Backward Ecal / EEEMCal

Triple I Engineering Meeting Update (02/06/2025)

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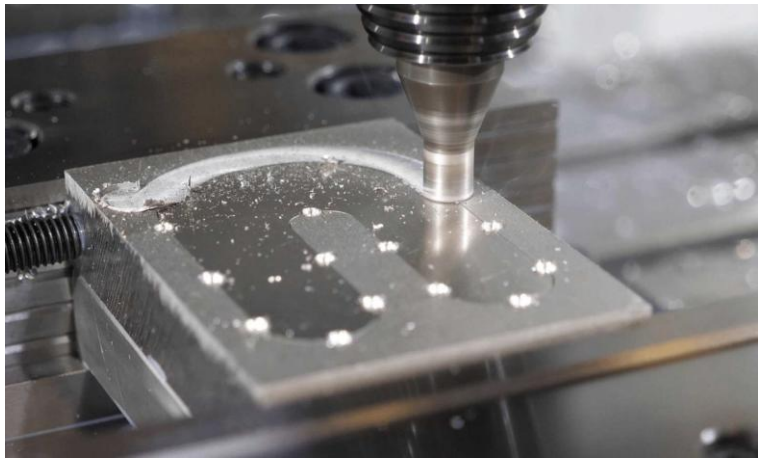
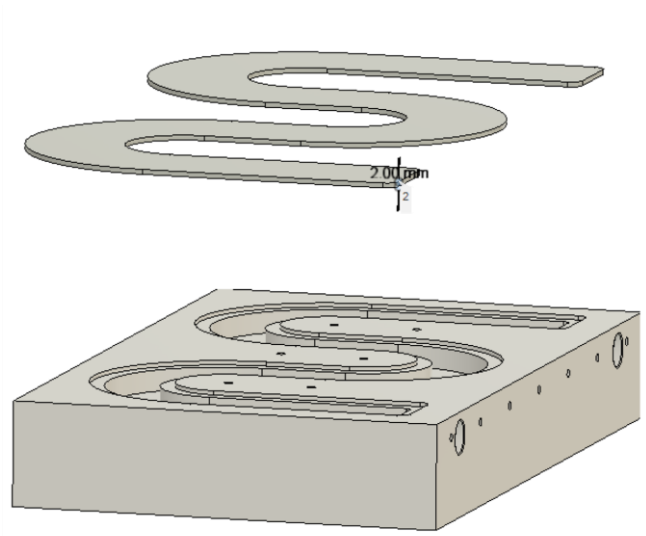
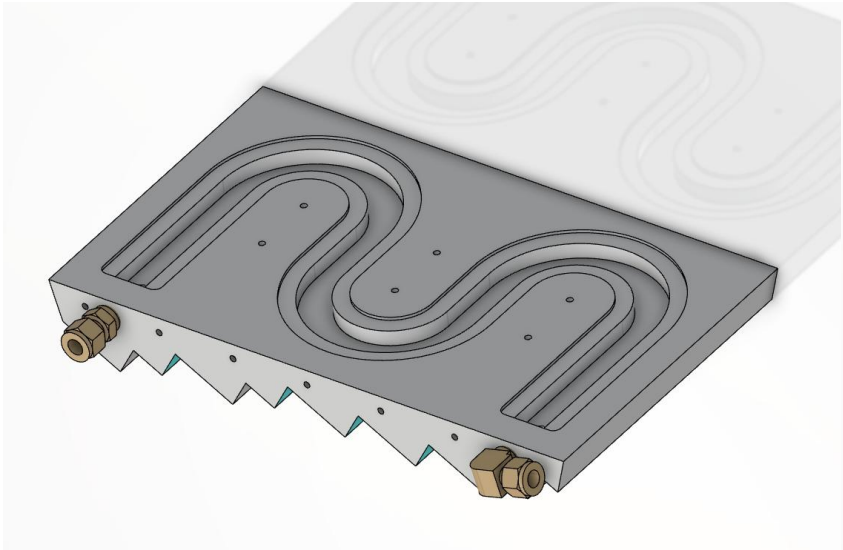
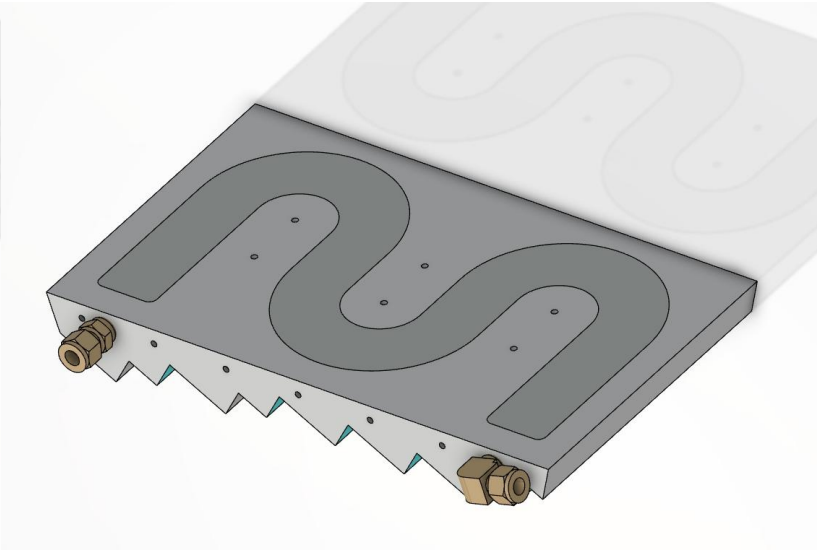
Prototype External structure (1/12) – FSW

