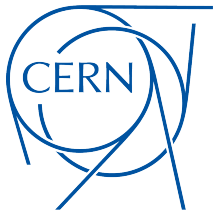
04.05.2021 TB Report of H1 status

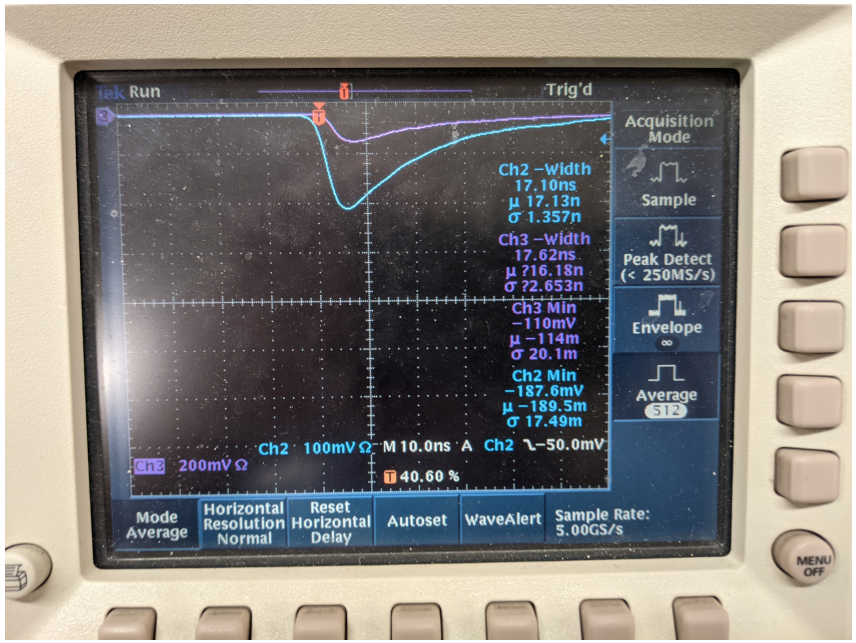
Benjamin Moritz Veit

4. Mai 2021



H1 PMTs Intervention and new PMTs

- **Long time tests in dark box with old XP2980**
  Until now ($\approx$ 3 Month with 1850V) $\rightarrow$ No failures - beam related or luck?!
- **Two new (ET Enterprise 9128B) PMTs are equipped with modified bases and under testing now:**

