

Quarterly collaboration-wide MG.T-REX update chat: September 2025

📅 Wednesday 24 Sept 2025, 13:00 → 16:00 Europe/Stockholm

📍 Graphene (ESS Campus B01)

👤 Alexander Backis (European Spallation Source ERIC)

Description Join Zoom Meeting

<https://ess-eu.zoom.us/j/67510964953?pwd=fLD2gvonp5KKwR1bQxzcxeUbNYgmjz.1&from=addon>

Meeting ID: 675 1096 4953

Passcode: 510911

13:00 → 13:45 **Project Overview**

Conveners: Alexander Backis (European Spallation Source ERIC), David Hansson (European Spallation Source ERIC)

13:45 → 14:30 **Internal scattering tests at EMMA: May-June 2025**

Convener: John Annand (University of Glasgow)

14:30 → 16:00 **Q&A**



Project overview

PRESENTED BY ALEXANDER BACKIS AND DAVID HANSSON

2025-09-24

Agenda



1 Overview

2 Updates

3 Production

4 Summary

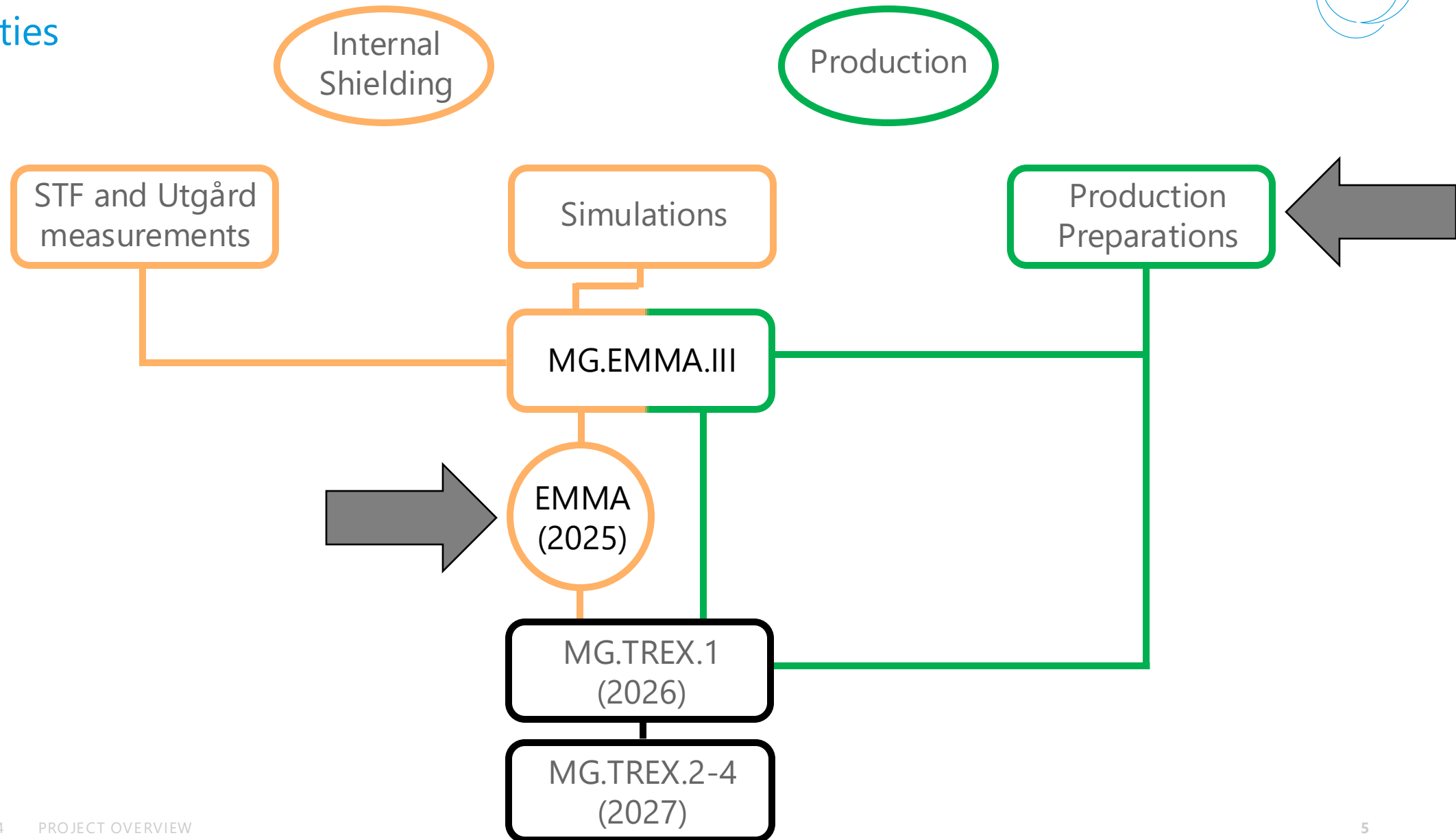
1.

