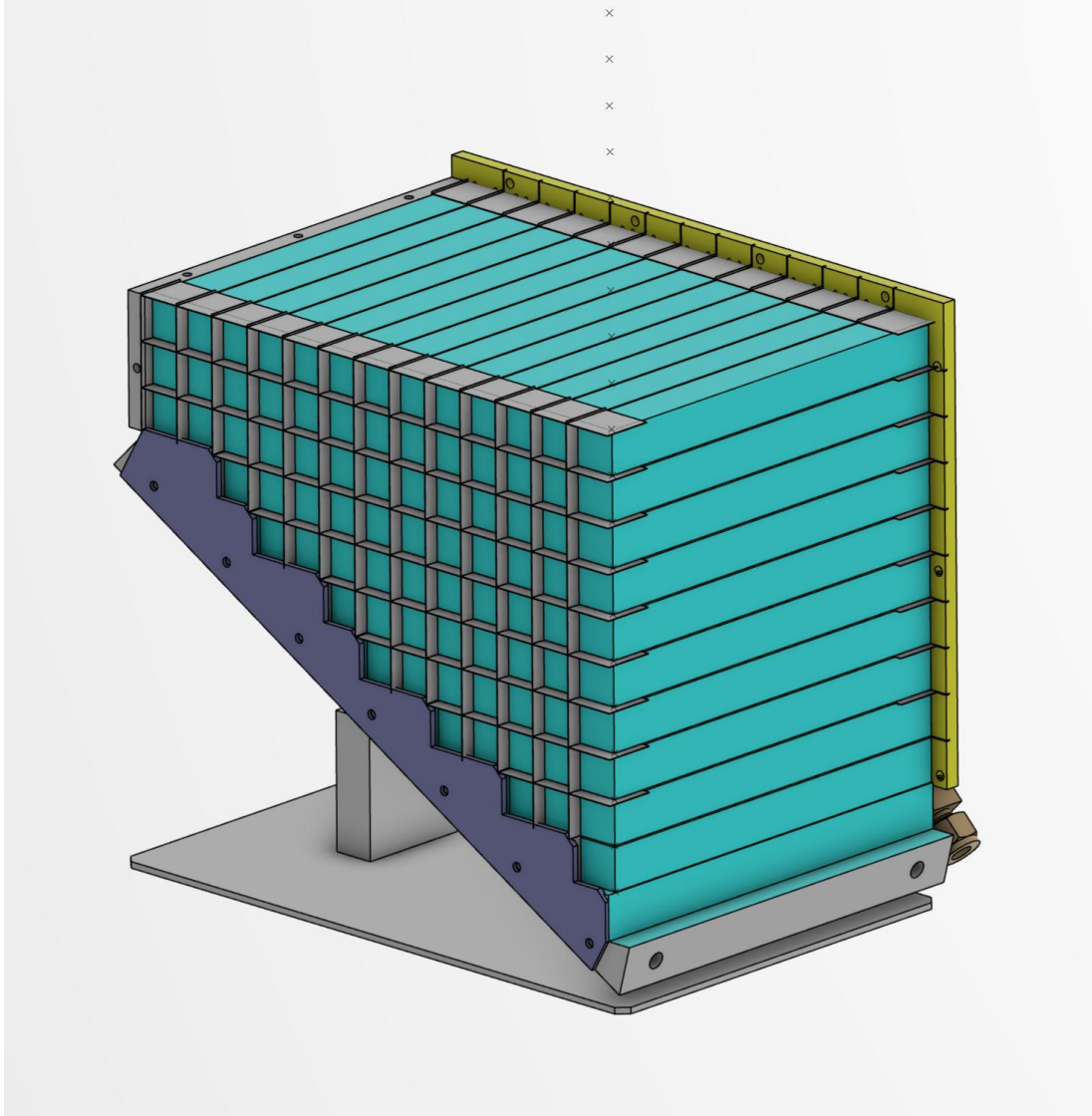




Design of the tooling in progress. How to fasten and how it works ?