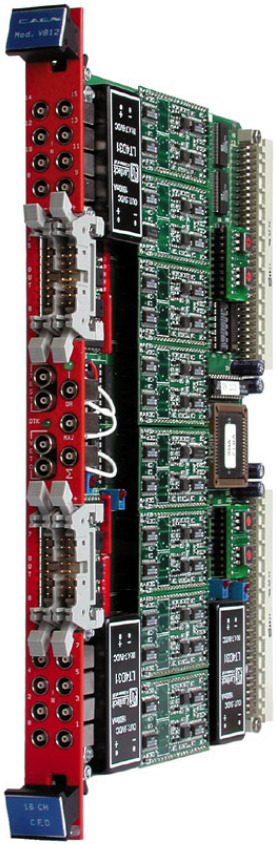


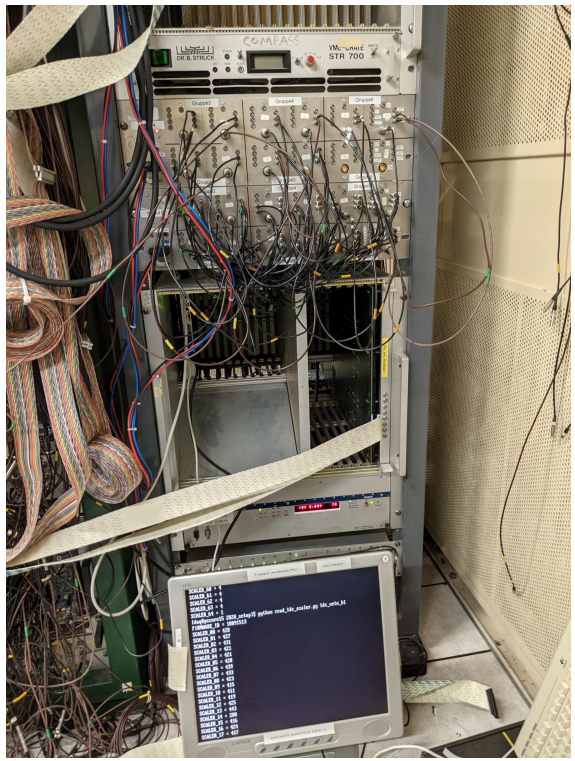
Setup for teststand for characterization is under preparation.
(LED source and ADC read-out is working)

We plan to buy 12+2 new ones still before the run!

H1 Discriminator (Week15)

