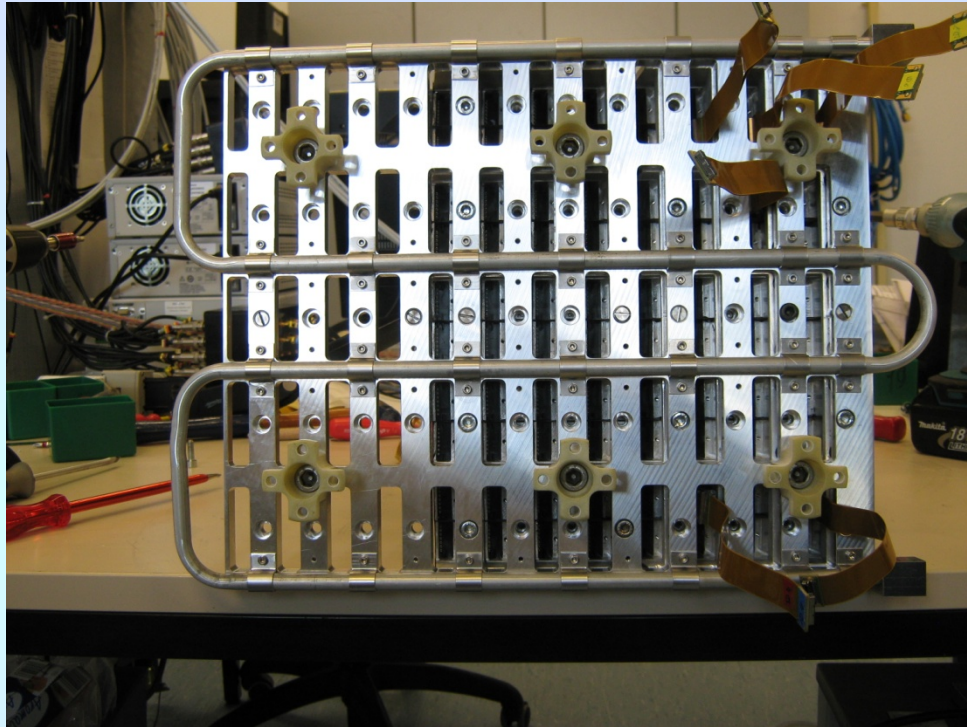

The status of mechanical structure of the barrel EMC

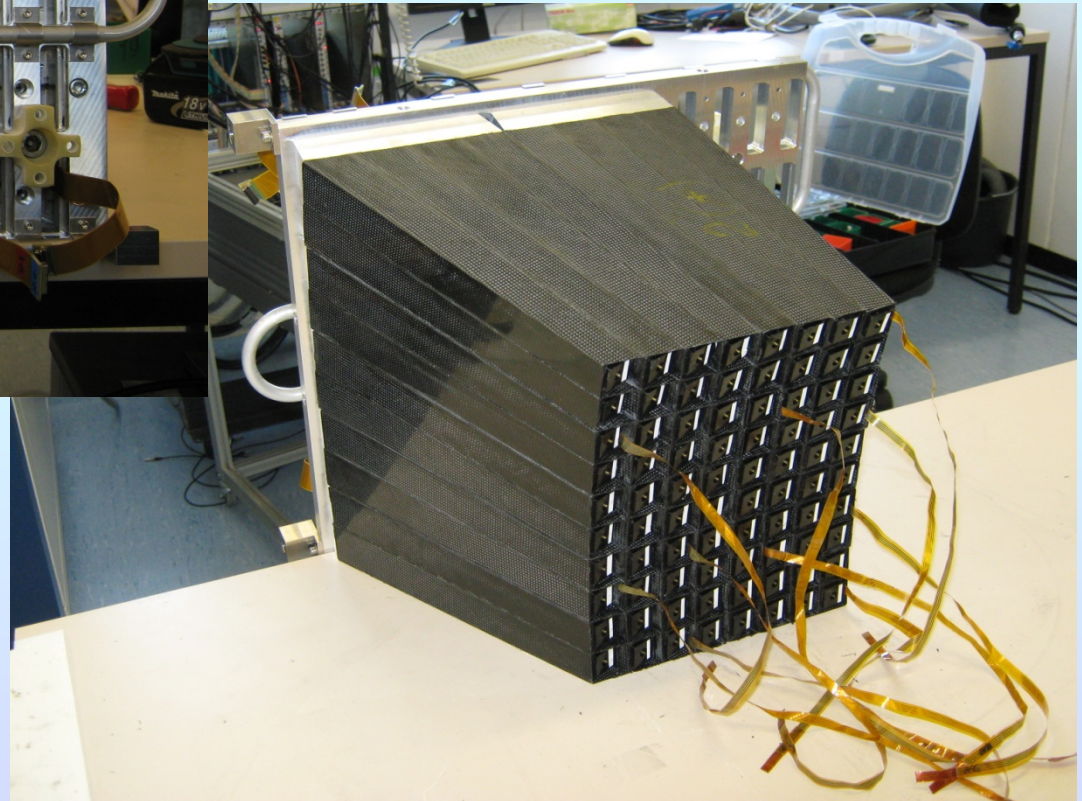
Andrey Ryazantsev

on behalf of the IHEP-Protvino group



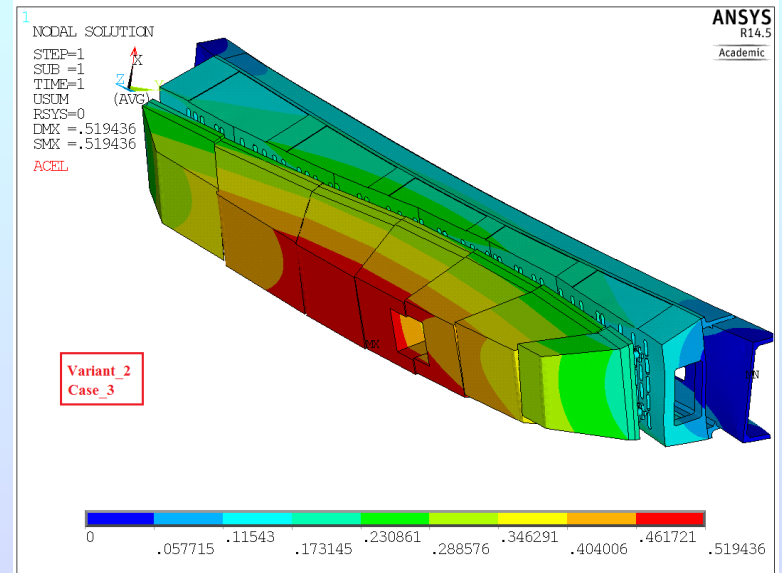
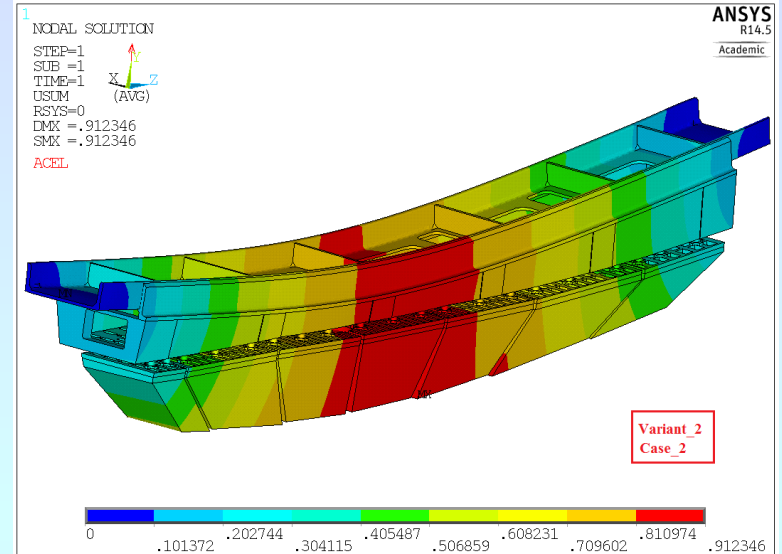
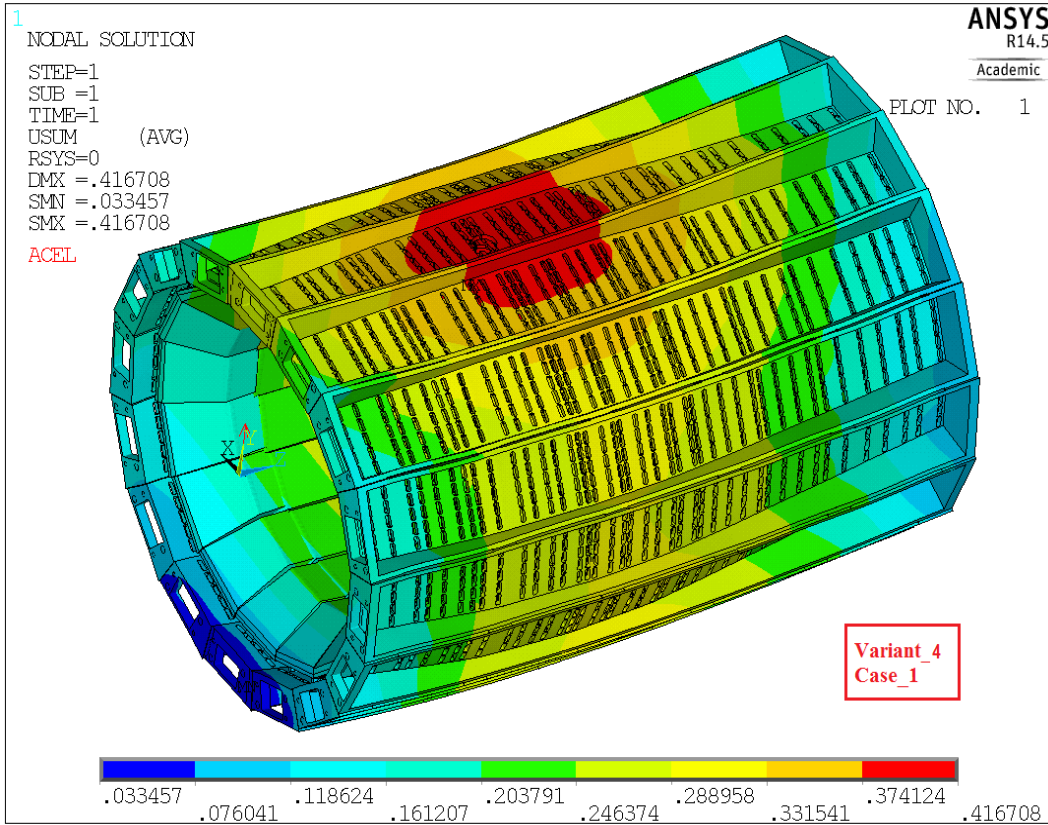
Four experts from IHEP went to Giessen University in October to participate in reassembling of the Proto-120 using components with the same design like for the pre-series slice

Agreement on the design of the module plates, support feet and support beam was achieved



	Case_1	Case_2	Case_3
Variant_0 (Initial design - September, 2014)	0.45	1.00	0.55
Variant_1 (Increased openings in the beam)	0.51	1.02	0.58
Variant_2 (Support feet are shorter by 10 mm)	0.49	0.91	0.52
Variant_4 (Support feet are shorter by 20 mm)	0.42	-	-
Variant_3 (Support feet are longer by 10 mm)	0.51	1.12	0.63

Cryostat, support rings and beam covers are not shown



Milestone	Work Description	Prerequisites to start work / procurement	Validation Criteria	Date
Pre-Series Slice				
1.1 M6	Finalise technical specifications		Technical specifications	Nov 2013
1.2	Design and delivery of 3D model and design of main support structures (support beam, support feet, module plate)	0.0, 1.1	Delivered 3D model and design drawings	Apr 2014
1.3 M7	Develop design documentation for Pre-Series Slice	0.0, 0.1, 1.1	Final Design Review for Pre-Series Slice	Sep 2014
1.4	Production and delivery of batch 1 of Pre-Series Slice (PSS-B1)	1.2	SAT Aa for PSS-B1	Mar 2015
1.5	Production and delivery of all remaining components (batch 2) for Pre-Series Slice (PSS-B2)	1.3	SAT Aa for PSS-B2	Sep 2015
1.6 M8	Testing of Pre-Series Slice	1.5	SAT Ab for mechanics of Pre-Series Slice	Mar 2016

