



Thermal activities (Update)

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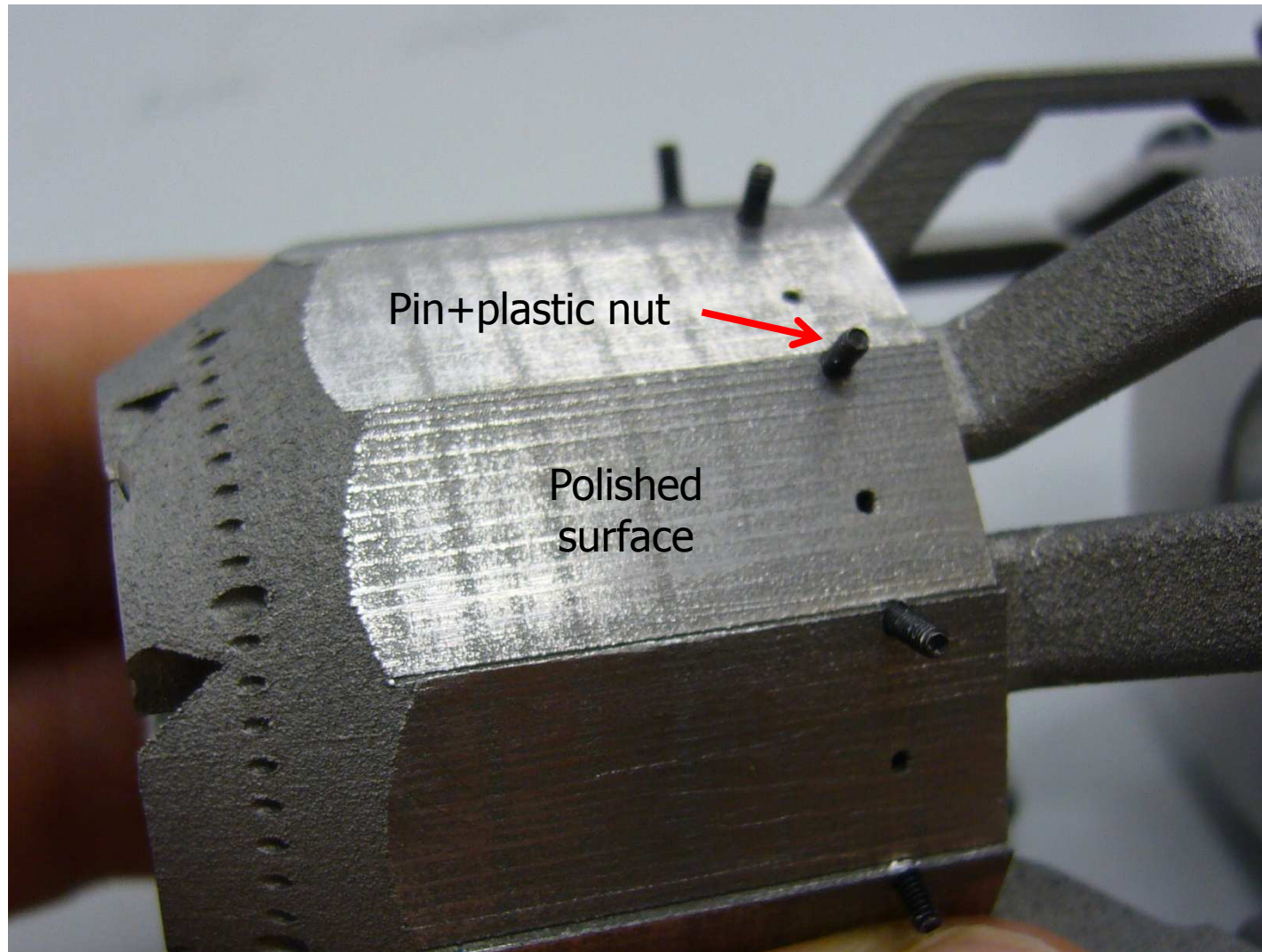
- Outline