HI04 Orsay Discriminator installed in Veto barracks

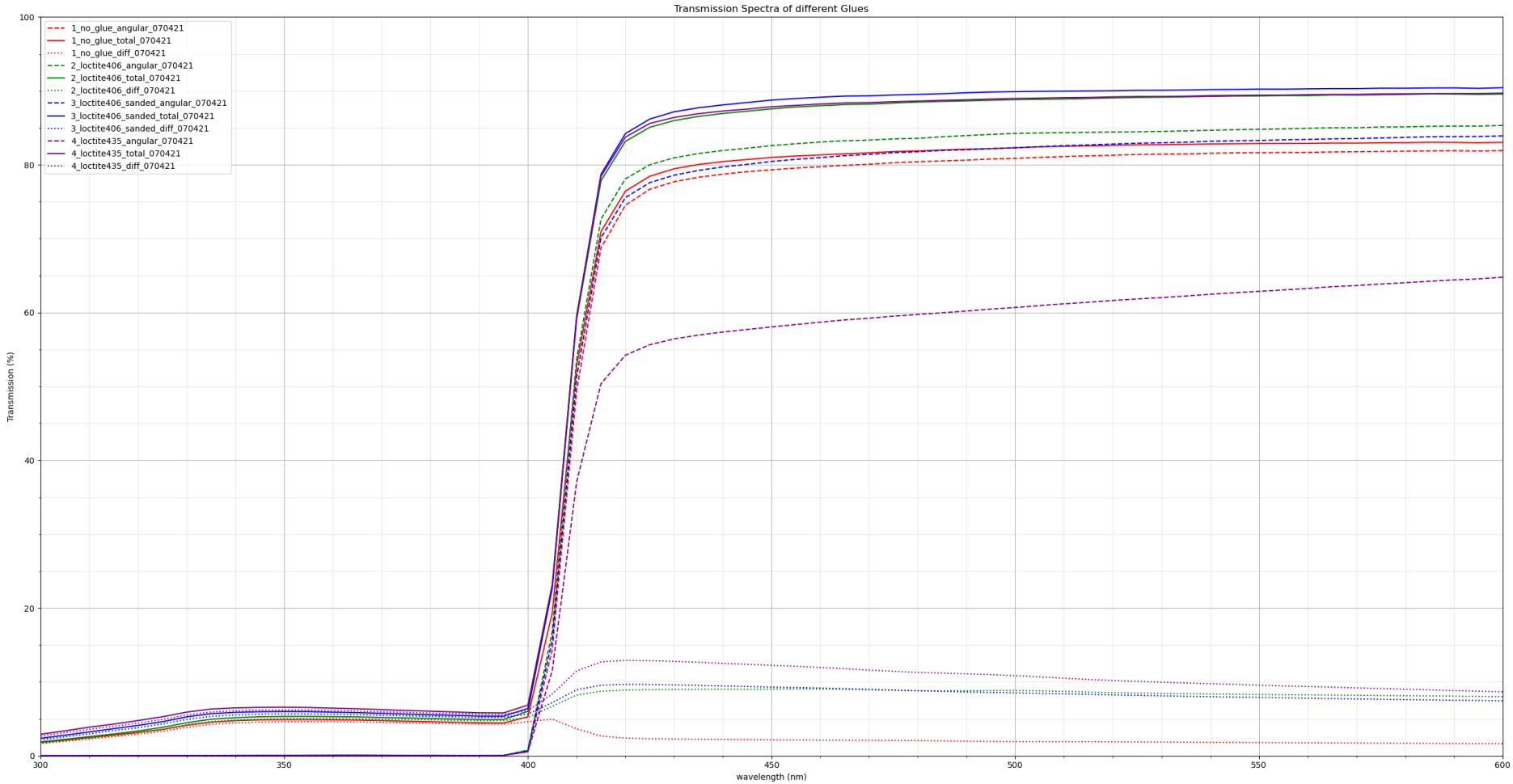




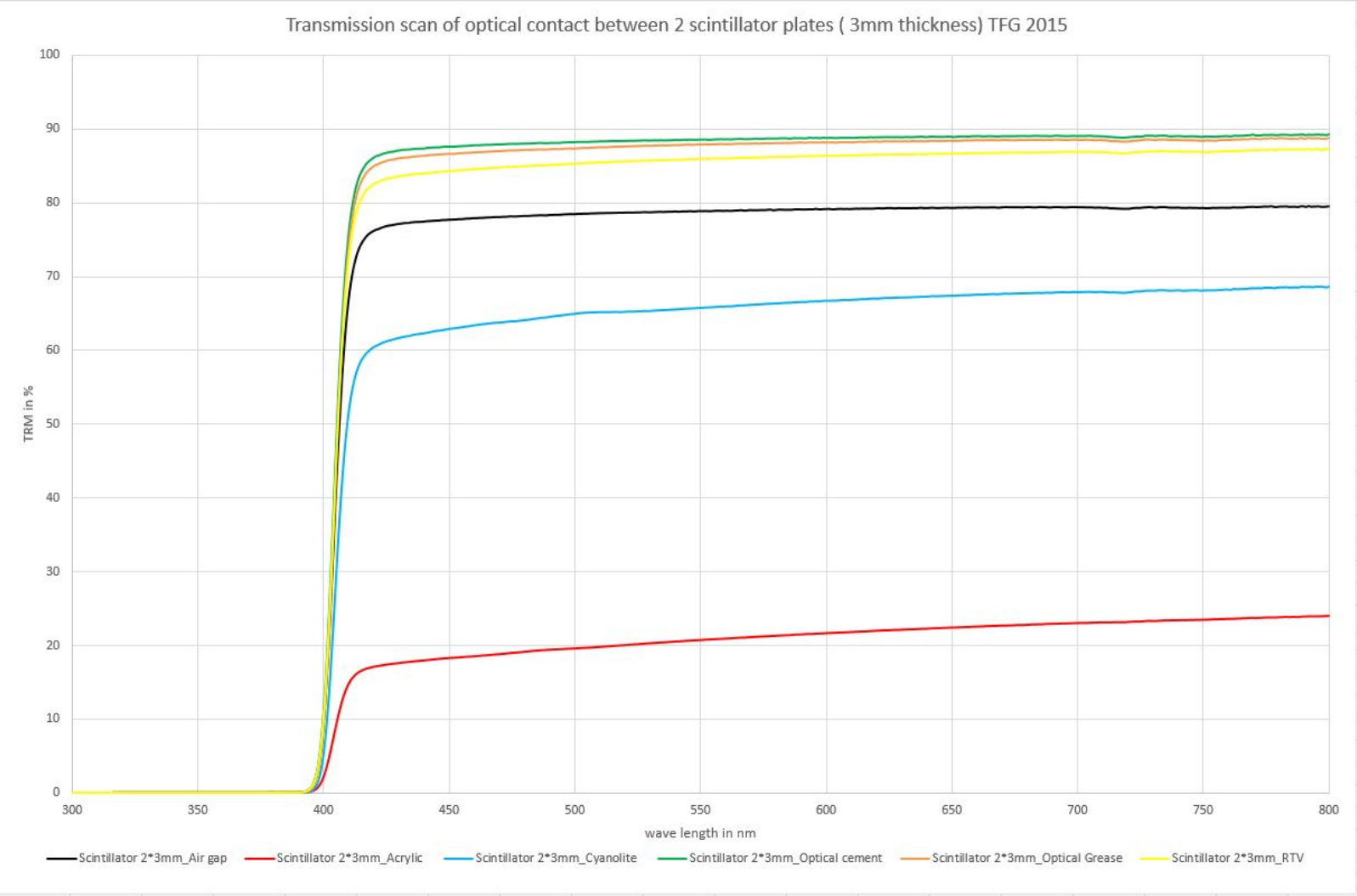
Orsay Discriminator have superior performance in respect to CAEN (double pulse resolution).
Infrastructure installed (Modified Crate, CPU, Signal Spliter).