Activities



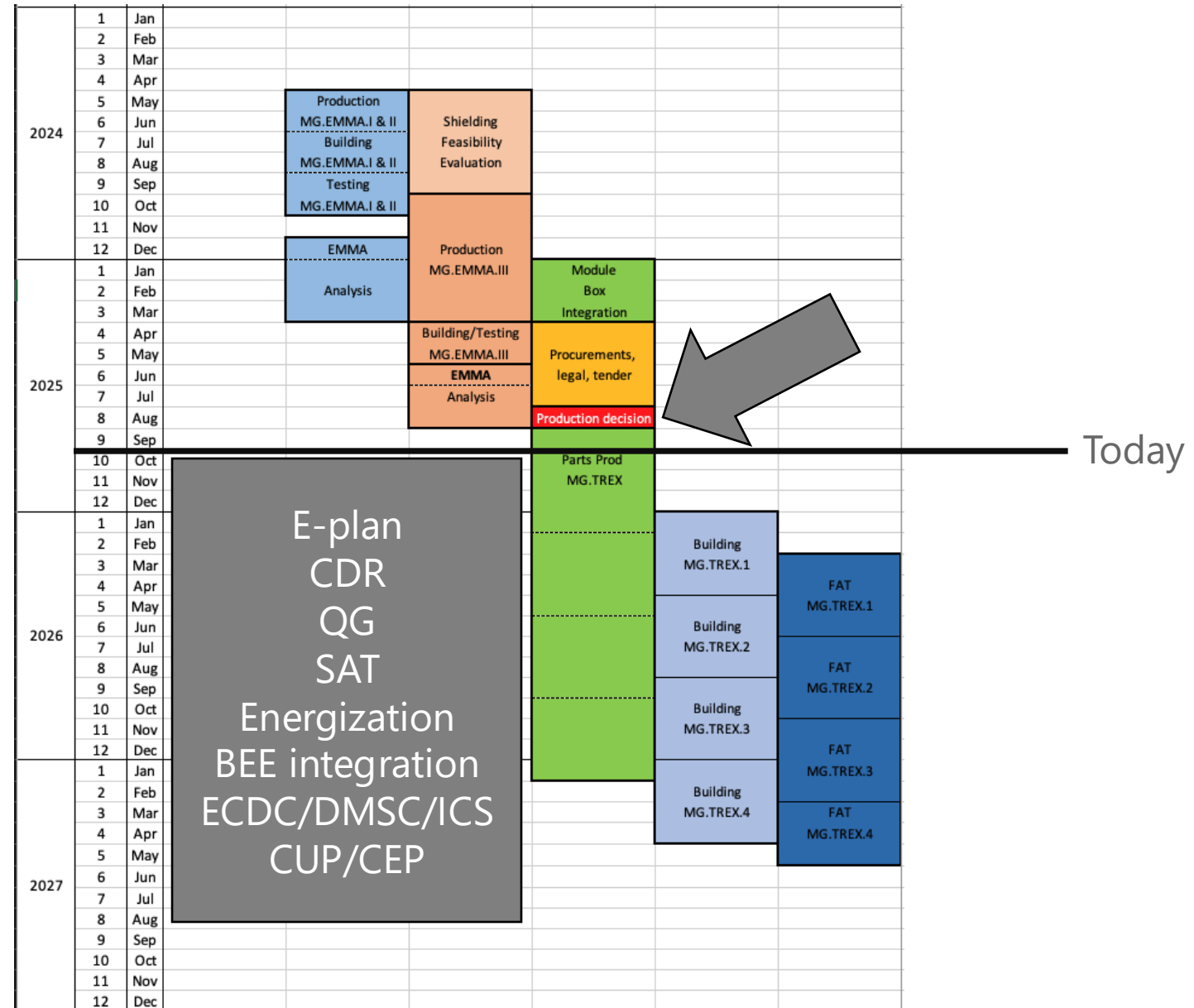
1. Overview

Activities



1. Overview

Simplified timeline

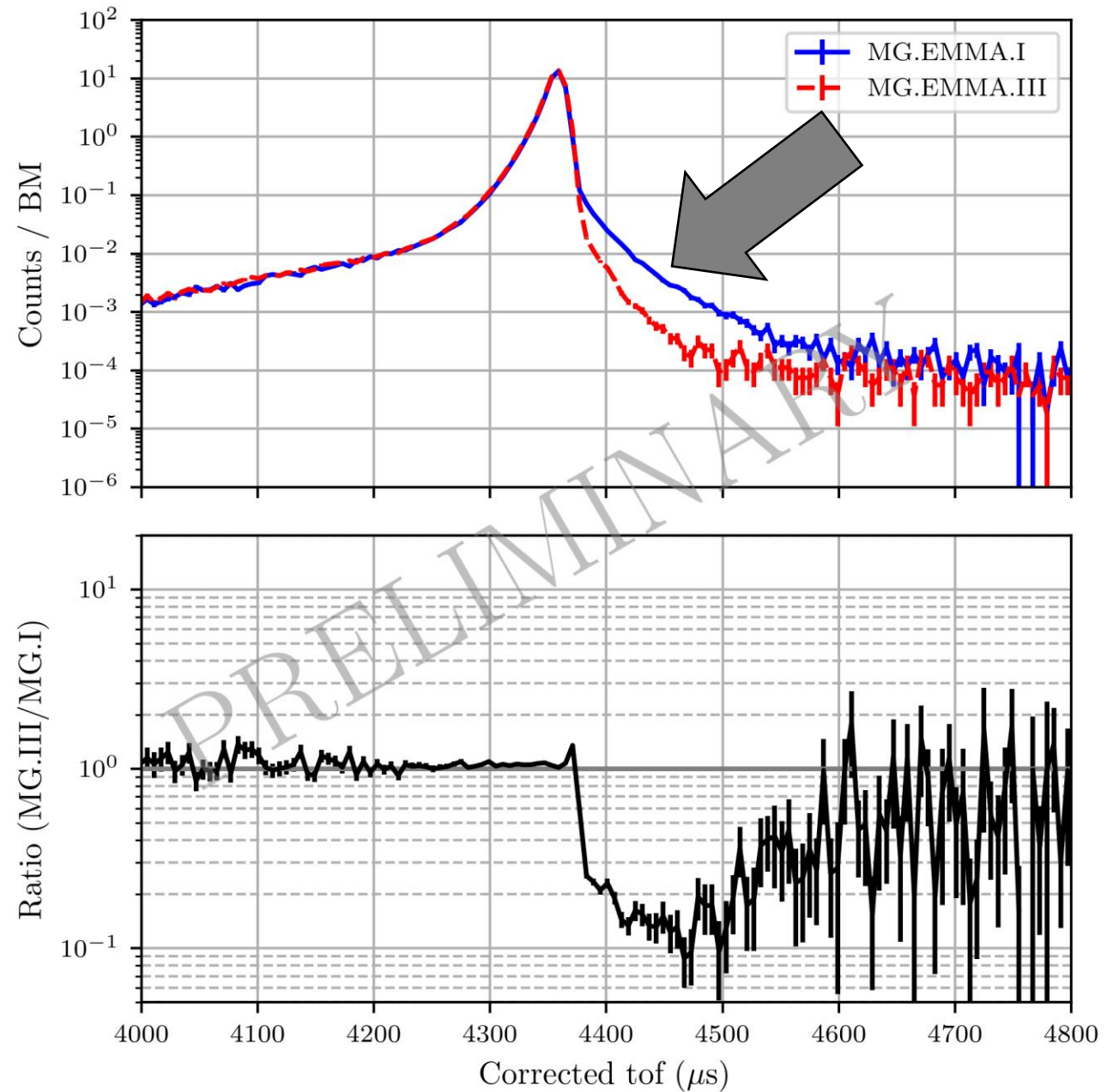


2.

Updates

2. Updates

Internal shielding – Al-B₄C