- Thermal mock-up (Update!)
- Rapid prototyping
 - New materials available



- Cooling blocks



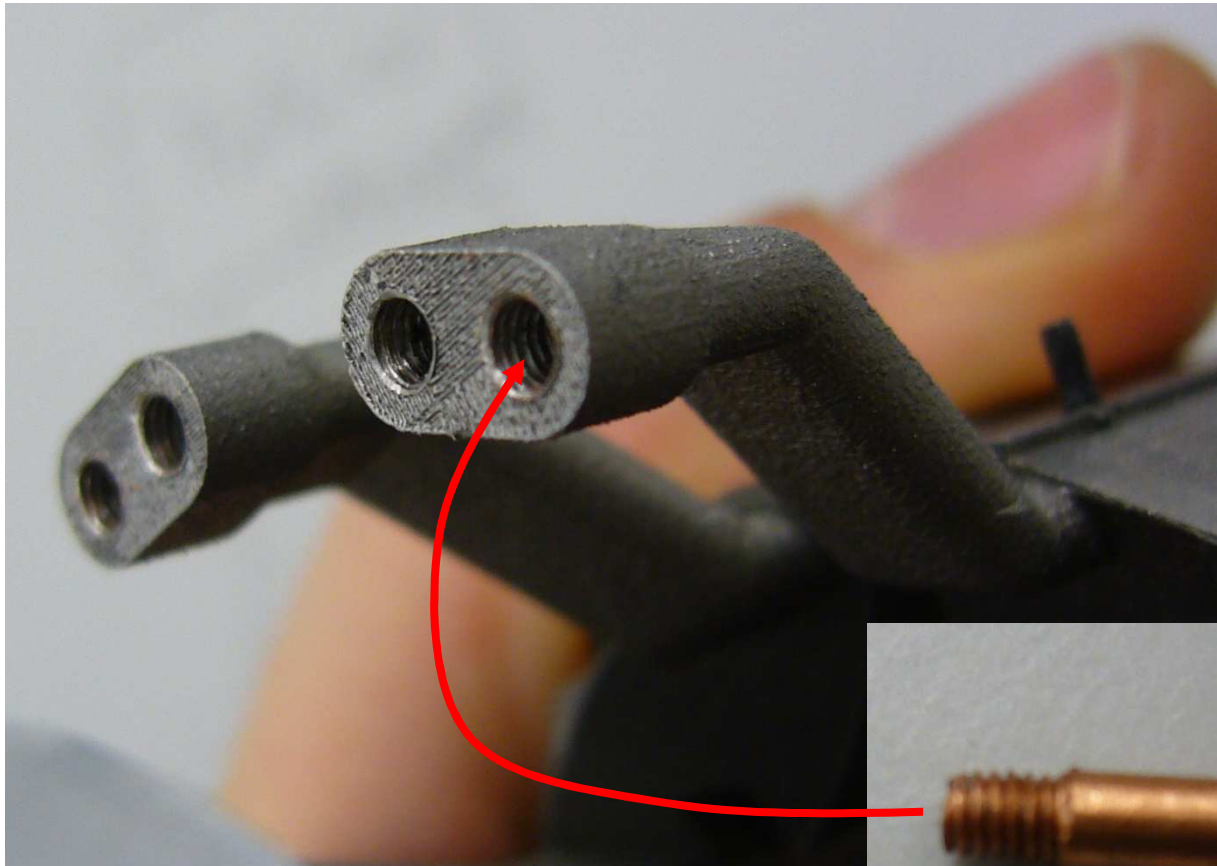
- Support rings



- The two independent halves attached to the support ring
- Support ring held to the beam pipe