Discriminator tested → One channel on one connector is broken!

Cyanacrylat glue tests (Measurment of 07.04.2021 Optical Lab)



Cyanacrylat glue tests (CERN Optical Lab)

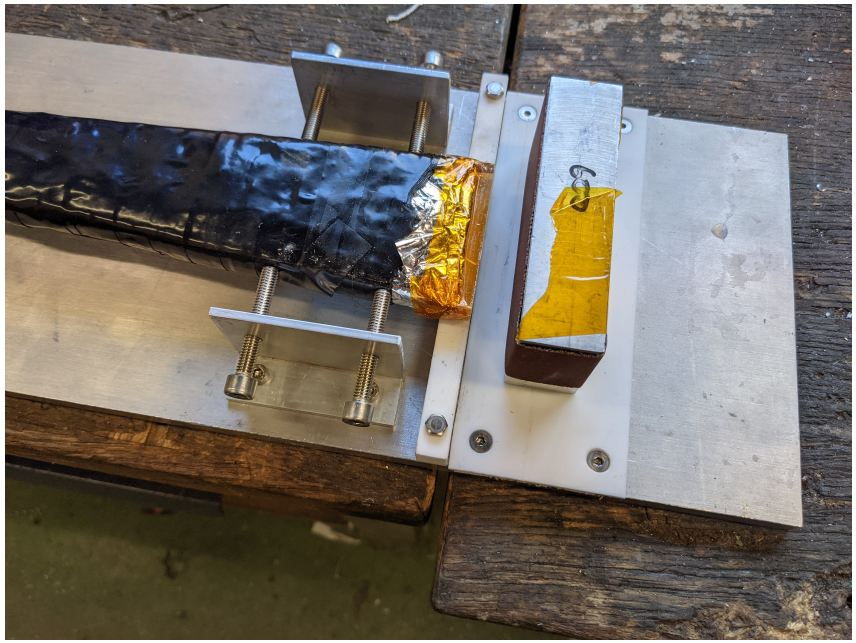


Loctite 406 is suitable for optical gluing of scintillators!