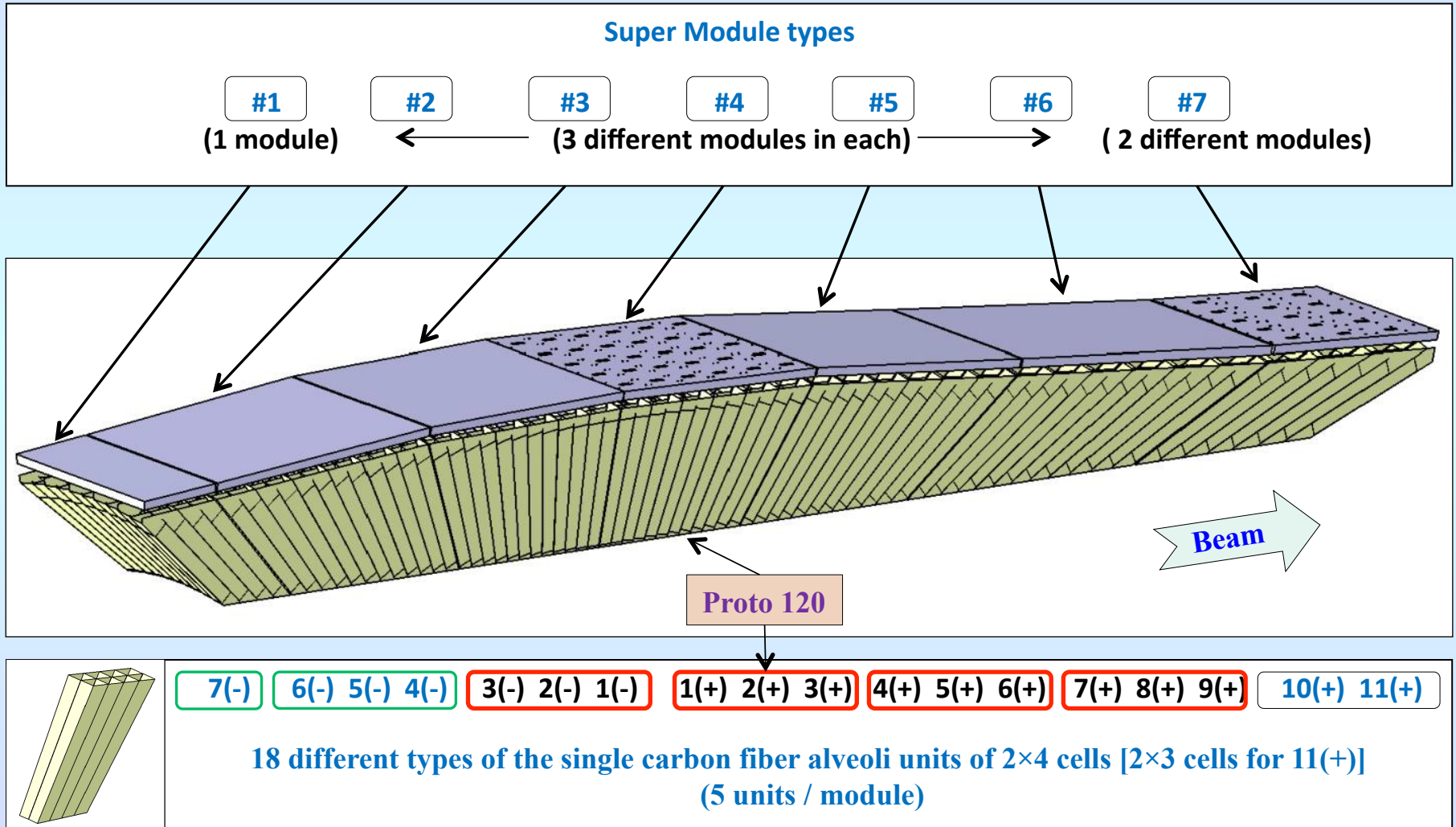
✓ **October 2015**

Delivered without tools

Production of support beam, support feet and module plates - tender formalities. Delivery in spring 2016

Slice Assembling?