- Prototype to check the efficiency of the cooling
- **Test the Friction Stir Welding (FSW) technology**
- Good watertightness and good for the pressure
- Order placed at the end of may
- Price expensive to record parameters, will used for the entire structure



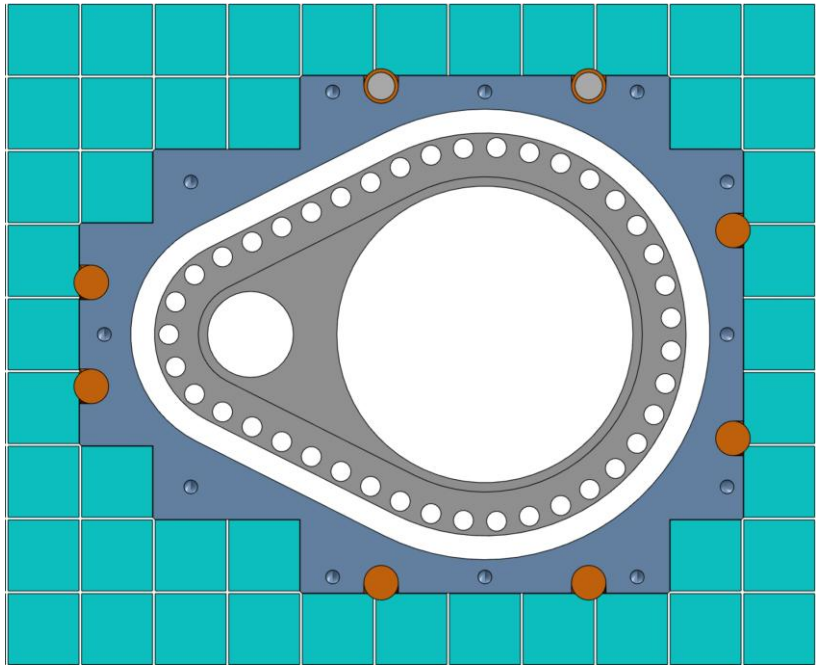


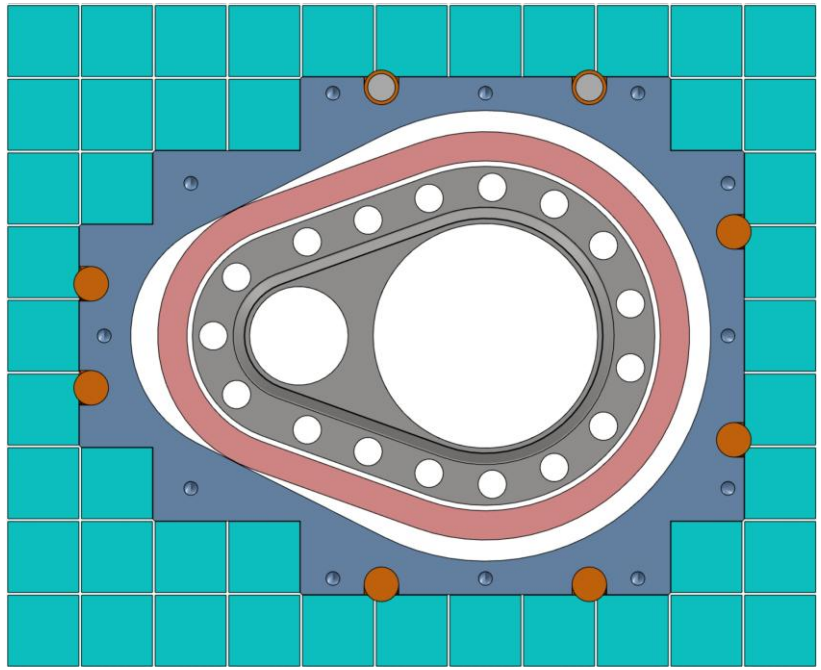