2. Updates

Intrinsic alpha rate

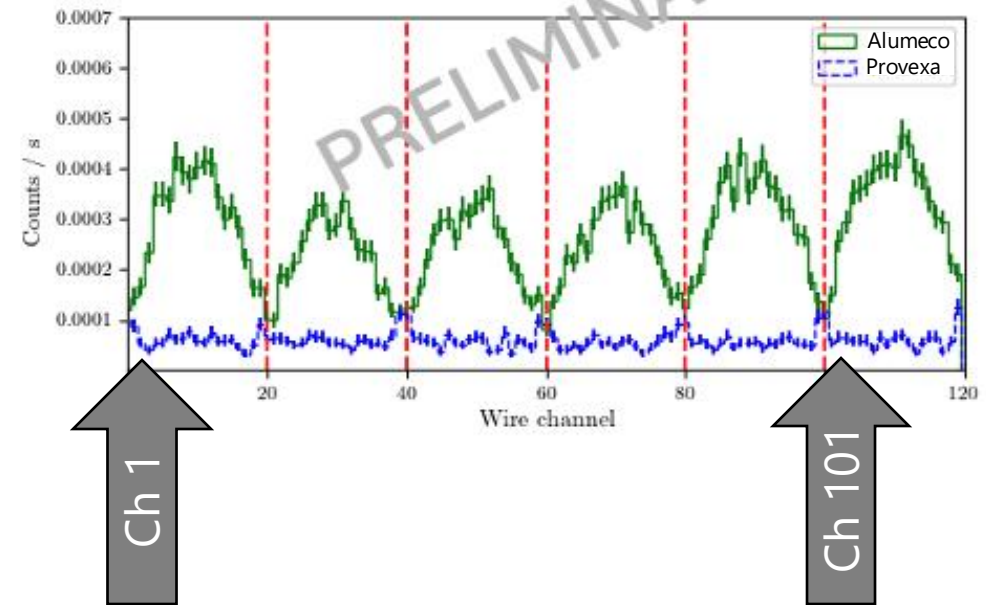
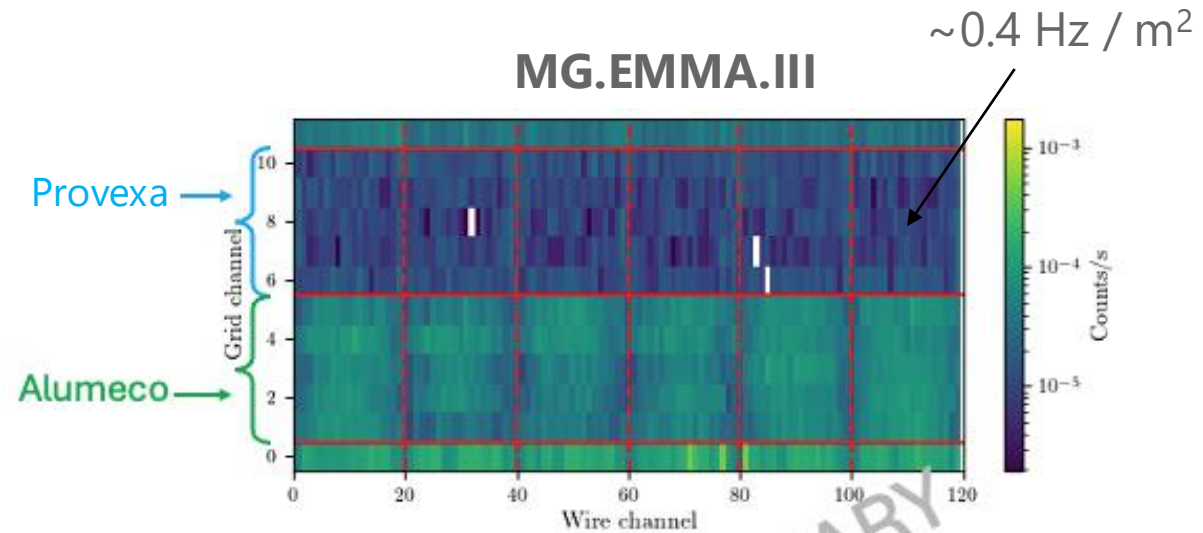
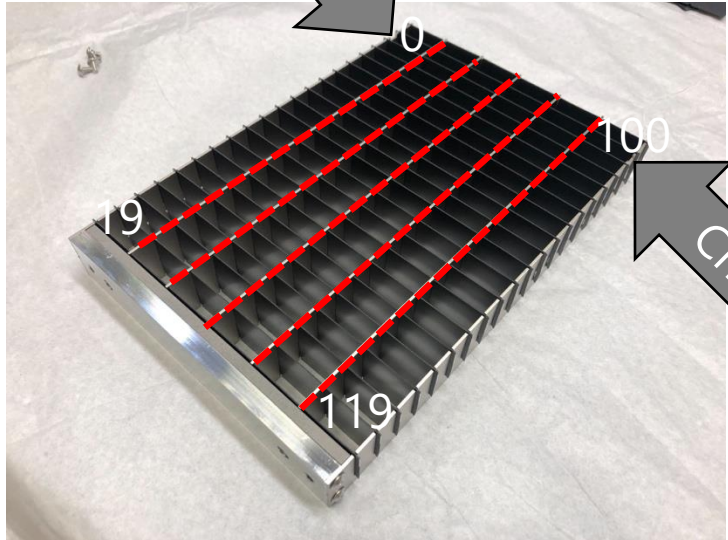
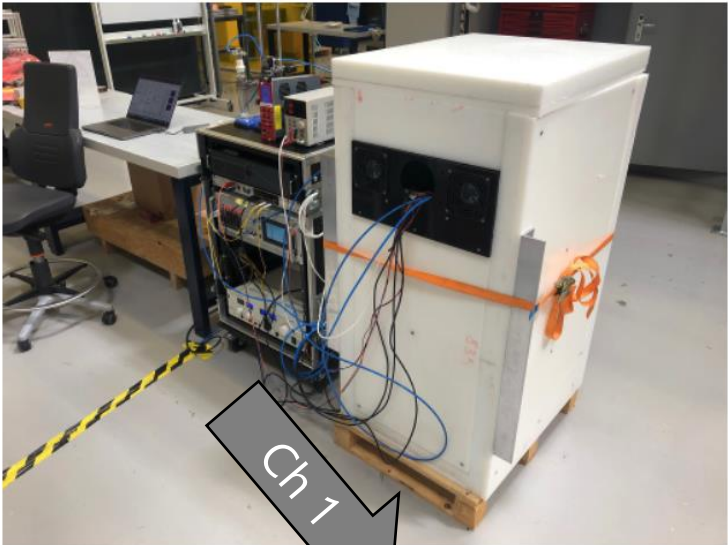