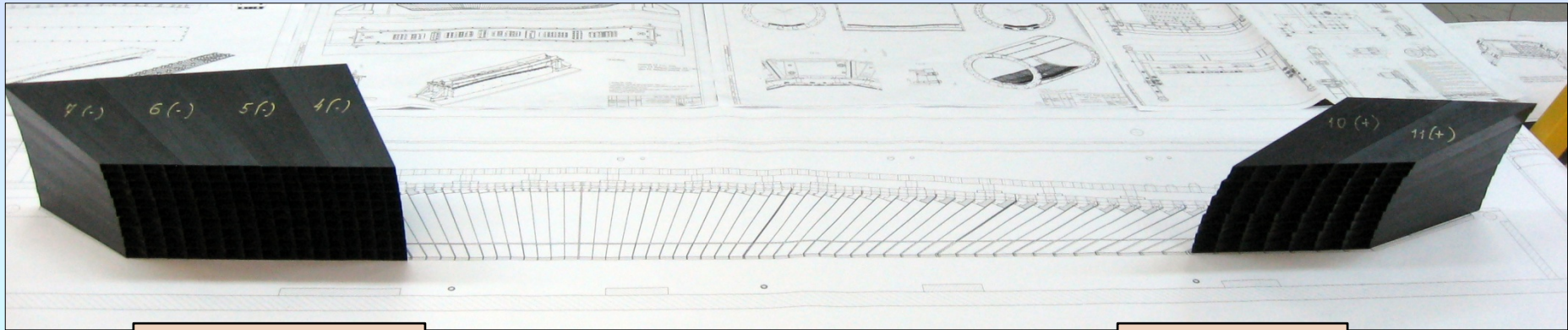
Crystals modular support structure



12 modules of crystals support structure

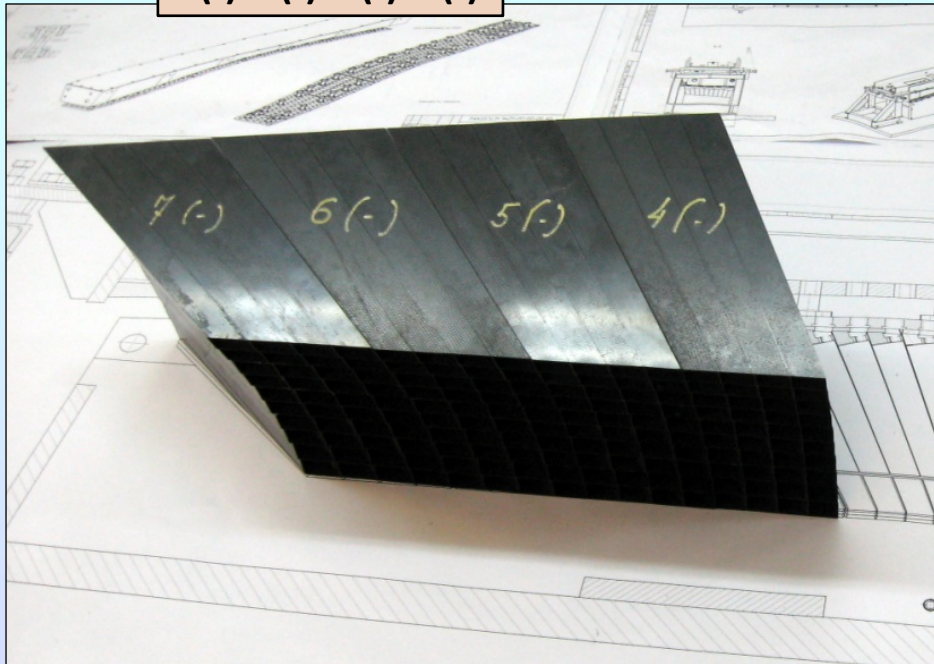


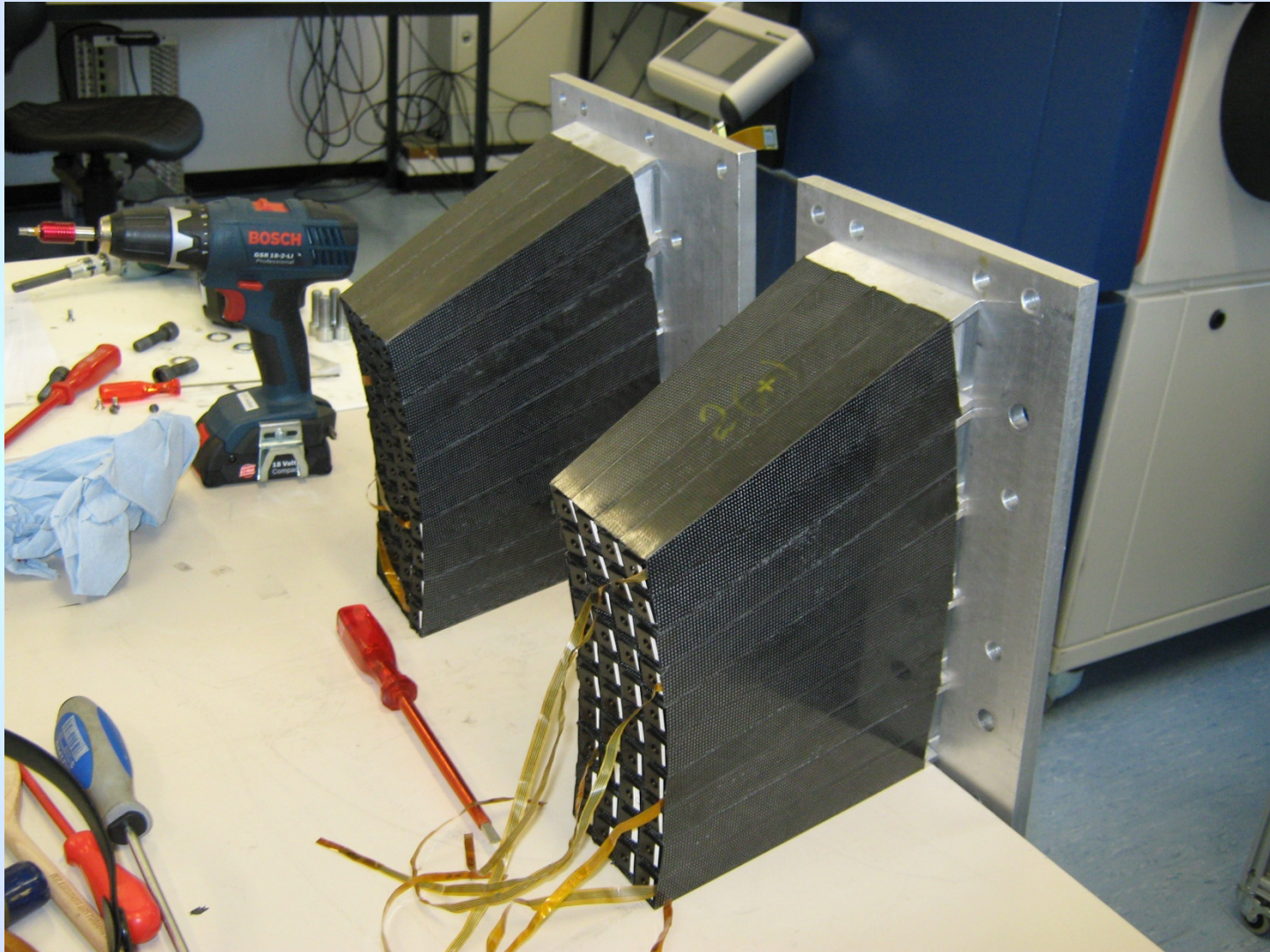
Six alveoli packs for super modules of type #1, #2 and #7



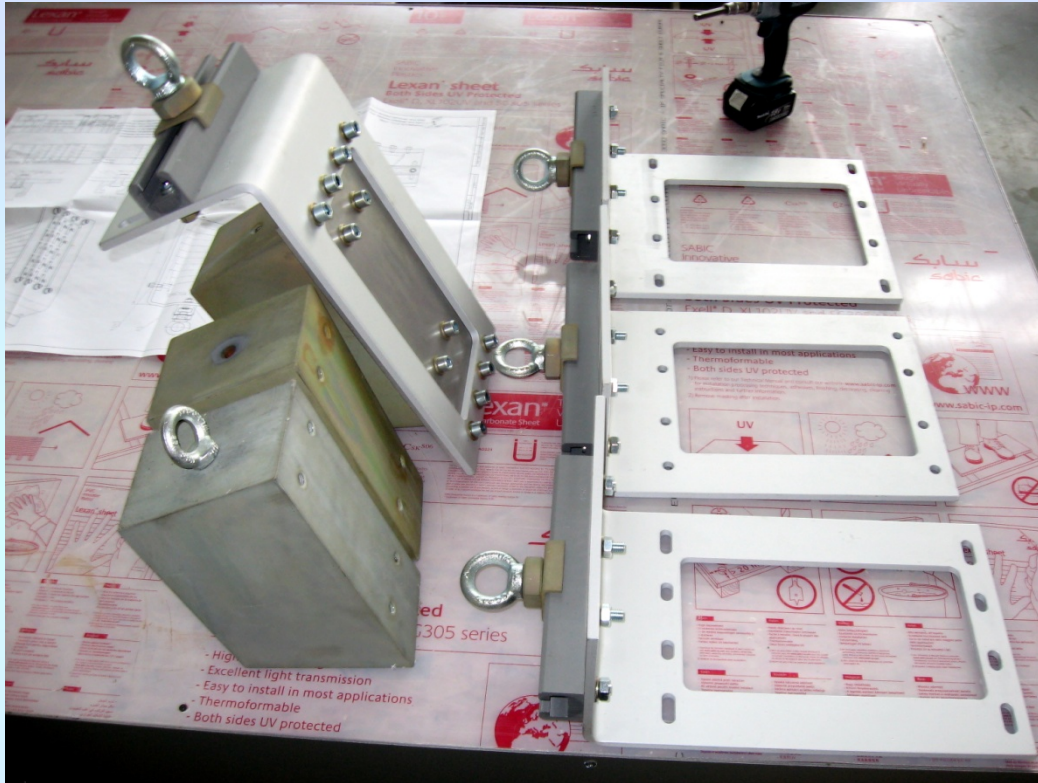
7(-) 6(-) 5(-) 4(-)

10(+) 11(+)



