



ALICE

ITS3

Tuesday 30<sup>th</sup> July 2024

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# WP5 progress report

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**WP5 collaboration**

# Outline

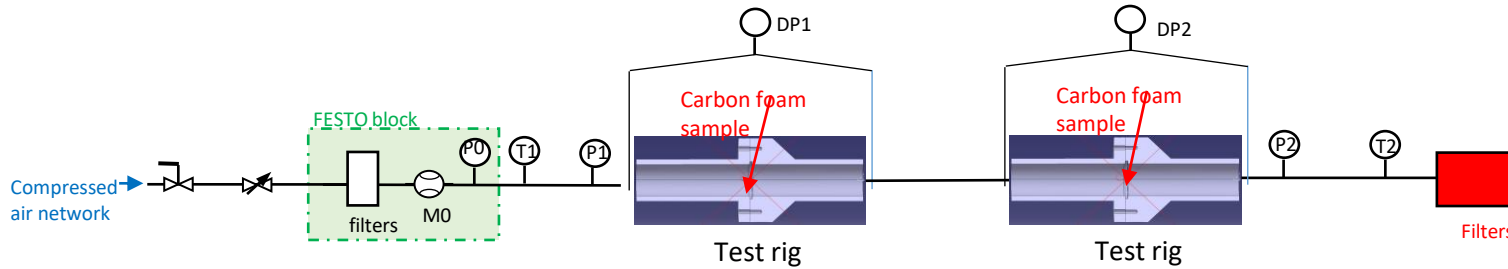
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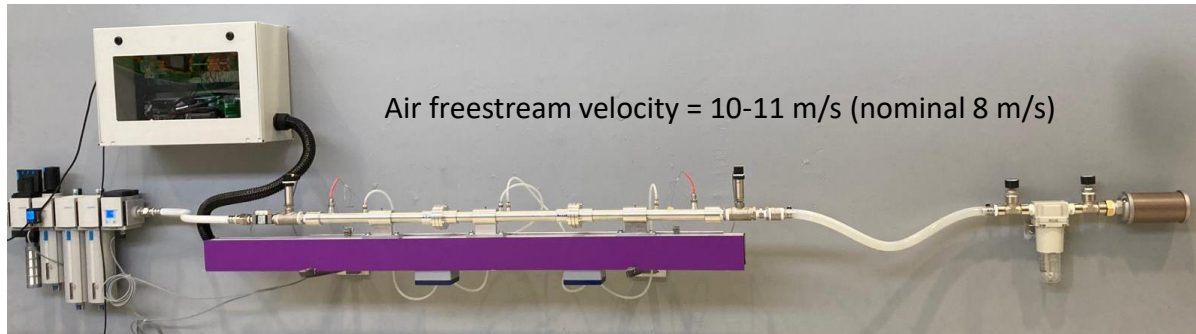
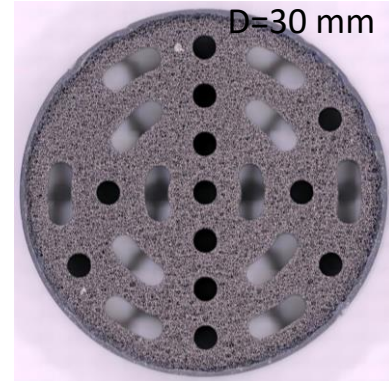
- Tests:
  - Particle realisation test
- Heaters for BBM6 (prototype assembly in Bari)
- Status of the new Engineering Models

Investigate potential particle release and **potential degradation** of the holes/slots of the carbon foam