Begin of Work - disassembly of modules

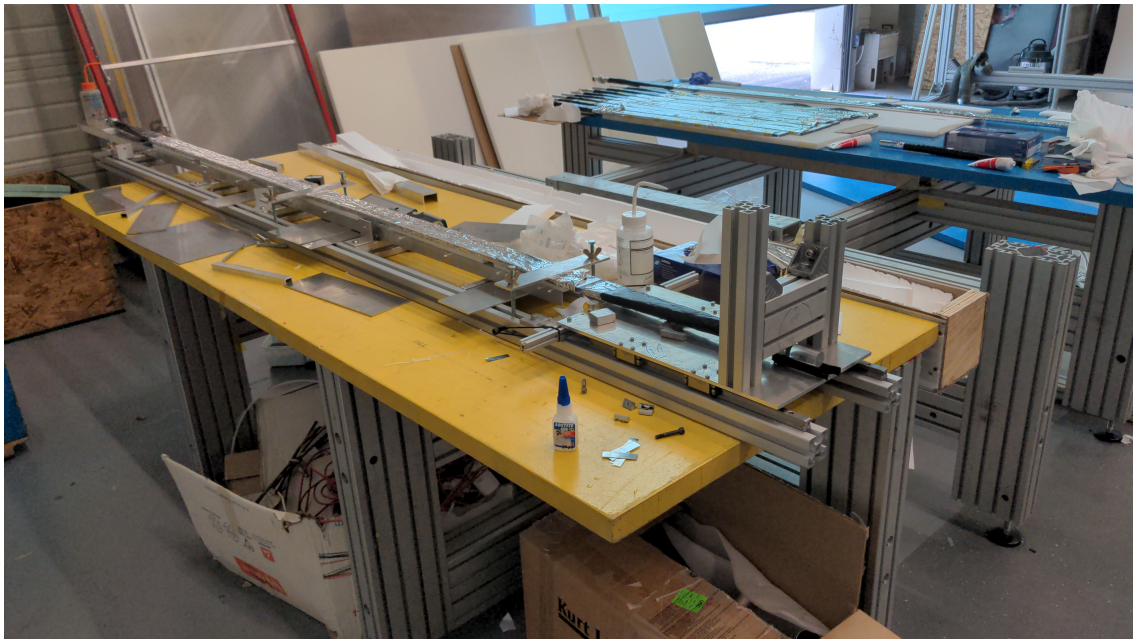
- Johannes G., Johannes M. and Livio R. arrived in Week 16 $\rightarrow$ start of main work.
- Disassembly of modules started - lot of work - everything glued together.
- All slabs are inspected and in case of need re-packed.
- 8 out of 52 lightguides are broken - not clear if it happen during movement or before.