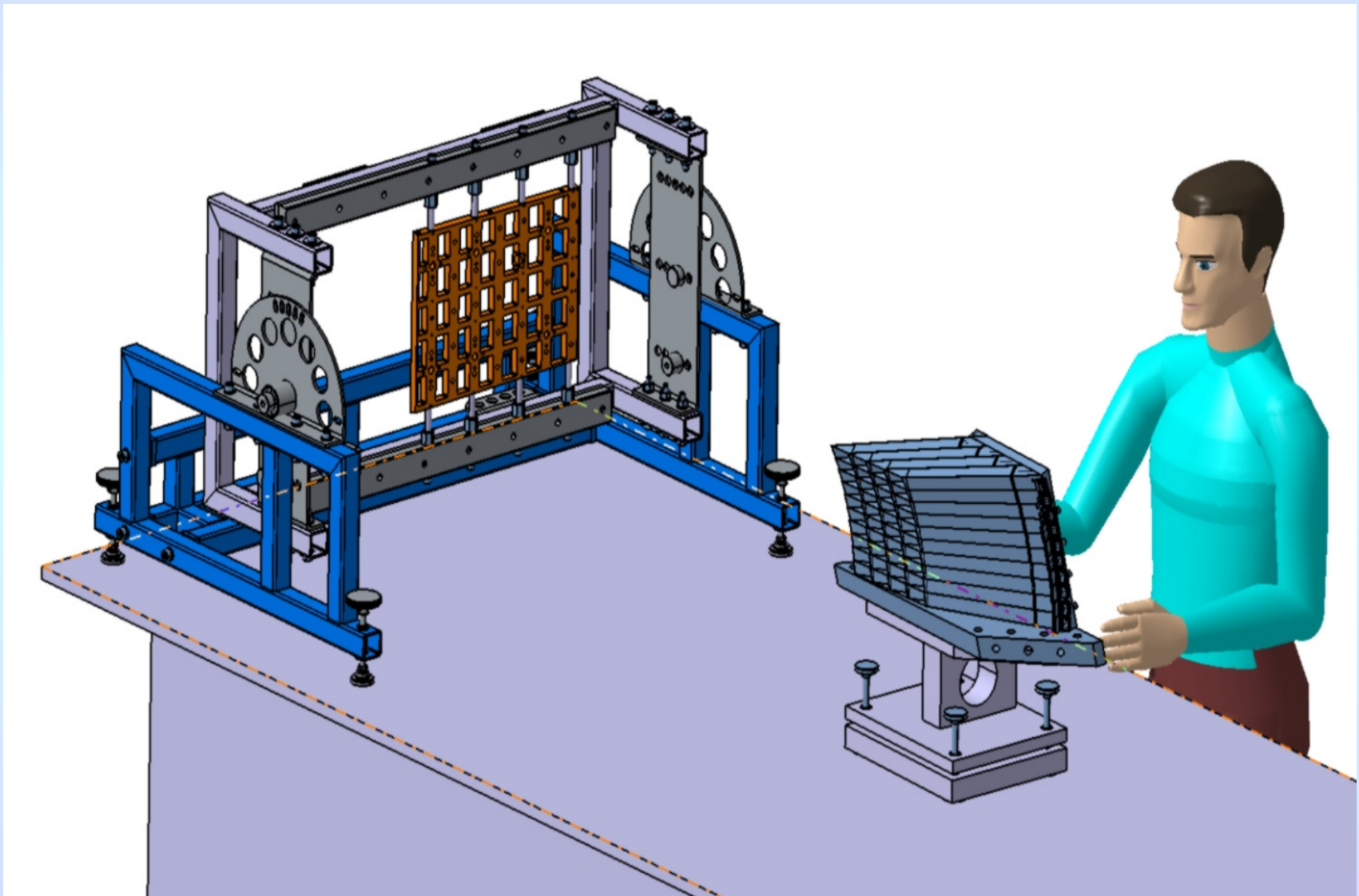


How to assemble slice



Dummy modules made of steel for the load tests and special tools to move fragile modules after their removal from the assembling devices.