Prototype 1/12 (one twelfth)



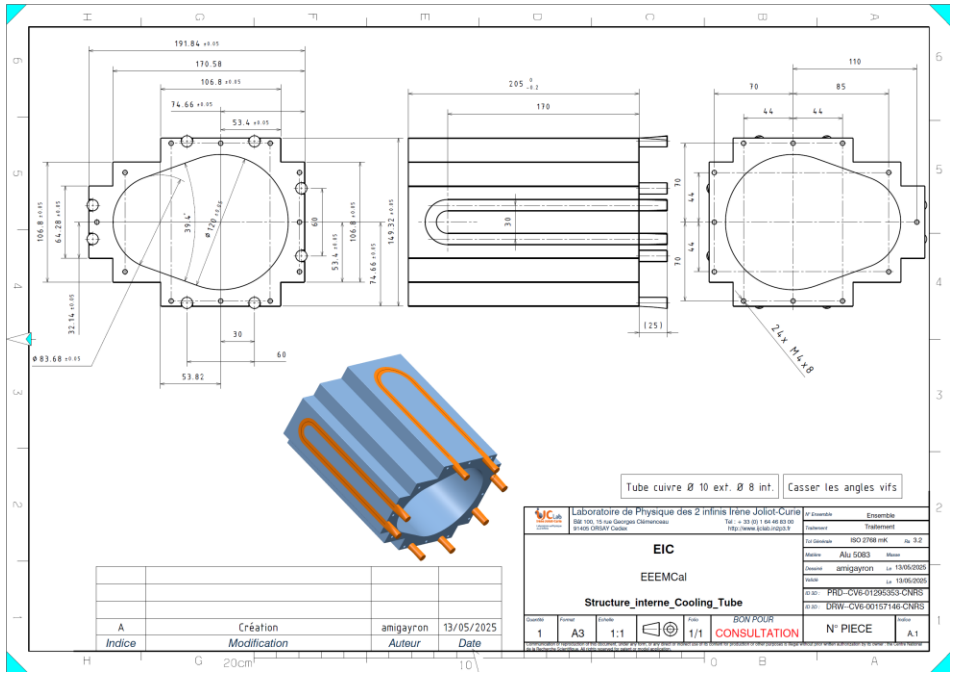


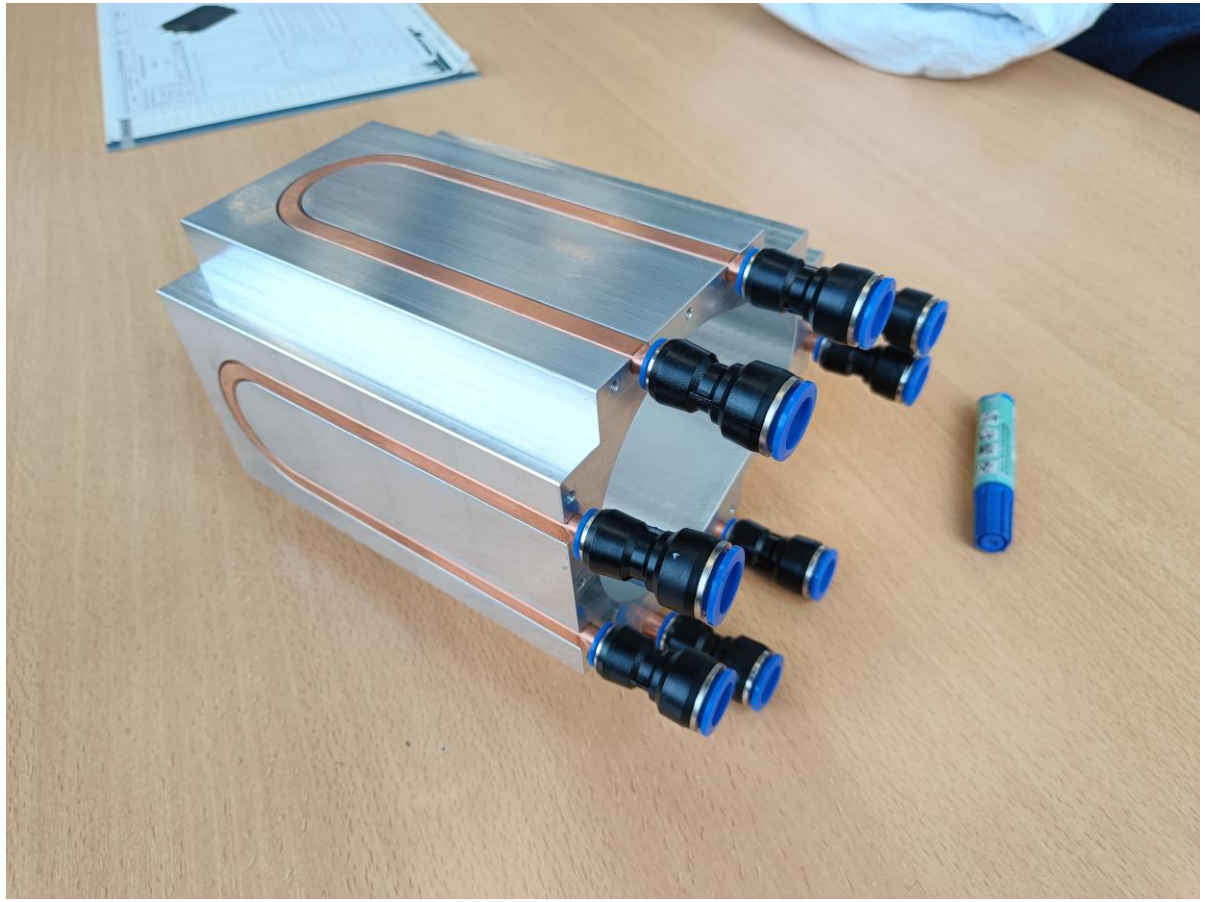
Machining of the grid and plates in progress.