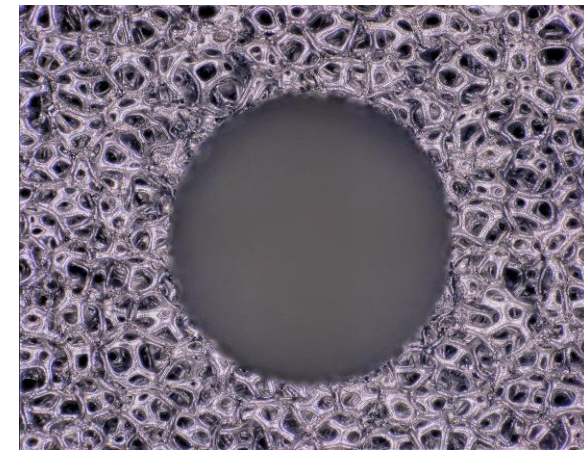
- Tests (1 month time) → inspection (visual, check of possible particle inside the vortex filter) → repeat test
- 2 samples : ERG and Allcomp



Visual inspection



- .....
- Allcomp, 1 month, 10-11 m/s (done)
- ERG, 1 month, 10-11 m/s (ongoing)
- Allcomp, 1 month, 16 m/s
- ERG, 1 month, 16 m/s
- Allcomp+ERG, 1 month, 16 m/s
- Allcomp+ERG, 3 months, 16 m/s



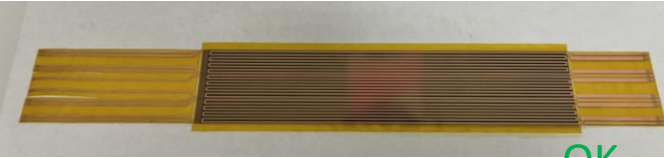
- The release of particles due to the machining (approximately within the first hour of testing).
- No release of particles or potential degradation within 2 months of testing

# Heaters for BBM6 (prototype assembly in Bari)

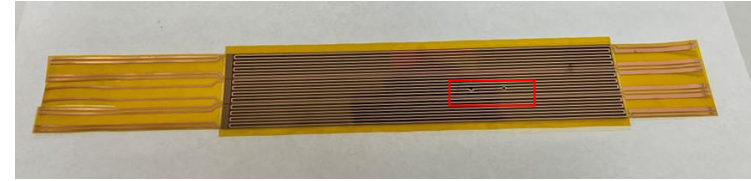
- 2sets (L0,L1,L2) ready to be shipped to Bari
- Total thickness: 40um (silicon) + 2 x 10um (glue) + 2 x 12.5um (Kapton ) + 5um (copper) + 20um Polyurethane protection → 110um in total

@EP-DT-MPT

L0



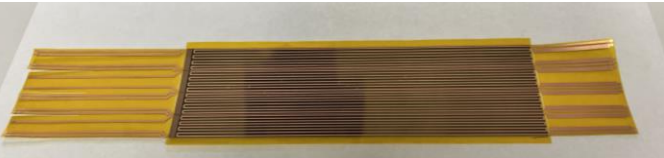
OK



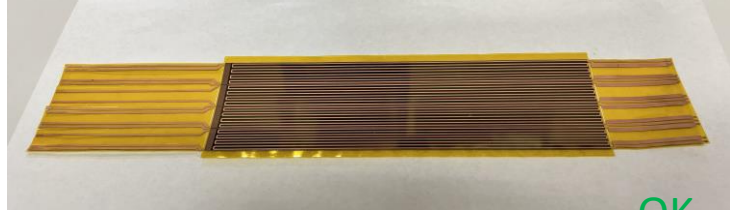
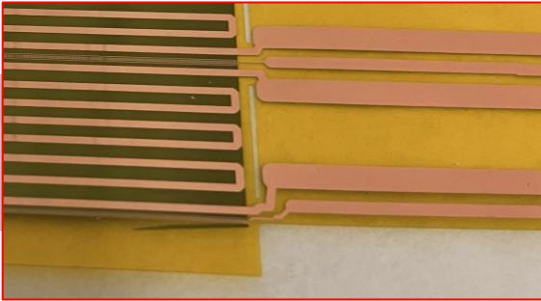
Second-choice