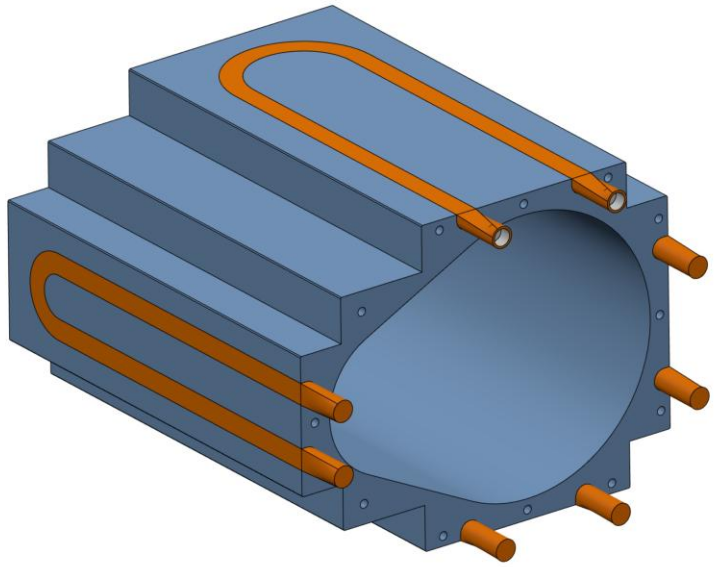


Prototype Internal structure – Copper tubes

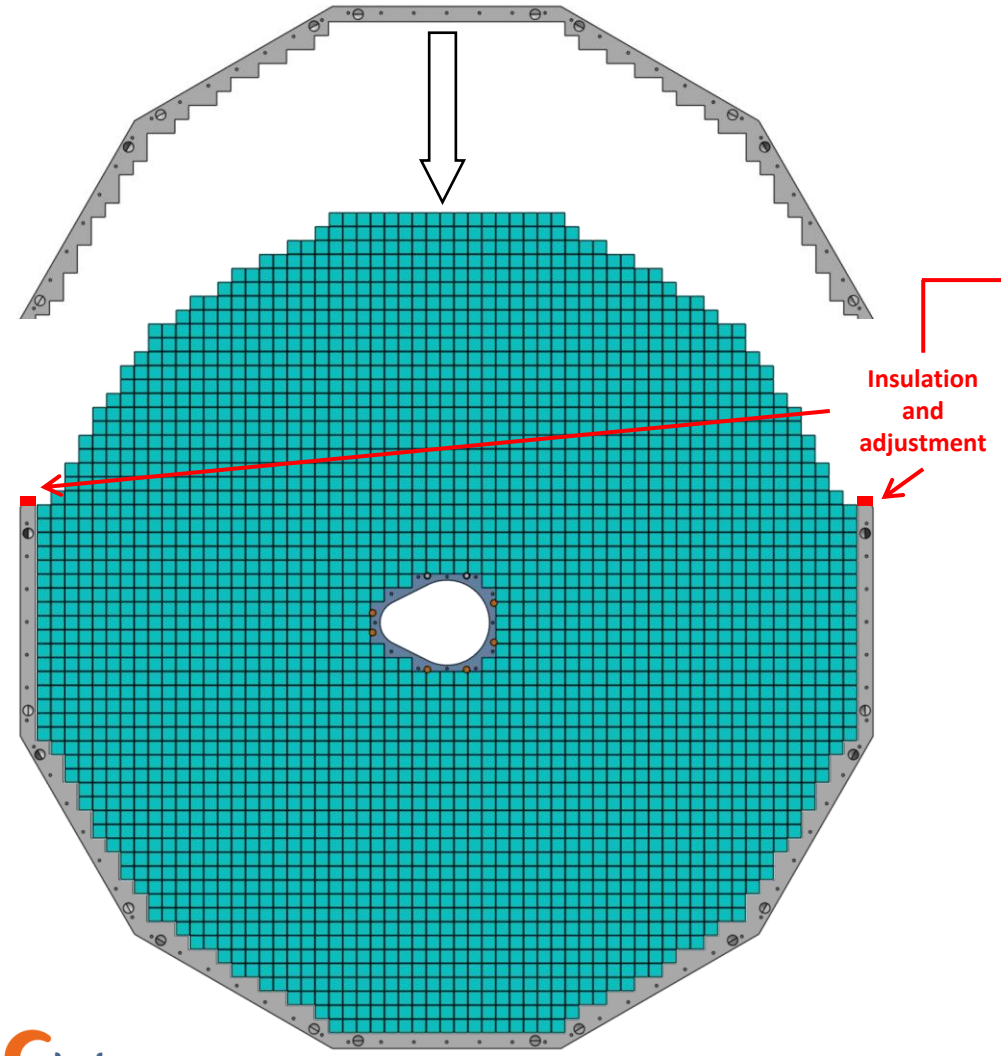
- Prototype with copper tubes
- First quote received at the end of may
- Designed with the old version of the flange → Update with the new design sent by Roland
- 10 mm clearance required all around → Probably not possible to add crystals