Polishing old Lightguides



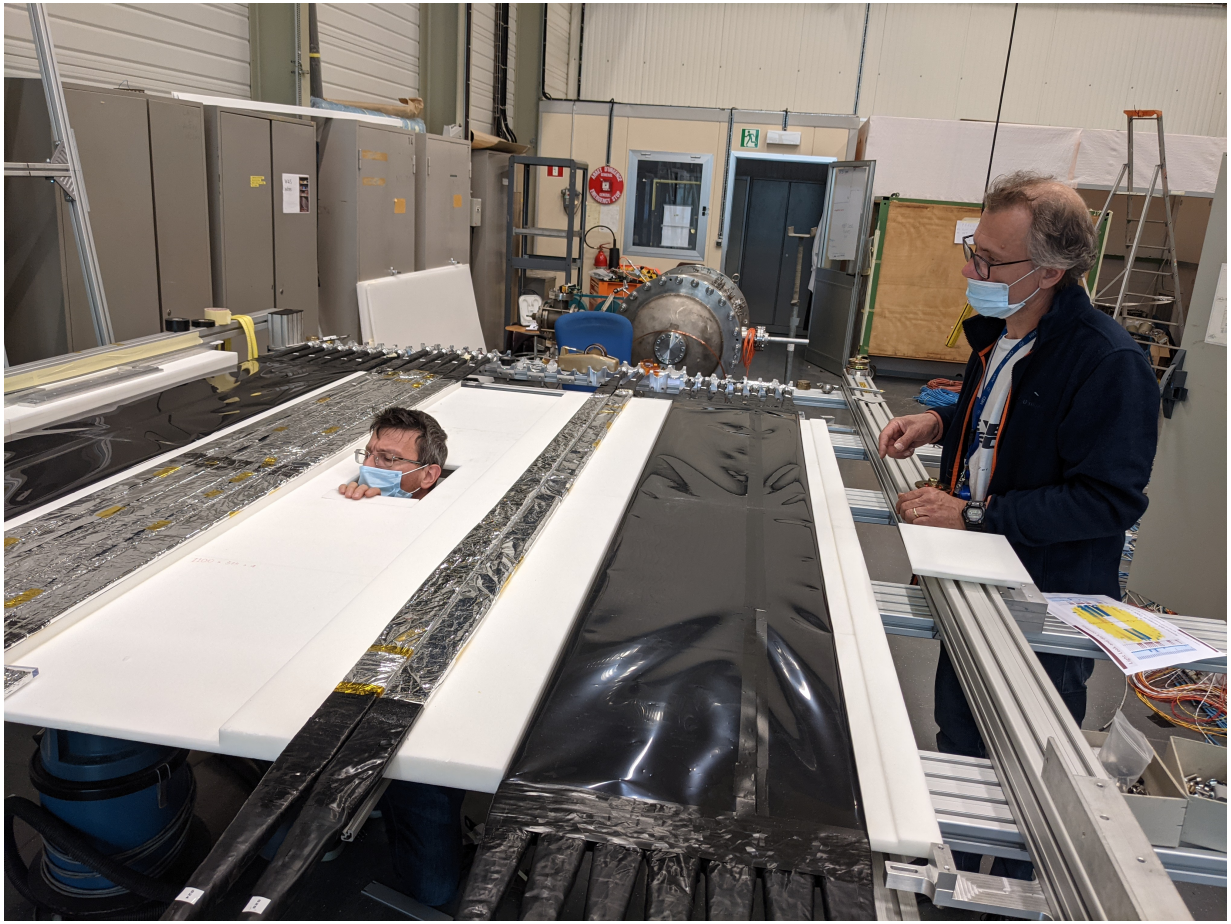
- 12+8 Lightguides had to be reused

Gluing of slabs



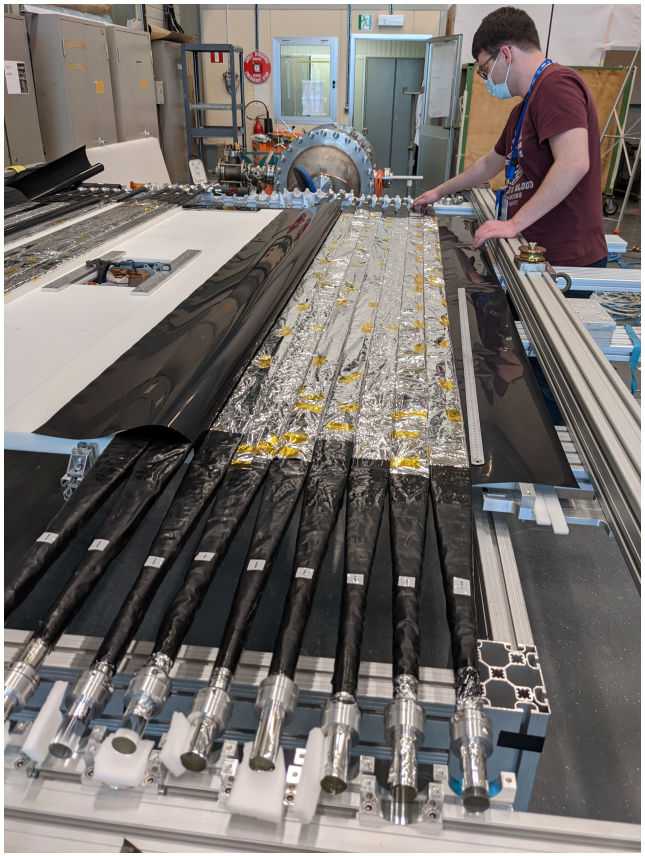
- All lightguides are glued with help of a gluing rack
- Process was optimized to allow to glue in a 2 h rhythm
- Sucess rate about 80% → remaining were re-glued