Design of the cooling in progress.

BACKUP SLIDES

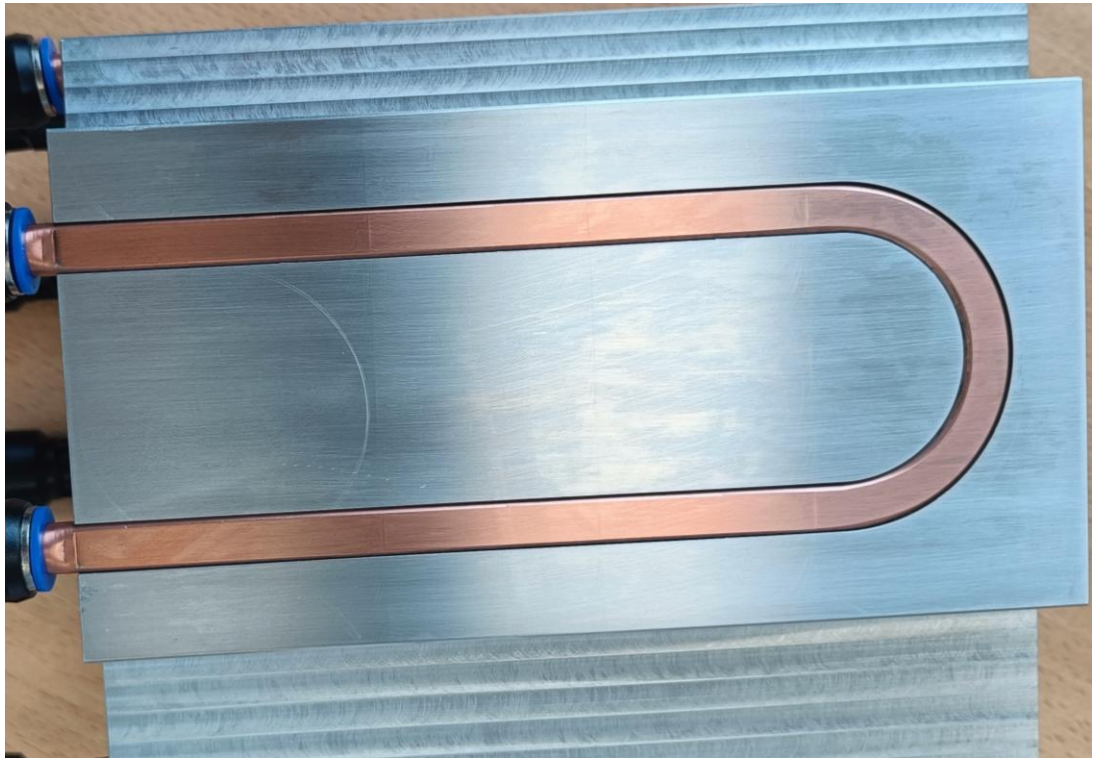
Prototype Internal structure – Copper tubes