Fabrication of the External structure

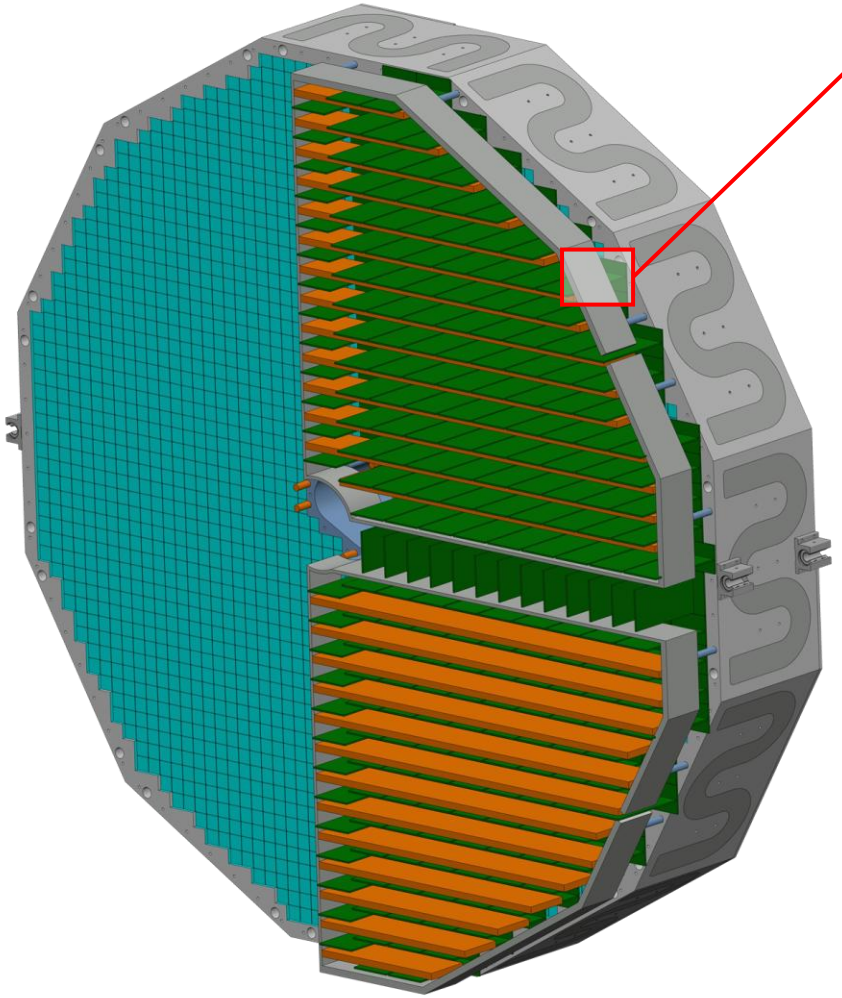


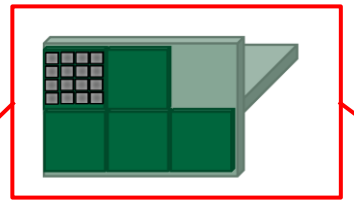
- ❑ External structure in one block at the beginning
- ❑ External structure in two parts at the end (after machining)
  - ➢ Better for the Eddy current
  - ➢ Better for the contact with crystals on the top (cooling)
- ❑ Good for the deflection & the stress
- ❑ Good for the tolerances and the positioning of the crystals