Table 1. Collected parameters of the investigated samples, measurement times, the obtained surface alpha emissivities (surface alpha rates) as well as the specific gross alpha activities.

Sample	Sample dimensions [cm]	[day]	Surface α rate [$\alpha/\text{day}/\text{m}^2$]	Gross specific α activity [Bq/kg]
Al_1	40×40×0.05	12	320 ± 20	0.22 ± 0.02
Al_1 cleaned	40×40×0.05	11	280 ± 20	0.19 ± 0.02
Al_2	40×40×0.05	13	310 ± 20	0.21 ± 0.02
Al_Al	30×30×0.16	6	3 980 ± 150	2.7 ± 0.1
Al_3	30×25×0.1	0.3	79 440 ± 2 300	53 ± 2
Al_Ni	30×25×0.16	21	68 ± 19	0.03 ± 0.01

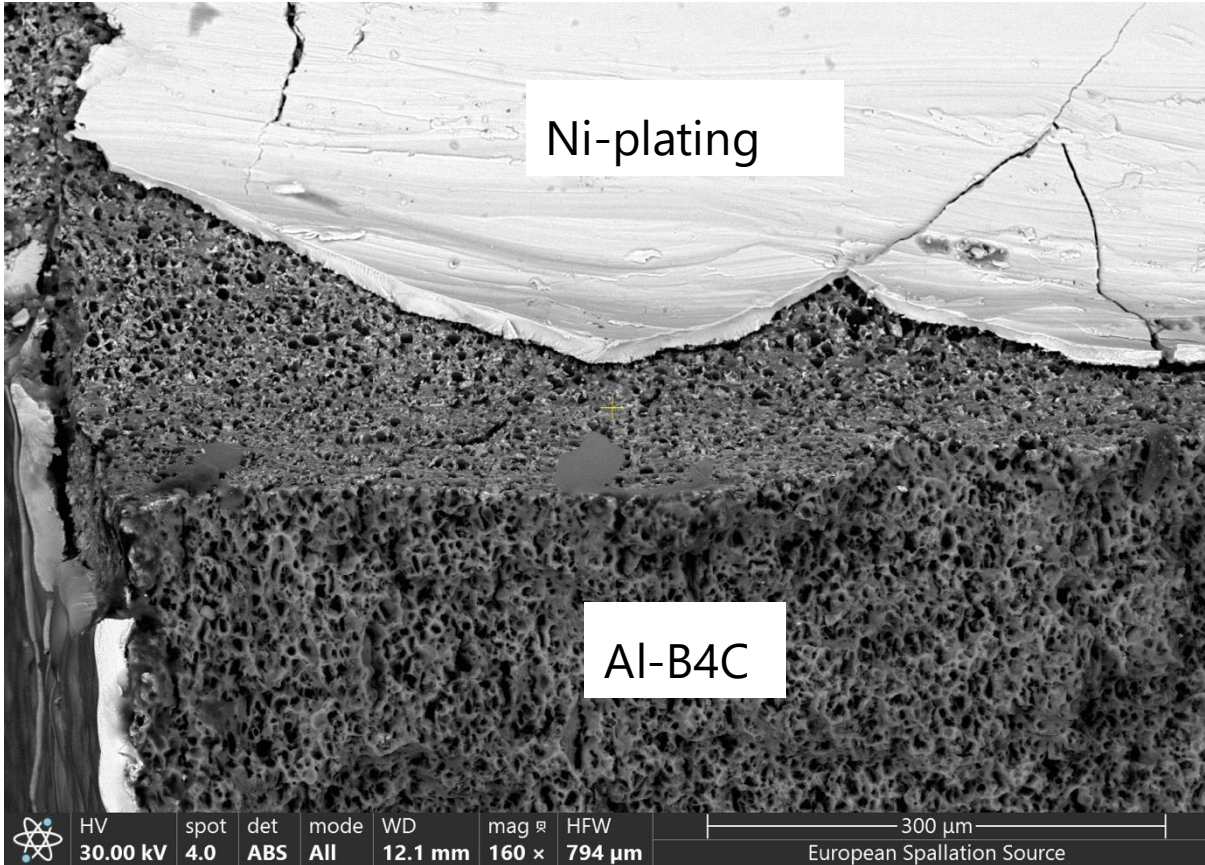
2. Updates

Ceramic H-spacers



2. Updates

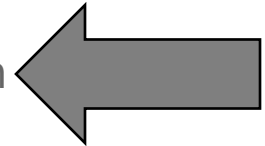
Ni-plating



Thickness

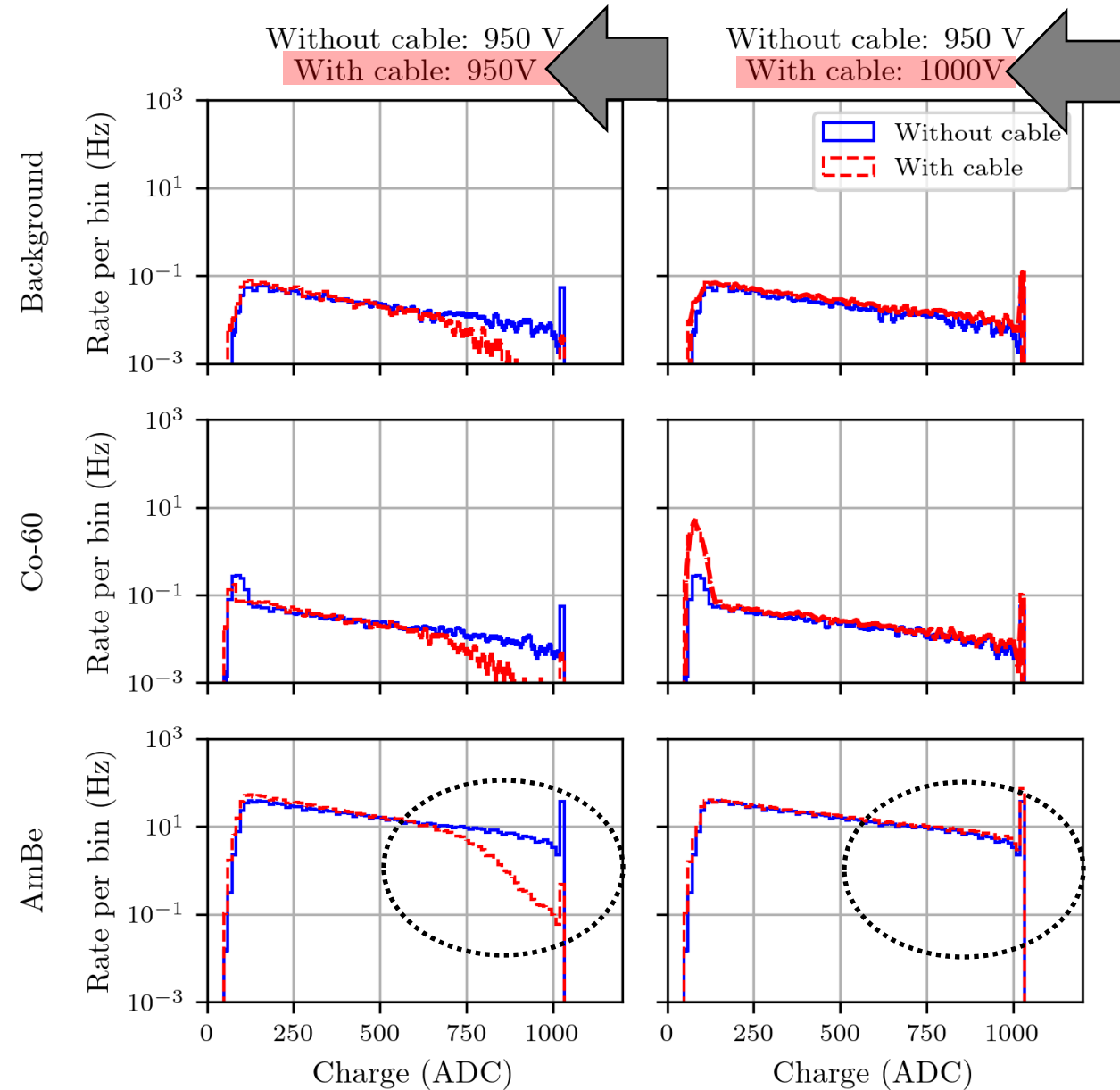
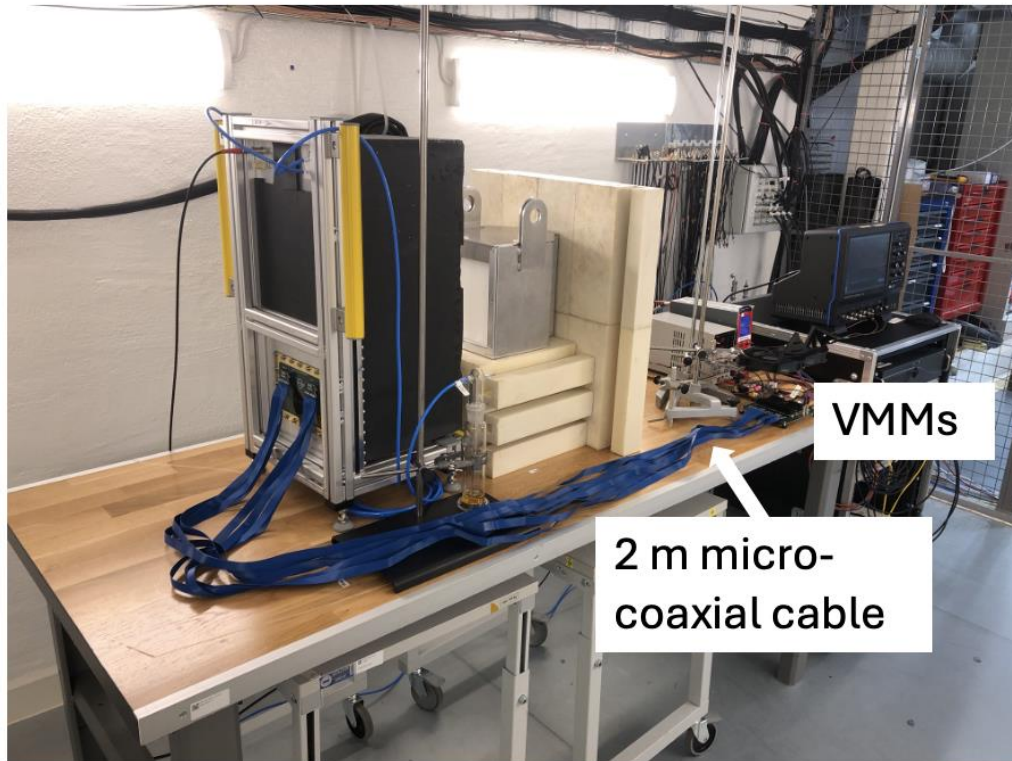
Alumeco: 8 – 13 μm