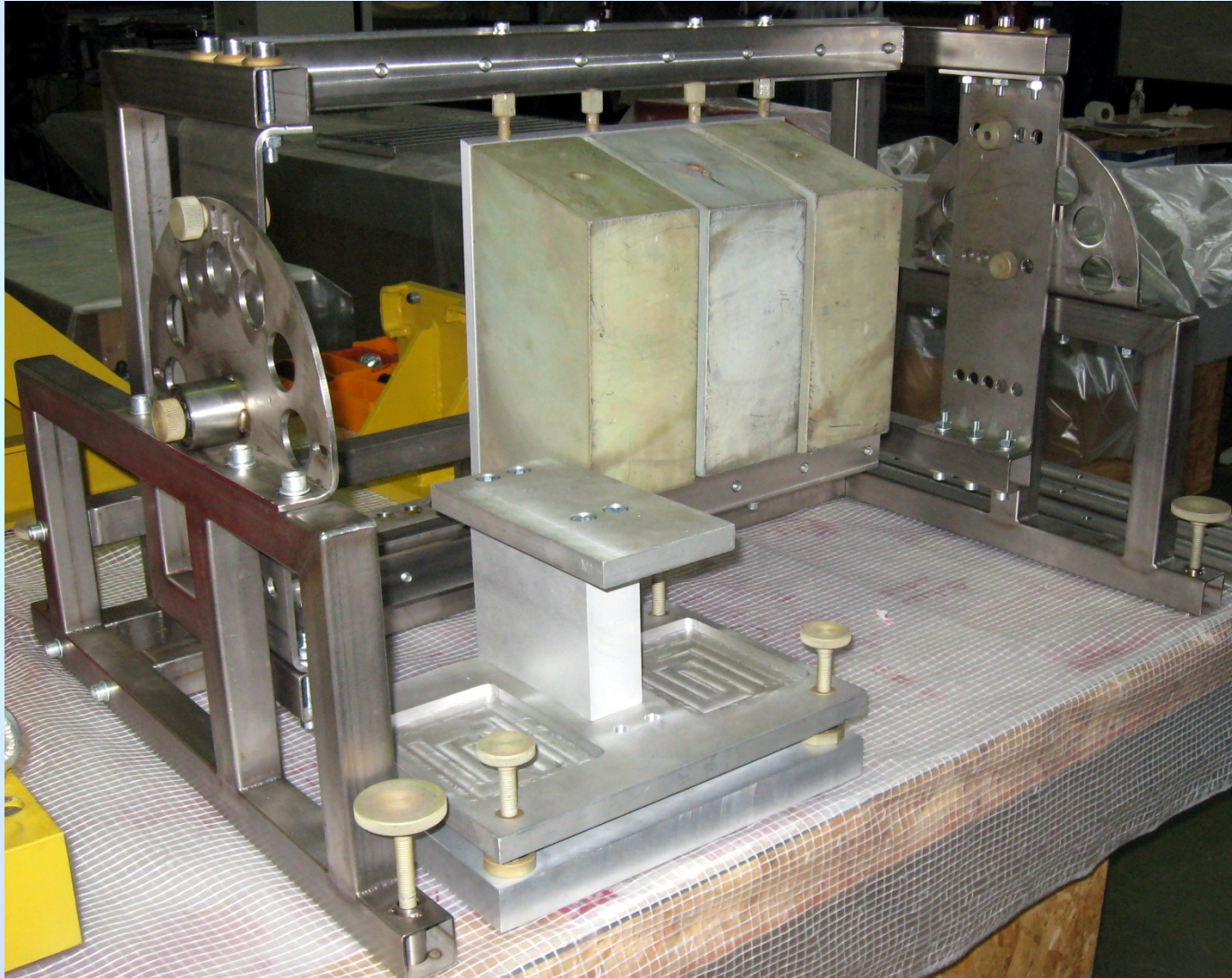






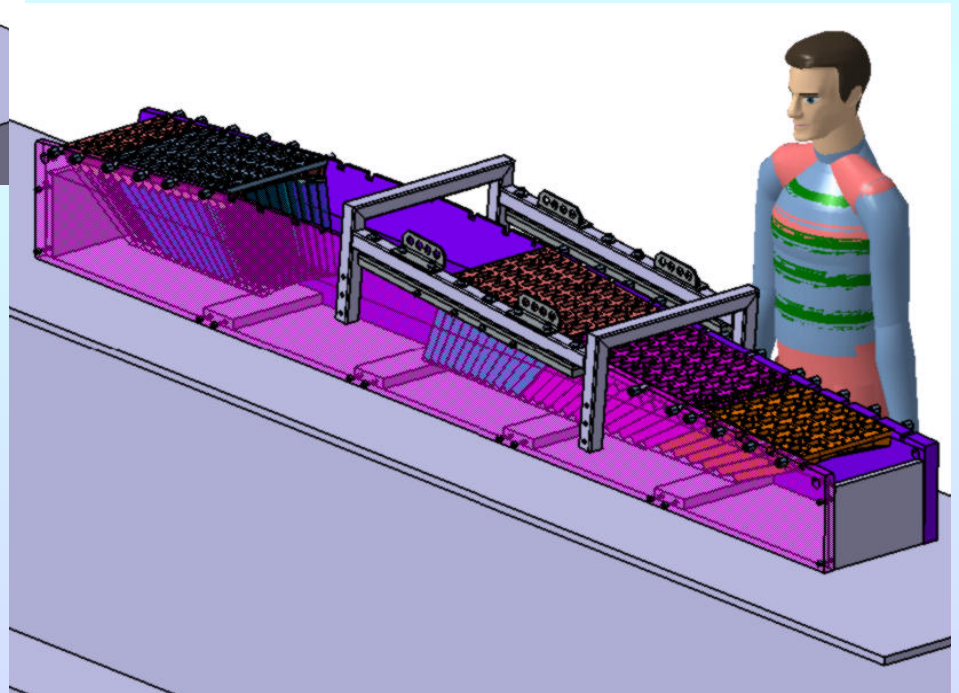
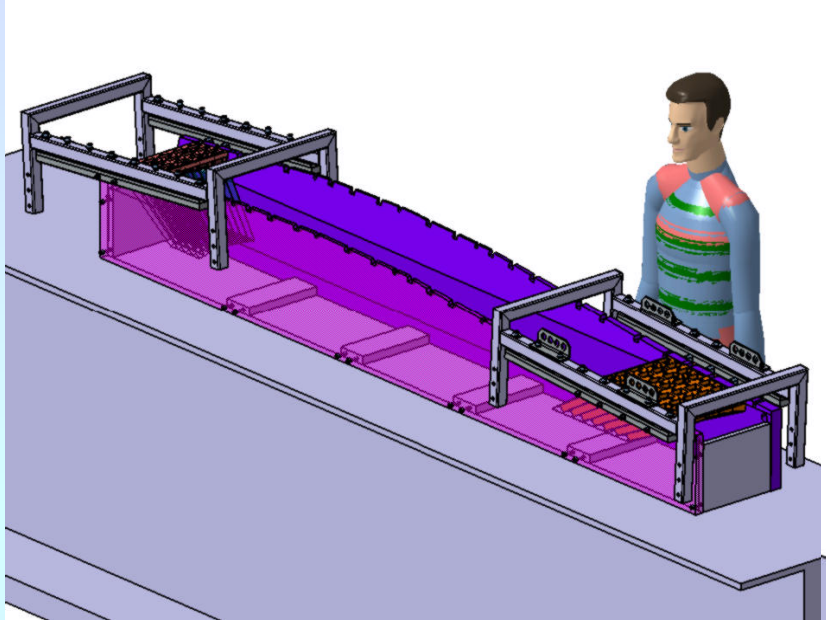
Set of tools for the mounting of all 18 types of modules onto the module plates