L1



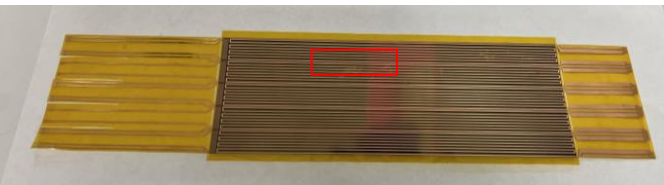
Second-choice



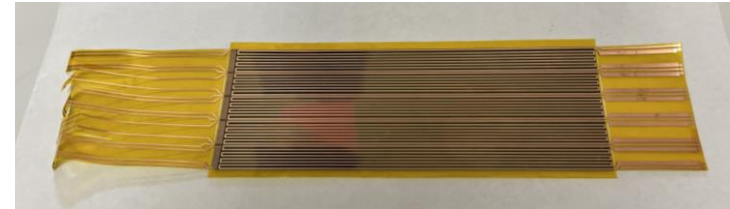
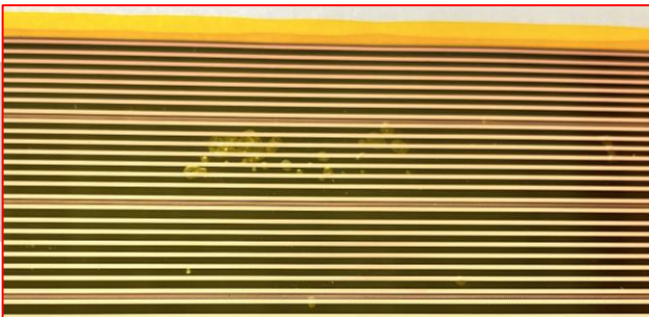
OK



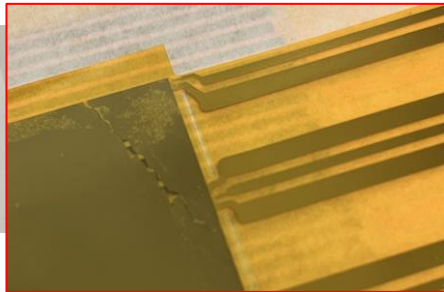
L2



Second-choice



NO



Asked for a production of 2 new L2

# Status of the new prototypes



Prototype:	BBM6	EM3	EM4	EM5
Responsible:	- INFN Bari	- CERN	- CERN	- CERN
Purpose:	- Thermal tests with periphery as well - Vibrational tests	- ER1 chip implementation - Wire bonding 3 layers - Qualif. jigs + ass. proced.	- "Installation assessment" - Qualif. jigs + ass. proced.	- "Installation assessment" - Qualif. jigs + ass. proced. - Wire bonding 3 layers
Details:	- Dummy heaters simulating the periphery as well	- it integrates ER1 chips - not nominal dimension, shorter length (~260mm)	- It integrates Blank Si - Nominal dimensions (l=266mm)	- Blank Si + Cr/Al dep. - Nominal Dimensions
Jigs:		Ready (@Utrecht univ.)	Ready (@Utrecht univ.)	Ready (@Utrecht univ.)
Sensor:		Ready	Ready	Middle of August (@EP-TFG)
PEEK h-rings		Ready	Ready	Ready
Air distributor		Ready	Ready	Ready
C.Foam h-rings		Ready	Ready	Almost ready
FPCs dummy		Middle of August	Middle of August	Middle of August
CYSS:		Middle of August	End of August	October

Postponed

The production of the prototypes has stopped. There will be an event on October 1st for CERN's 70th anniversary. A small exhibition is being prepared, featuring objects representing CERN's activities. The plan is to include one component for each of the four LHC experiments, one for the LHC, and one for IT. For ALICE, it has been proposed to display a ITS3 mockup.

# Status of the new prototypes



Two mockups for the exposition will be made: one displaying a 3-layer mockup and the other a single layer visible from the CMOS side.