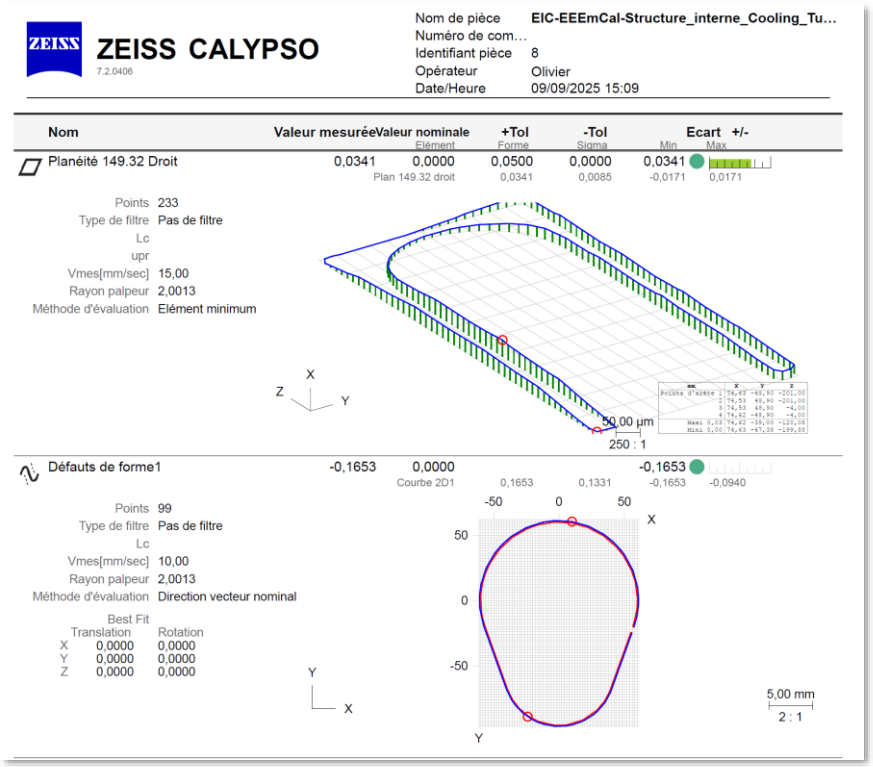
- Prototype with copper tubes
- Internal structure received
- Clearance with beam pipe = 11 mm
- Thermal tests ongoing