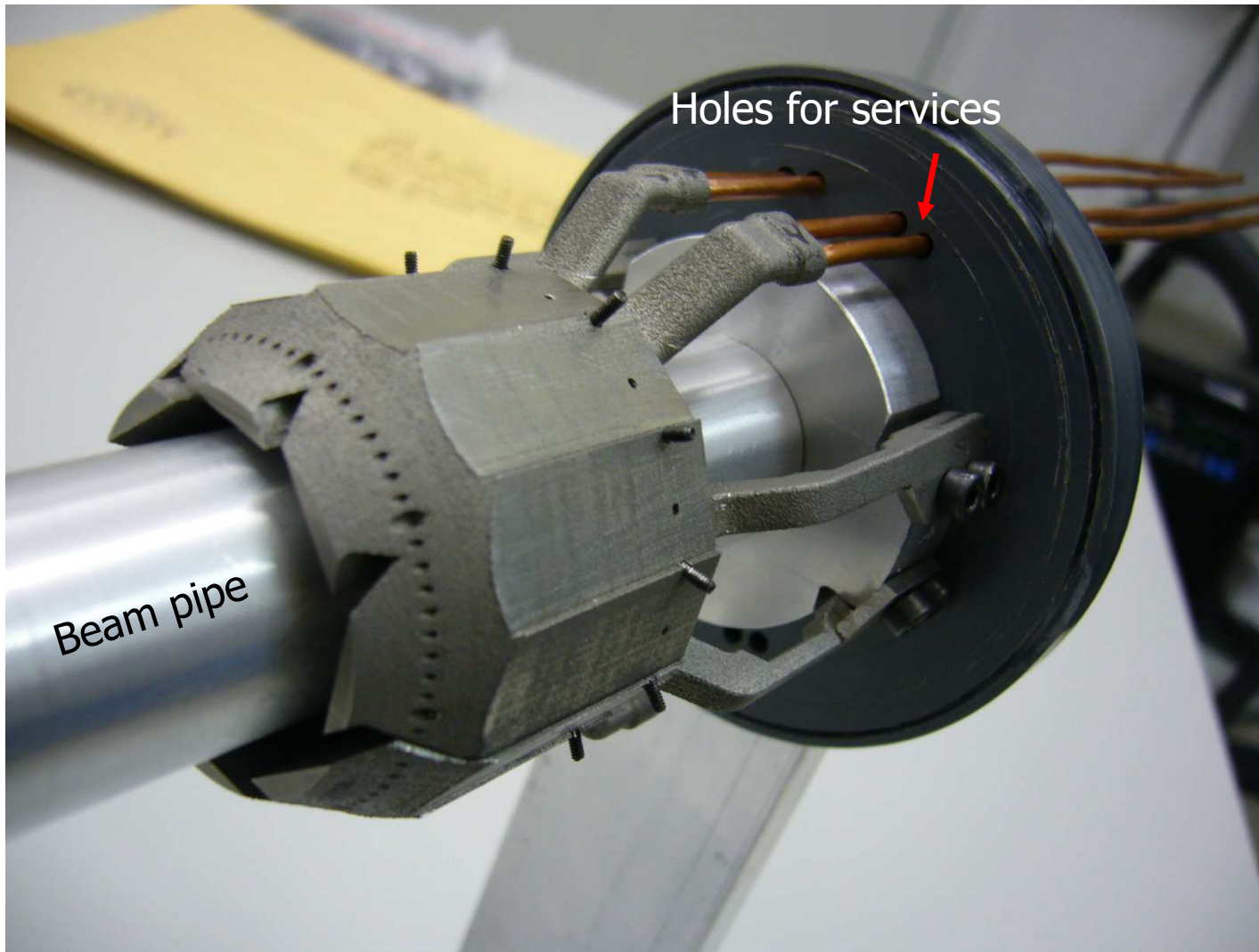
- Services

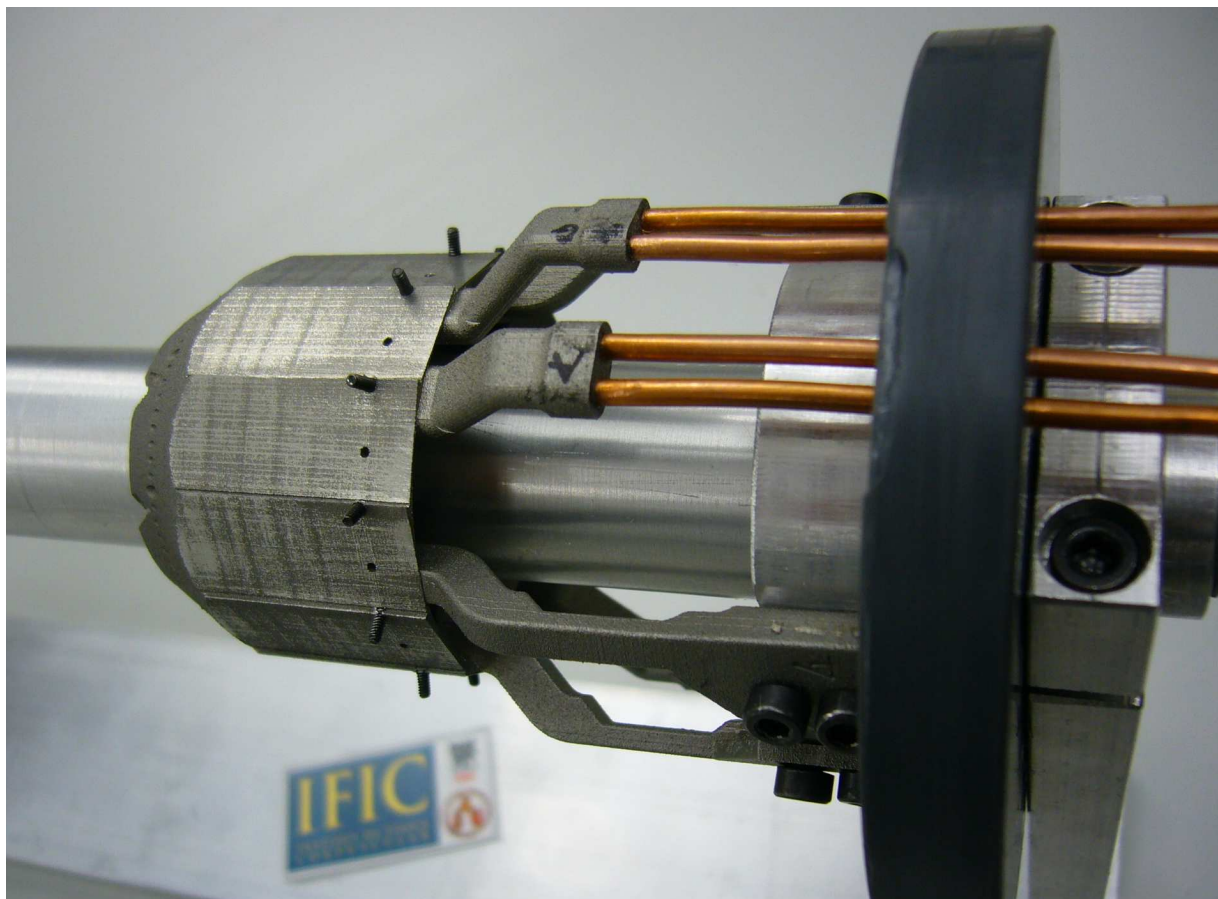


- Mono phase cooling + Air
- Delivered by means of copper capillaries threaded to the cooling block



- Hole system





- Two PVC "endcaps" will define the working volume: PXD standalone or PXD+SVD
 - The polycarbonate screen will be extended to cover the full volume

- Materials for rapid prototyping



- Cooling block materials:

Thermal conductivity as high as possible

Anti-magnetic

Cope with high pressures (tens of bar)

Available to be produced using 3d fast prototyping

DM20

AlSi10Mg

Titanium alloy Ti6Al4V

Steel CL20

Stainless Nickel-Chromium Steel AISI 316

Stainless steel 15-5 and 17-4



- Physical properties



Material	Thermal conductivity (W/m·K)	CTE (um/m°C)	Tensile strength (N/mm ²)
Stainless steel 17-4	16	11.7	~1000
Stainless steel 15-5	22.6	13	
Steel CL20	15	17	650
AISI 316 steel	16.2	15.9	~600
DM20	30	18	400
→ AlSi10Mg	140	21	310
Ti6Al4V	7.2	9.2	1200

Remember that $CTE_{Si} = 3.2 \mu\text{m}/\text{m}^\circ\text{C}$





Thank you!!