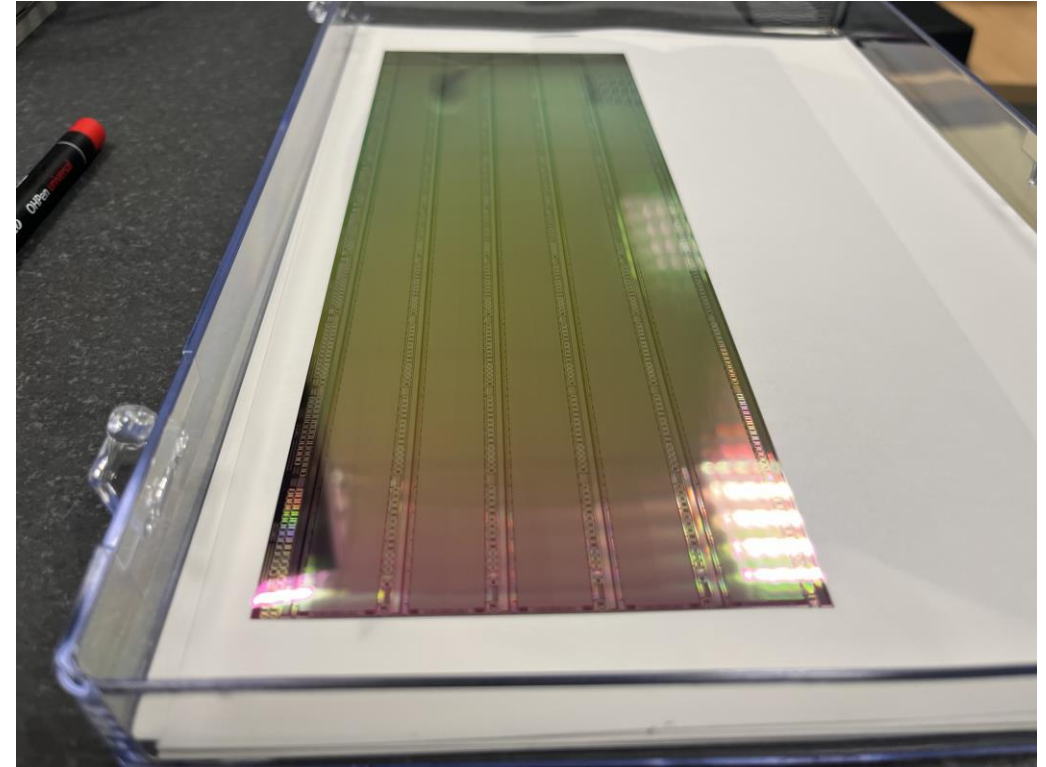
Prototype:	EXPO (half-detector)	EXPO (Single layer)
Responsible:	- CERN	- CERN
Purpose:	<ul style="list-style-type: none"> <li>- ER1 chip implementation</li> <li>- <b>Wire bonding 3 layers (TBD)</b></li> <li>- Qualif. jigs + ass. proced.</li> </ul>	<ul style="list-style-type: none"> <li>- Show and put focus on the curved thin sensor</li> </ul>
Details:	<ul style="list-style-type: none"> <li>- it integrates ER1 chips</li> <li>- shorter length (~260mm)</li> <li>- CYSS transparent</li> </ul>	<ul style="list-style-type: none"> <li>- Only H-L2</li> <li>- <b>Supported by longerons only (TBD)</b></li> <li>- CYSS transparent</li> </ul>

Jigs:	Ready (@Utrecht univ.)	Ready (@Utrecht univ.)
Sensor:	Ready	Ready
PEEK h-rings	Ready	NA
Air distributor	Ready	NA
C.Foam h-rings	Ready	NA
FPCs dummy	Middle of August (assembly to be done)	NA
CYSS:	Middle of August (assembly to be done)	Middle August (assembly to be done)



# Status of the new prototypes

Silicon pieces with L2 and L0 size from ER1 pad wafer have been removed with the die ejector grid (same used for the MOSS).



**Next** Bending of the two layers (@Pieter) → if ok → Peel-off of the other layers (@Pieter)

Example of stand