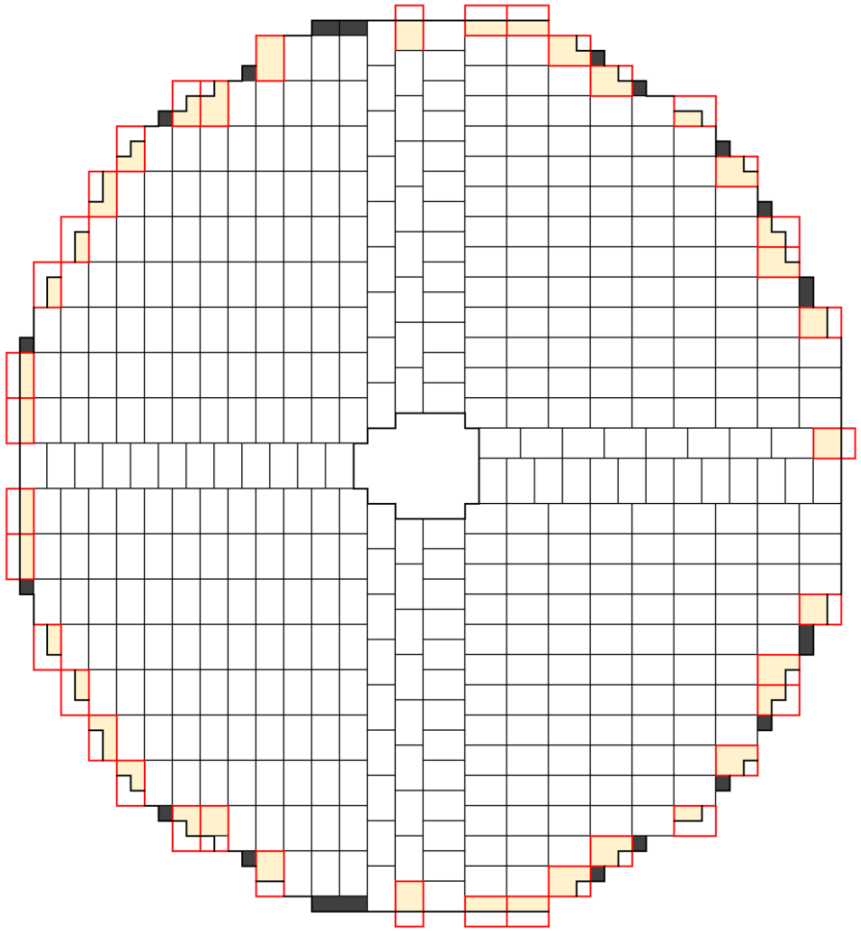
Prototype Internal structure – Copper tubes