Provexa: 19 – 26 μm



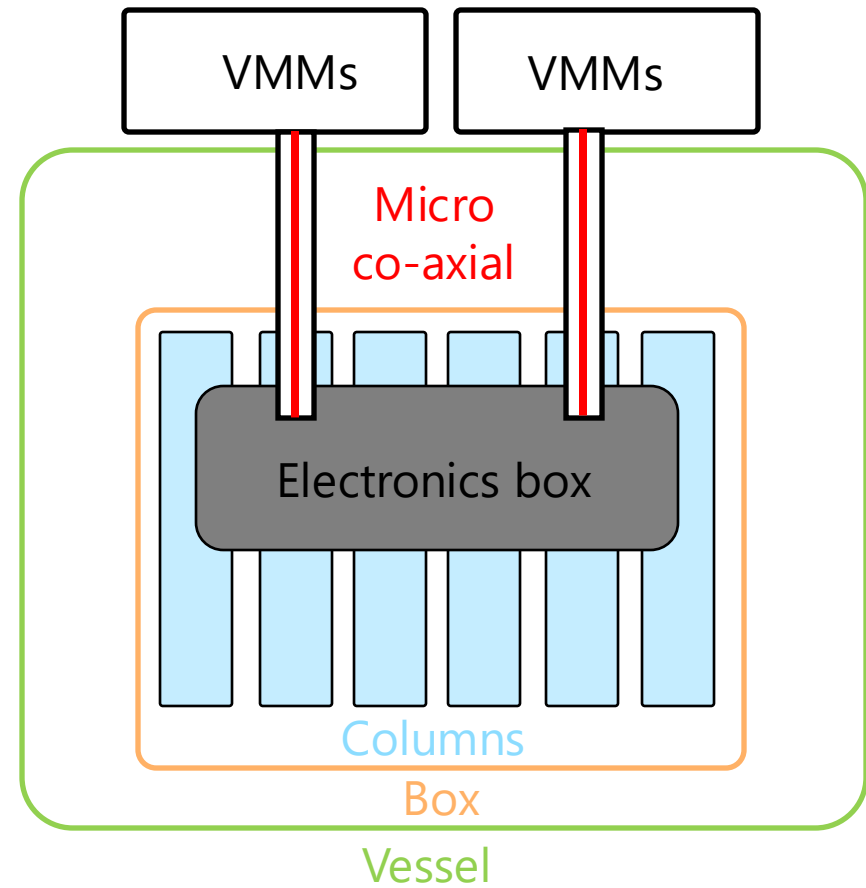
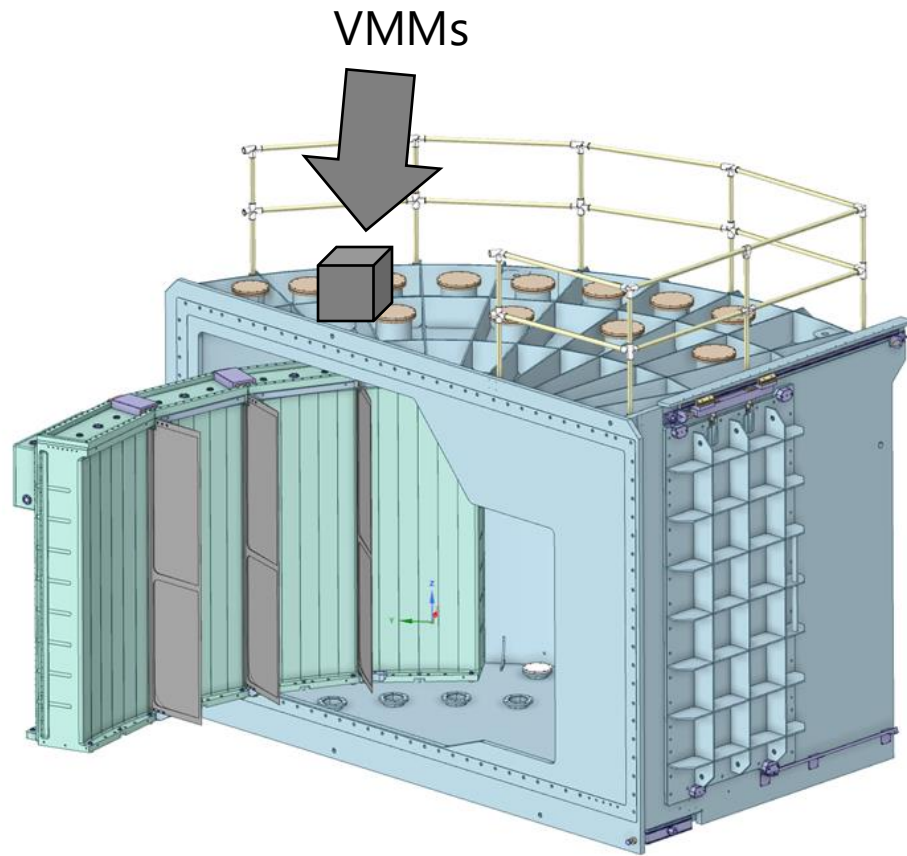
2. Updates