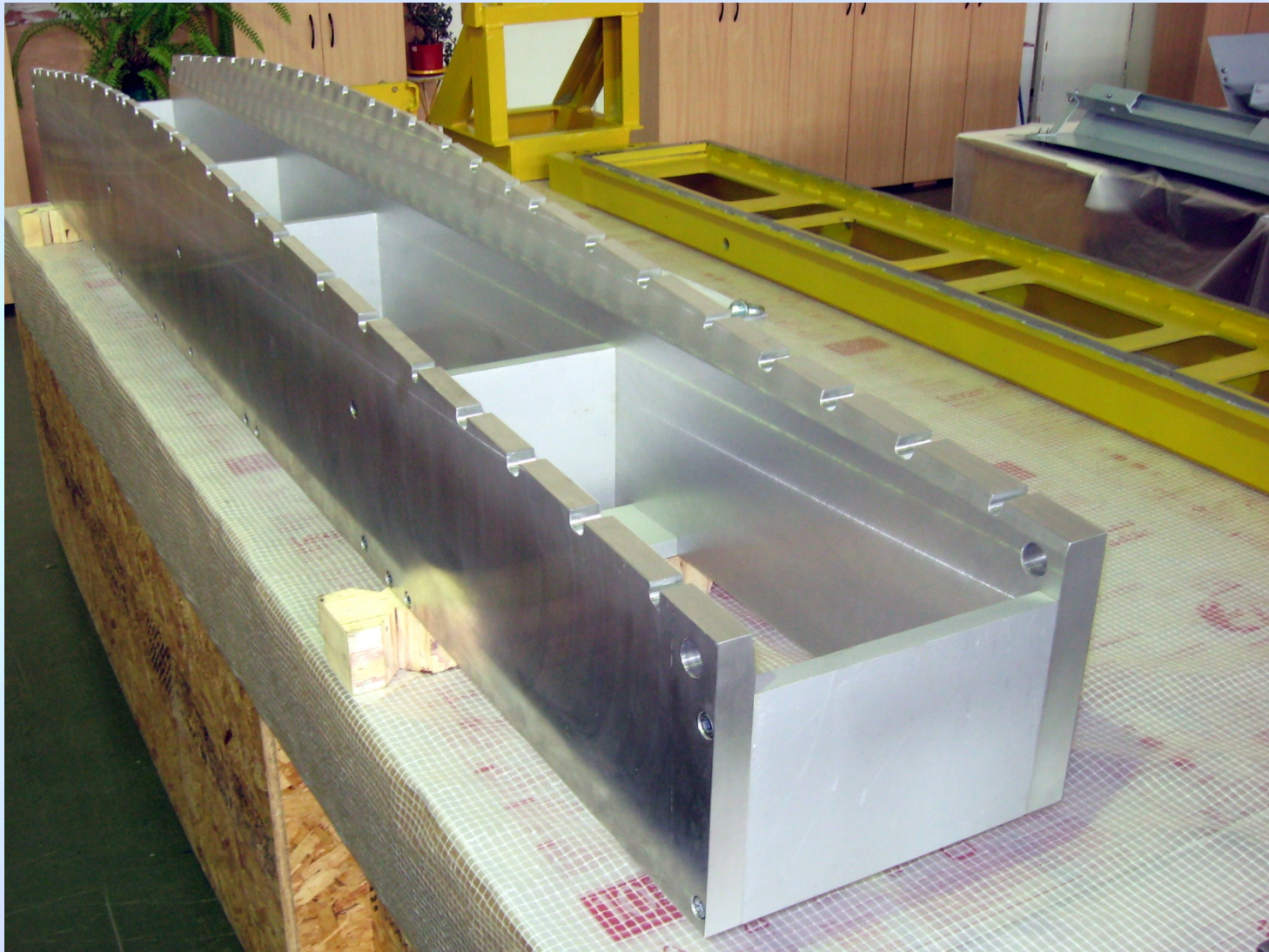


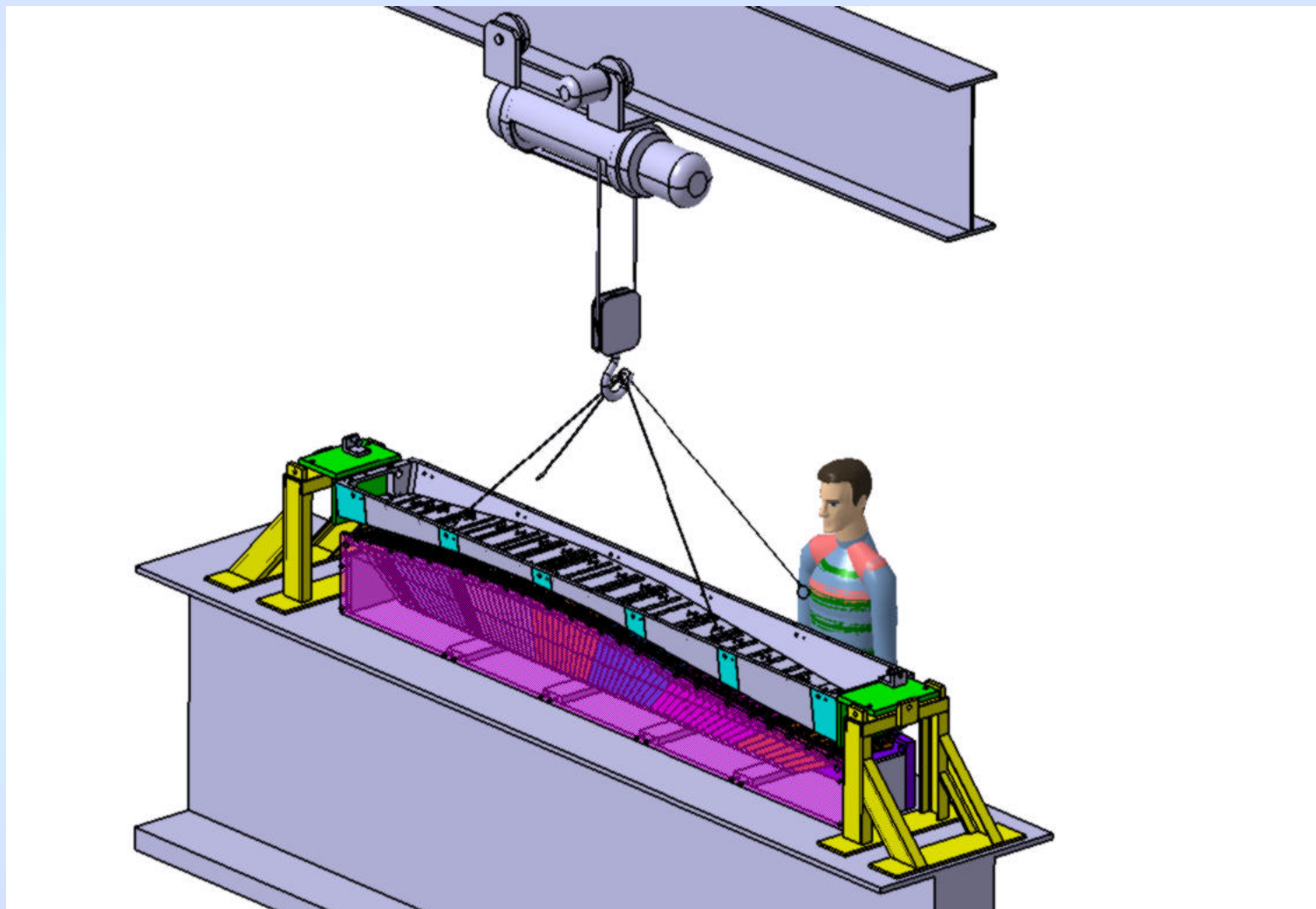




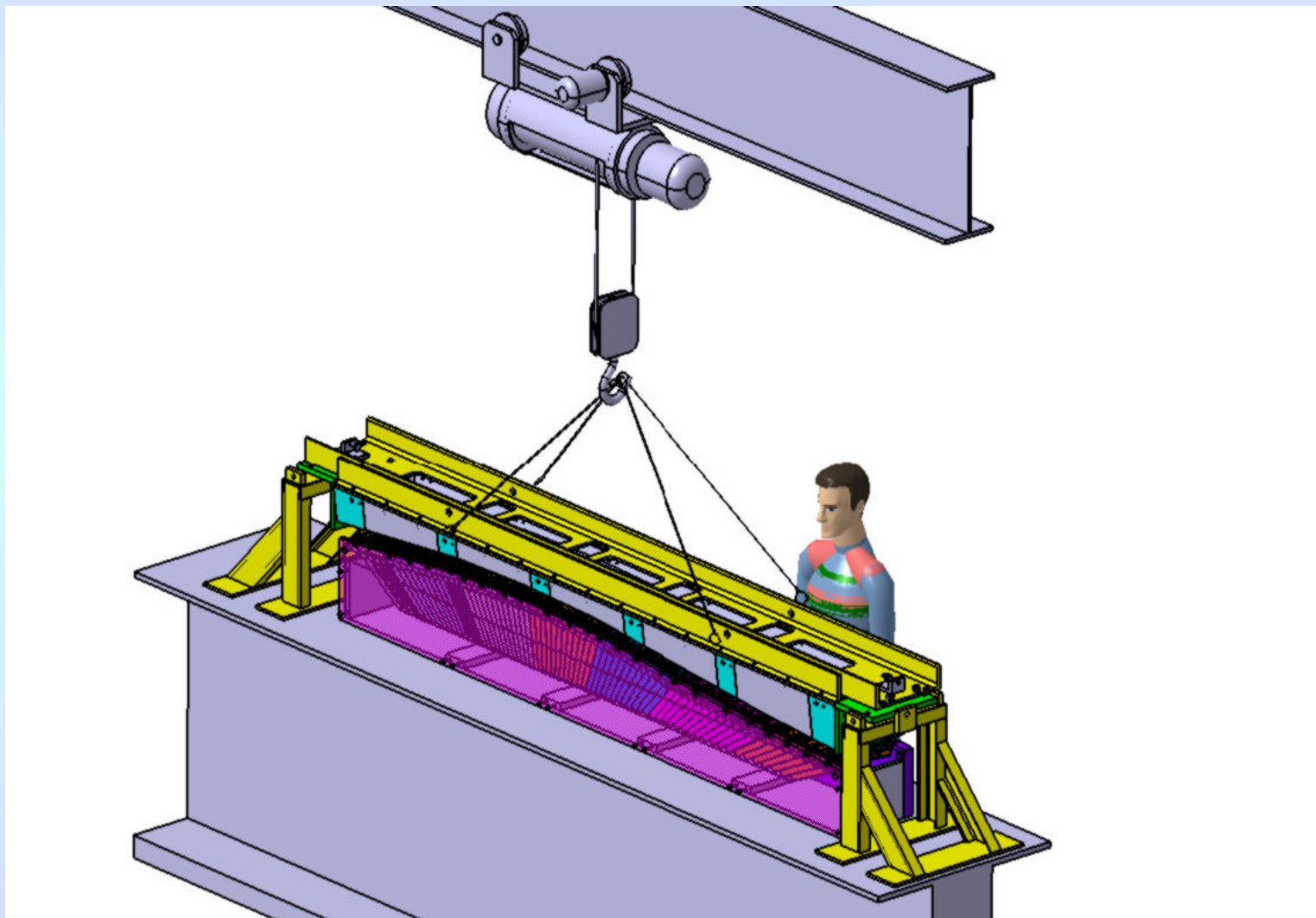
How to assemble slice



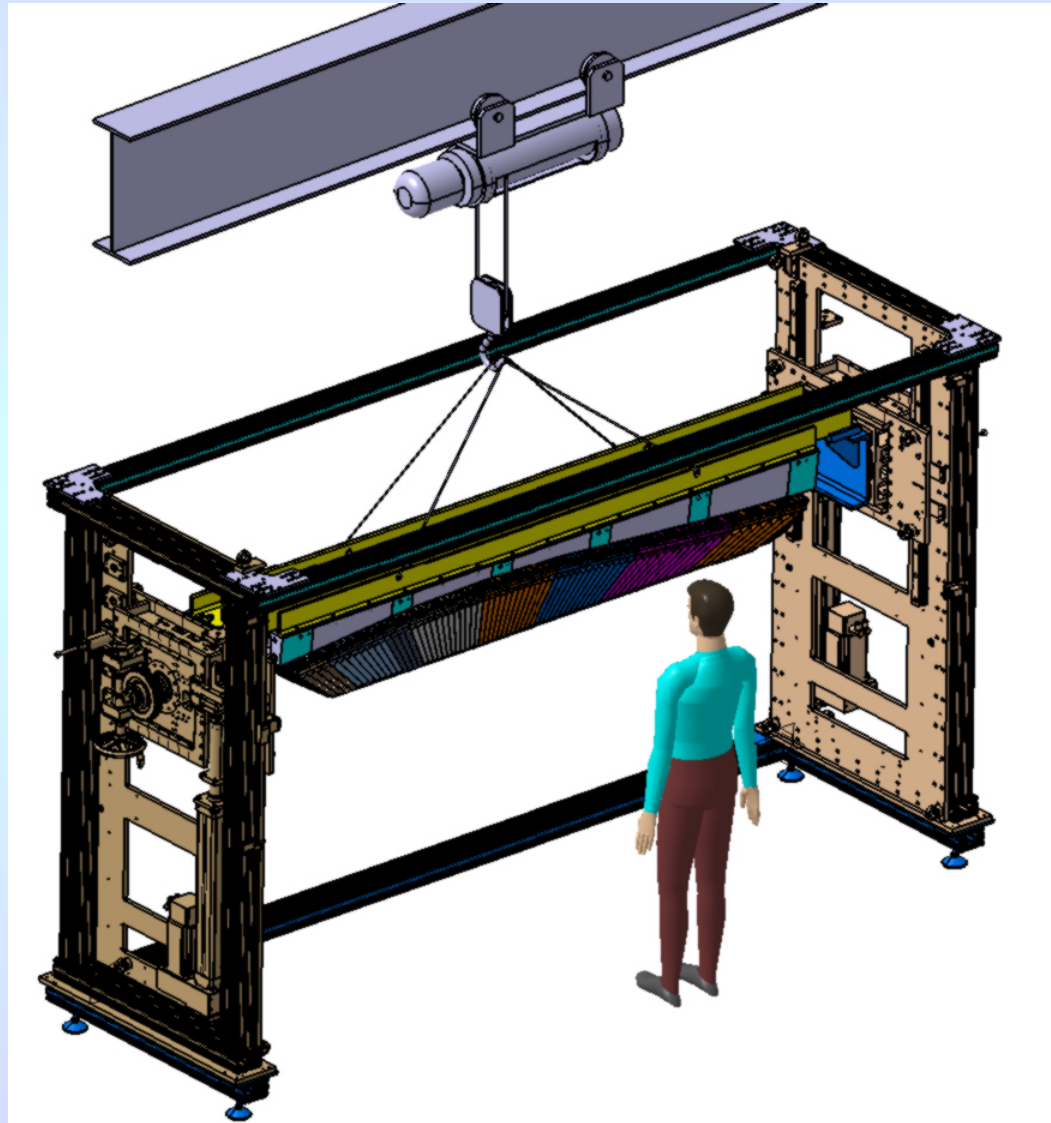


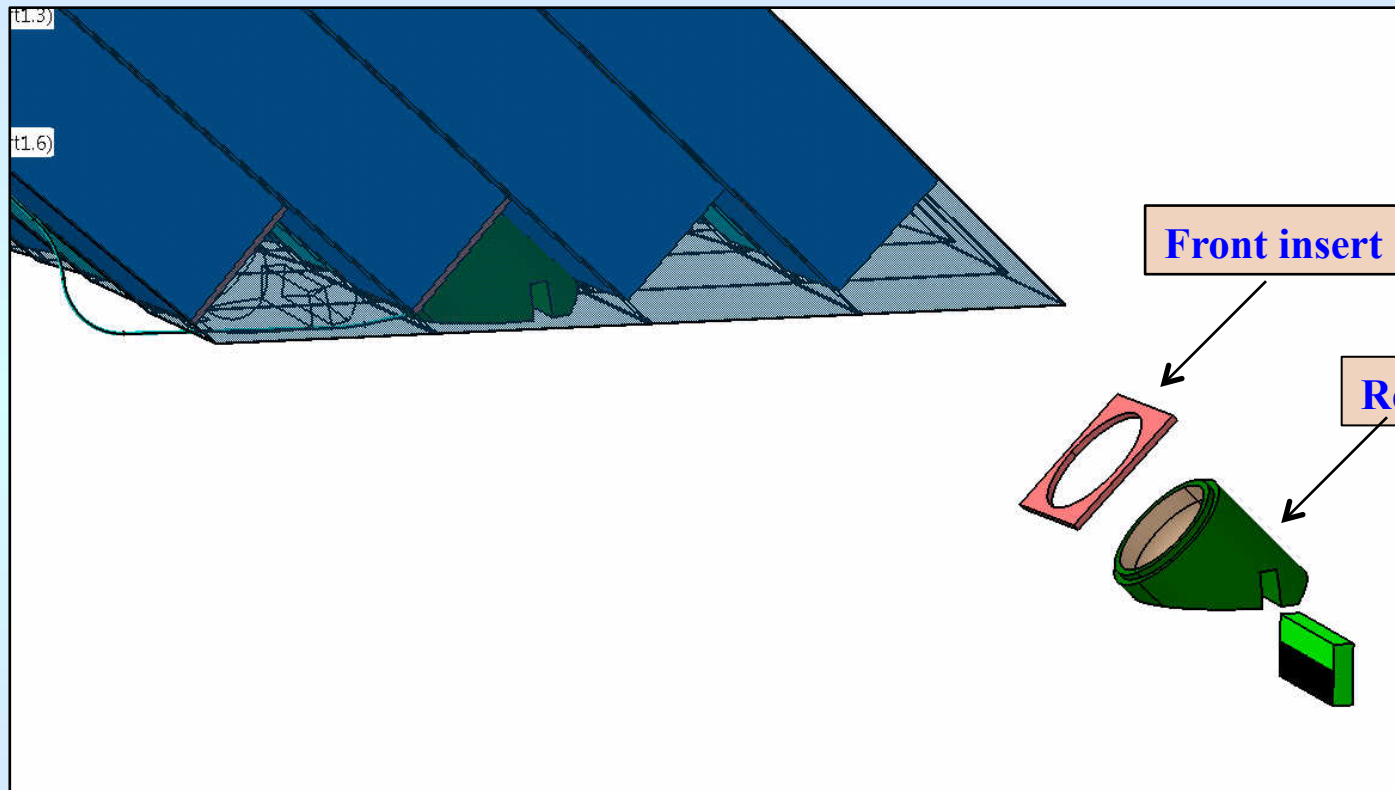


How to assemble slice









We suggest to produce such front inserts not waiting for the final solution on reflector design!

- *Manufacturing and quality control of single carbon alveoli units of different types is in progress. About 86% of necessary for the barrel assembly quantity were produced.*
- *All types (from 4(-) through 7(-), 10(+) and 11(+)) of alveoli packs, rear inserts and intermediate plates from the Batch 2 (pre-series slice) were produced.*
- *Manufacturing of devices and tools for the slice assembling was finished.*
- *Tender procedure for the production of back module plates, support feet and support beam is started. We have about 3 weeks to make last changes in technical drawings concerning positions, size and number of holes to mount electronics inside support beam.*
- *Delivery of Batch 2 of the pre-series slice is planned in spring 2016.*