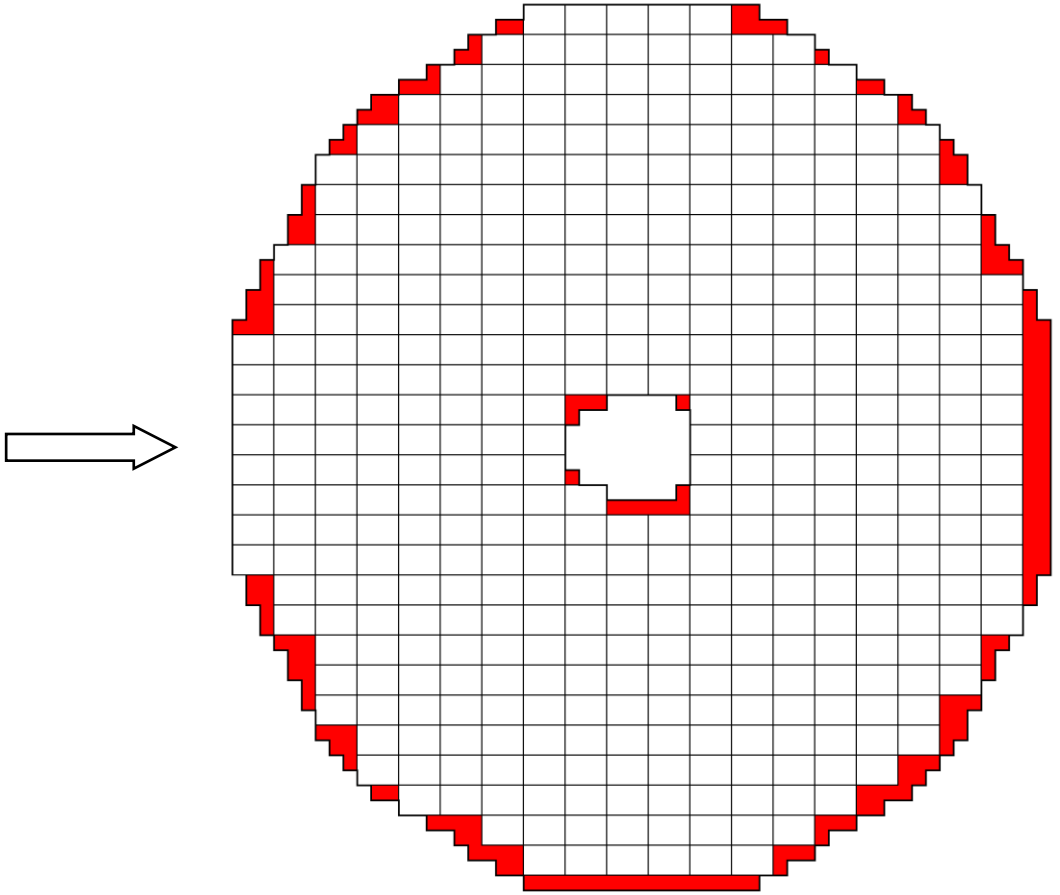


Dimensional inspection
→ OK (< 0,1 mm)