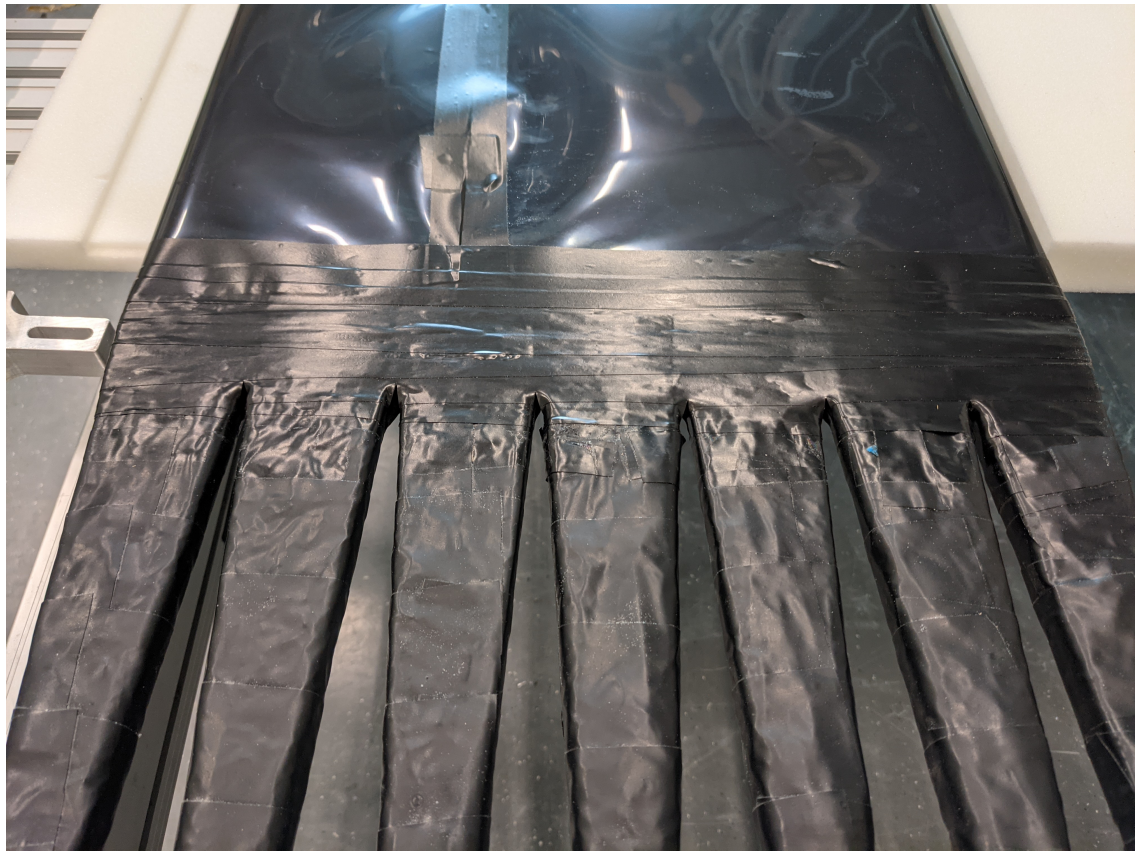
Mechanics



- Small modifications of the rohacell dimensions were needed.
- Central hole was cut out.
- Mechanics for rotation is prepared.
- Modules are not glued to the rohacell to allow for final alignment with minimal gaps.