→ The design depends on the technology used

→ Alternative solution: an assembly of 12 cold plates

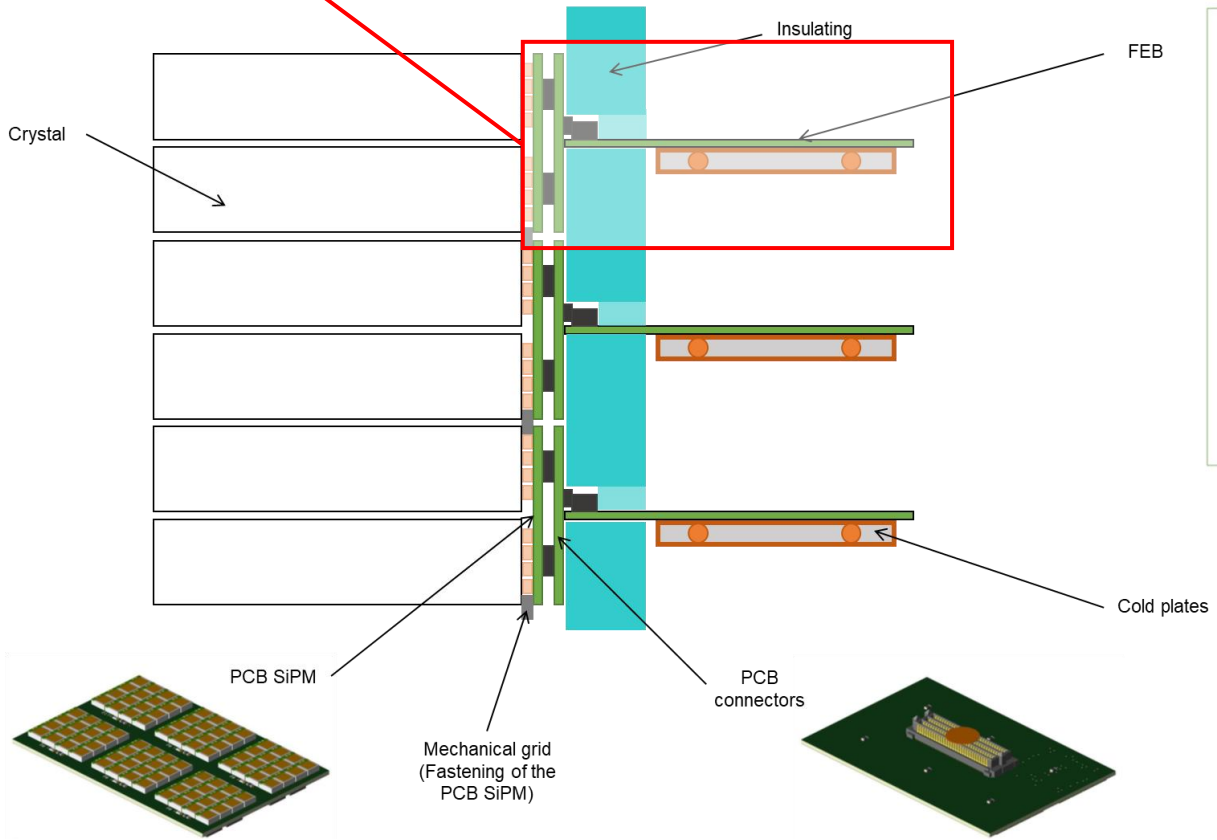
Design & Cooling for the FEB

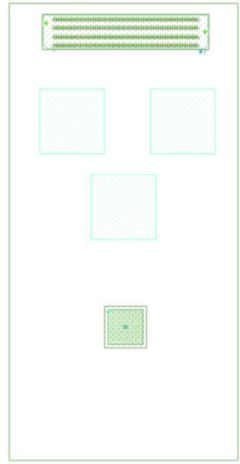




→ Work in progress

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





1 FEB for 6 crystals

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
- Adjustment required with the carbon tube