Design & Cooling for the FEB

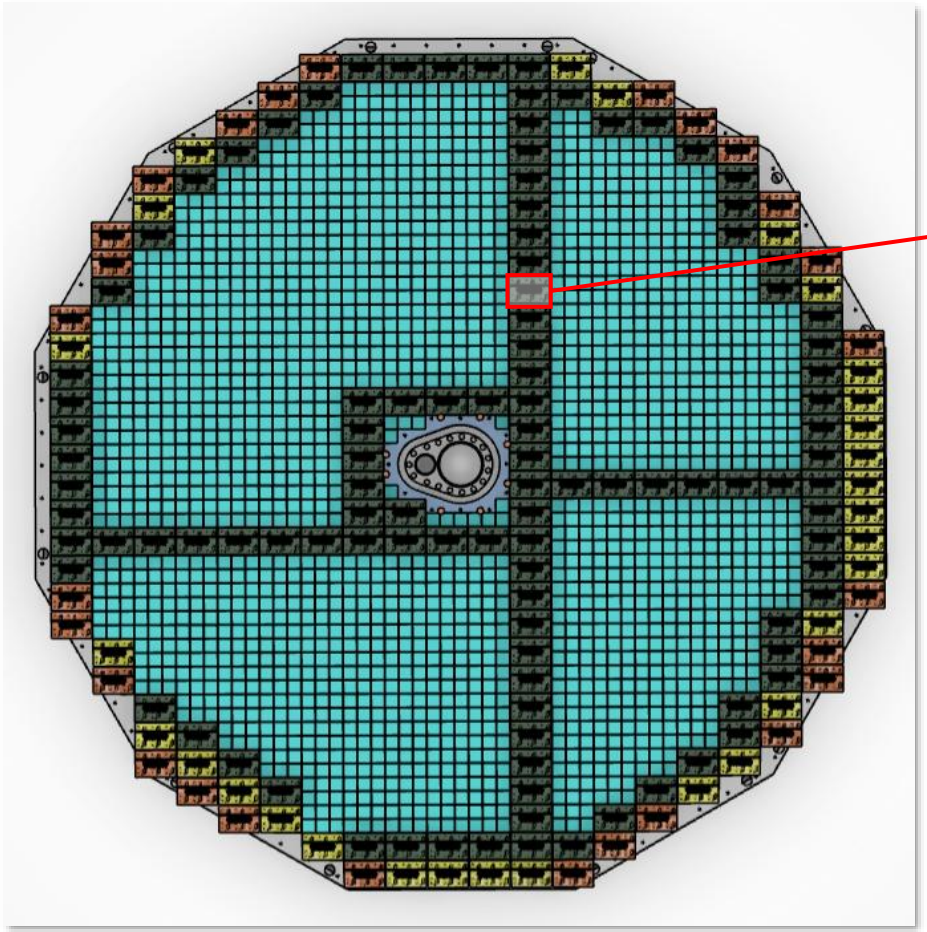


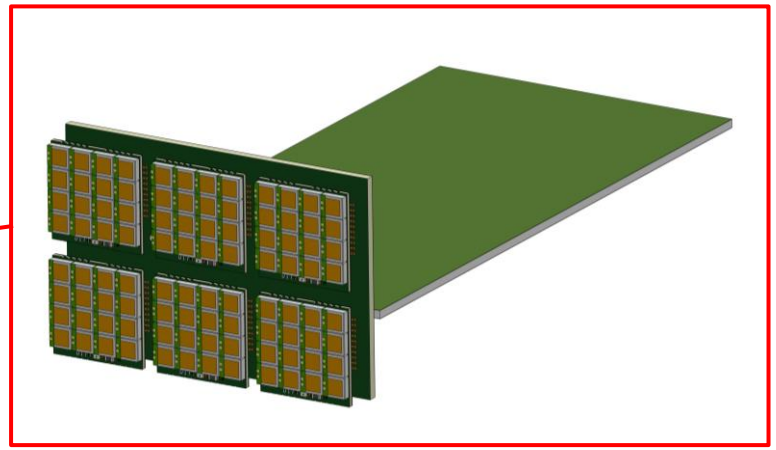
+	-
Good mapping	Hard to cool
Good fitting at the center	Bad fitting on the edge



+	-
Easier to cool	Bad fitting at the center
	Bad fitting on the edge

Design & Cooling for the FEB



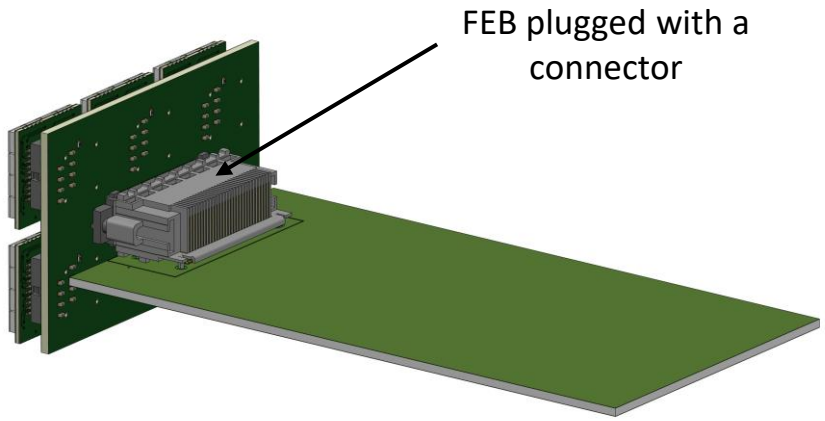


≈ 500 (Adapter + FEB)

→ Work in progress

Based on the optimum for the Asics
→ 1 lpGBT for 3 EICROC (OMEGA, IN2P3)

1 FEB for 6 crystals



Clearance OK
Clearance OK – On structure
Clearance KO – Adjustment required

Installation

- Two rails at 3 & 9 o'clock
- Validate the kinf of rails
- Mass= 2,5 tons
- Increase the surface to reduce local stress on the structure
- Two Guide bearing or Plain bearing per face
- Carbon tube removed ?
- PfRICH attached ?