Assembly of Modules

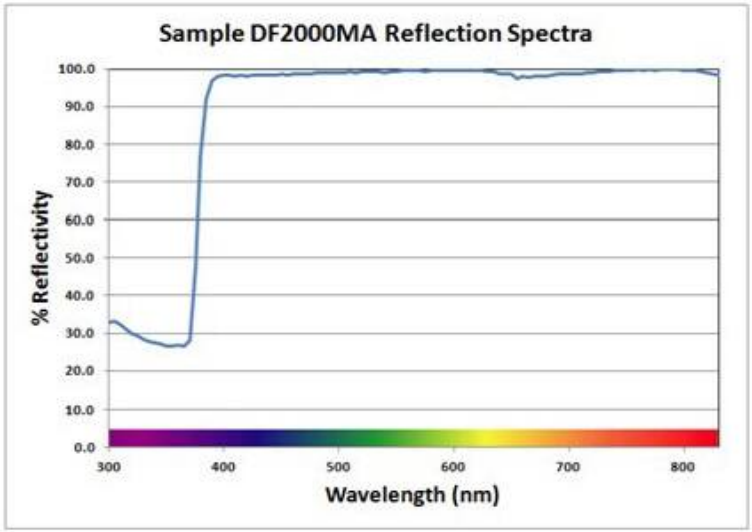




Two Modules are already fully assembled and made light tight!

Air Light Guide

High reflective foil Enhanced Specular Reflector (3M ESR) was bought (according to COMPASS Note 2011-5) - turned out to be the wrong one (thicker, no adhesive layer).

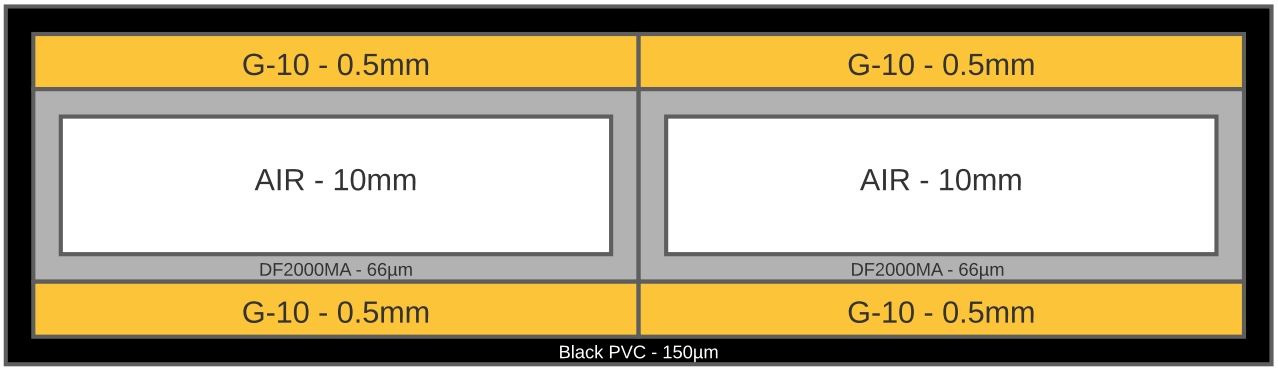


Investigation was performed: 3M Specular Film DF2000MA seems to be a good replacement (used by many experiments for this purpose).

Supplier was identify which has 2 lm on shelf - registration is pending at the procurement office at the moment!

Air Light Guide stack

It was decided to sandwich air-light-guide with two plates of 0.5 mm G10-FR4 material.



$2 \cdot 0.5mm$ G10-FR4 will add a lot of stiffness and a plane surface for the reflector foil - costs in terms of radiations length: 0.5%

Material	Radiation length /cm	Thickness /cm	X/X0 /%
G10	19.4	0.05	0.257731959
PVC	19.63	0.015	0.076413653
Rhoacell	760.43	1	0.131504543
PMMA	34.07	1	2.935133549
BC408	42.54	1	2.350728726

Summary

- Mechanical modifications of rohacell finished after test fitting of scintillators.
- All modules are disassembled and checked $\rightarrow$ Total of 8 broken LG
- All slabs are inspected and if needed repacked.
- All new and broken slabs are re-glued.
- Waiting for material for central module.
- Testing in clean-area foreseen.
- Electronics / PMT well progressing.
- **2 out of 5 Modules completed!**

Some delay due to missing reflective foil for the central air-lightguides. Going vertical $\rightarrow$ end May / begin June - still possible!

Thanks a lot to the Team!

Johannes Giarra, Johannes Merz, Stefano Levorato, Livio Rinaldi

+ support of Triloki and Daniele D'Ago

+ all future help by colleagues to get finish in time!