Samtec cables



2. Updates

Samtec cables



2. Updates

Demonstrator column back in Lund



2. Updates

Publications – University of Glasgow

- In progress {
 - 1. Front-end readout electronics
 - 2. Shielding material evaluation
- Upcoming {
 - 3. Alpha rate investigation
 - 4. Internal shielding evaluation
 - 5. Multi-Grid simulation tool kit

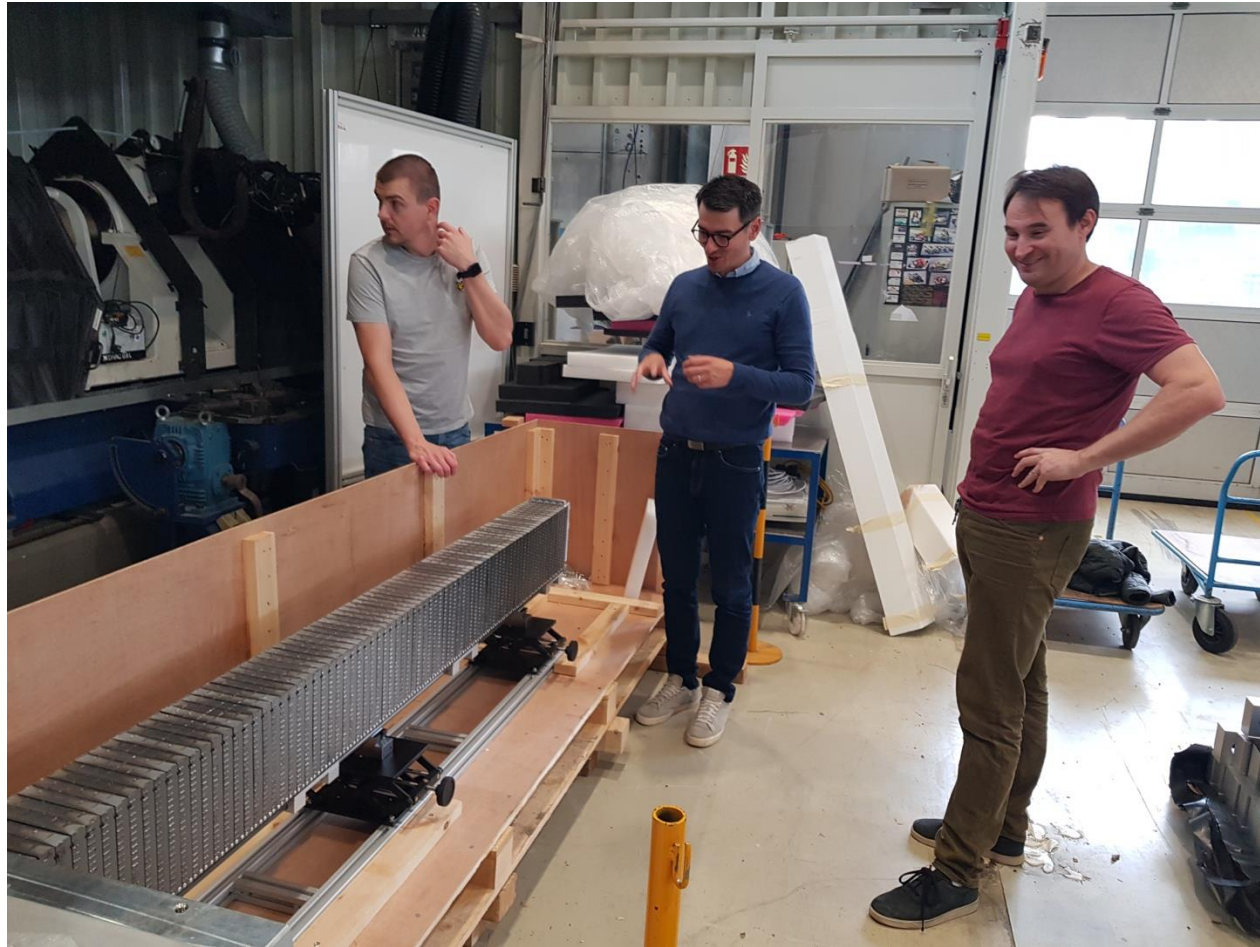
2. Updates

Marina is joining the coating production



2. Updates

Jan is leaving ESS by the end of October

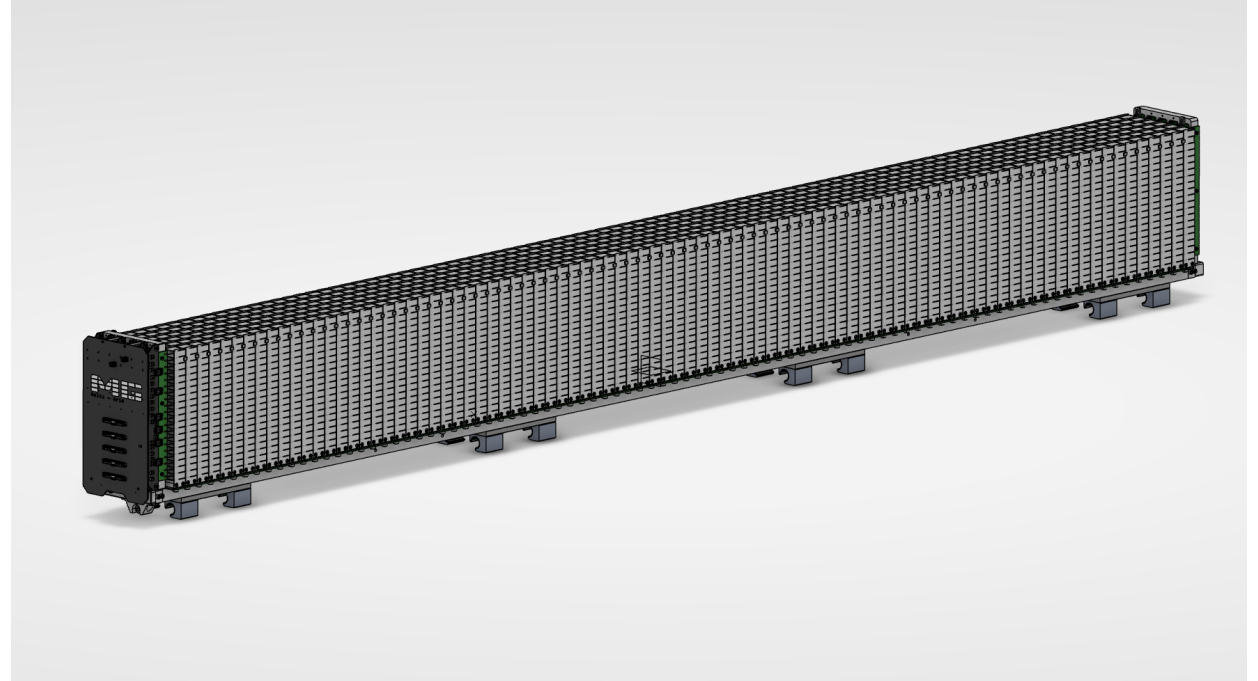
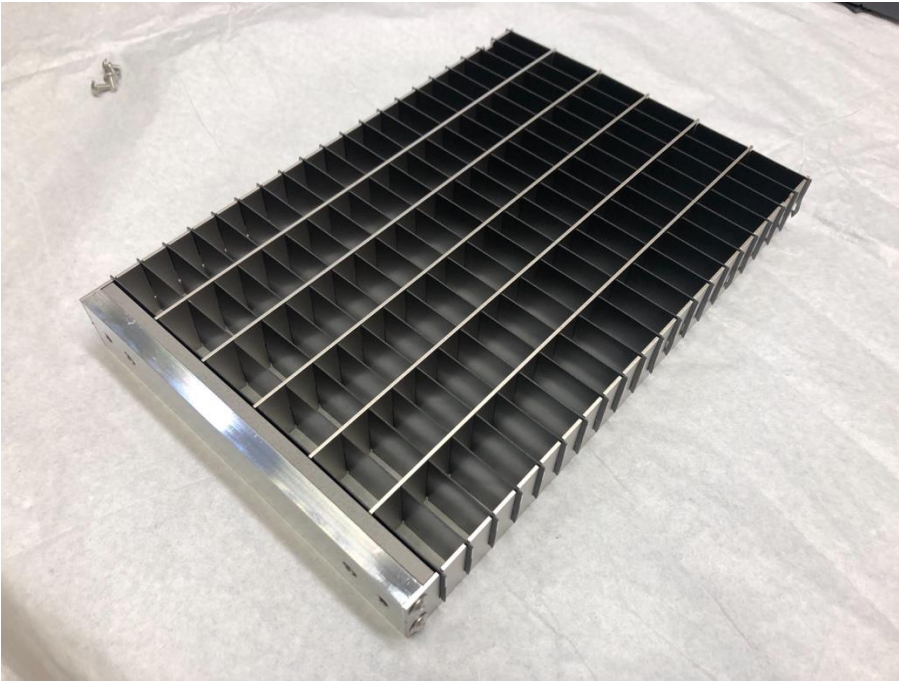


3.

Production

3. Production

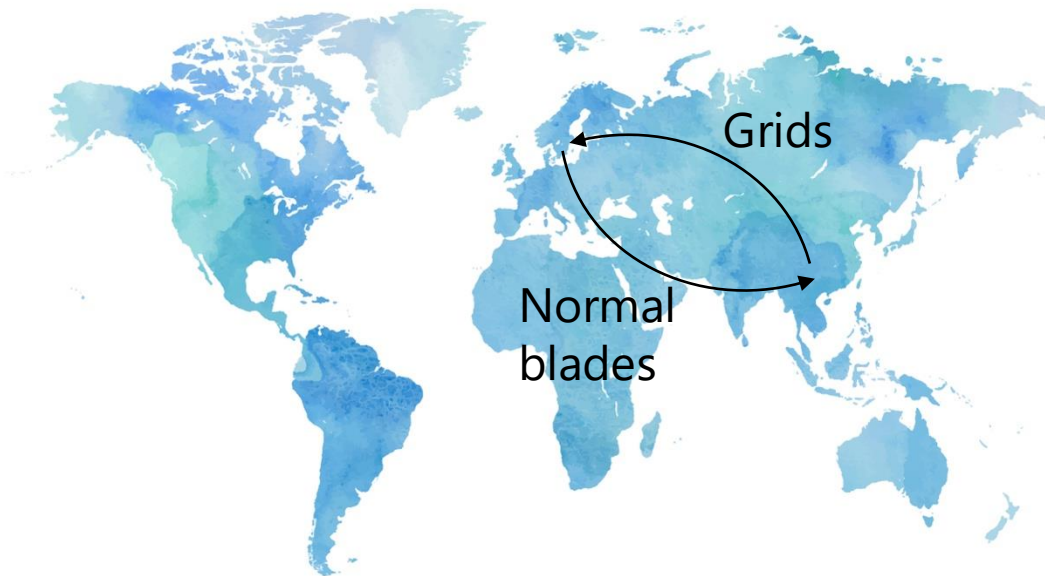
Overview



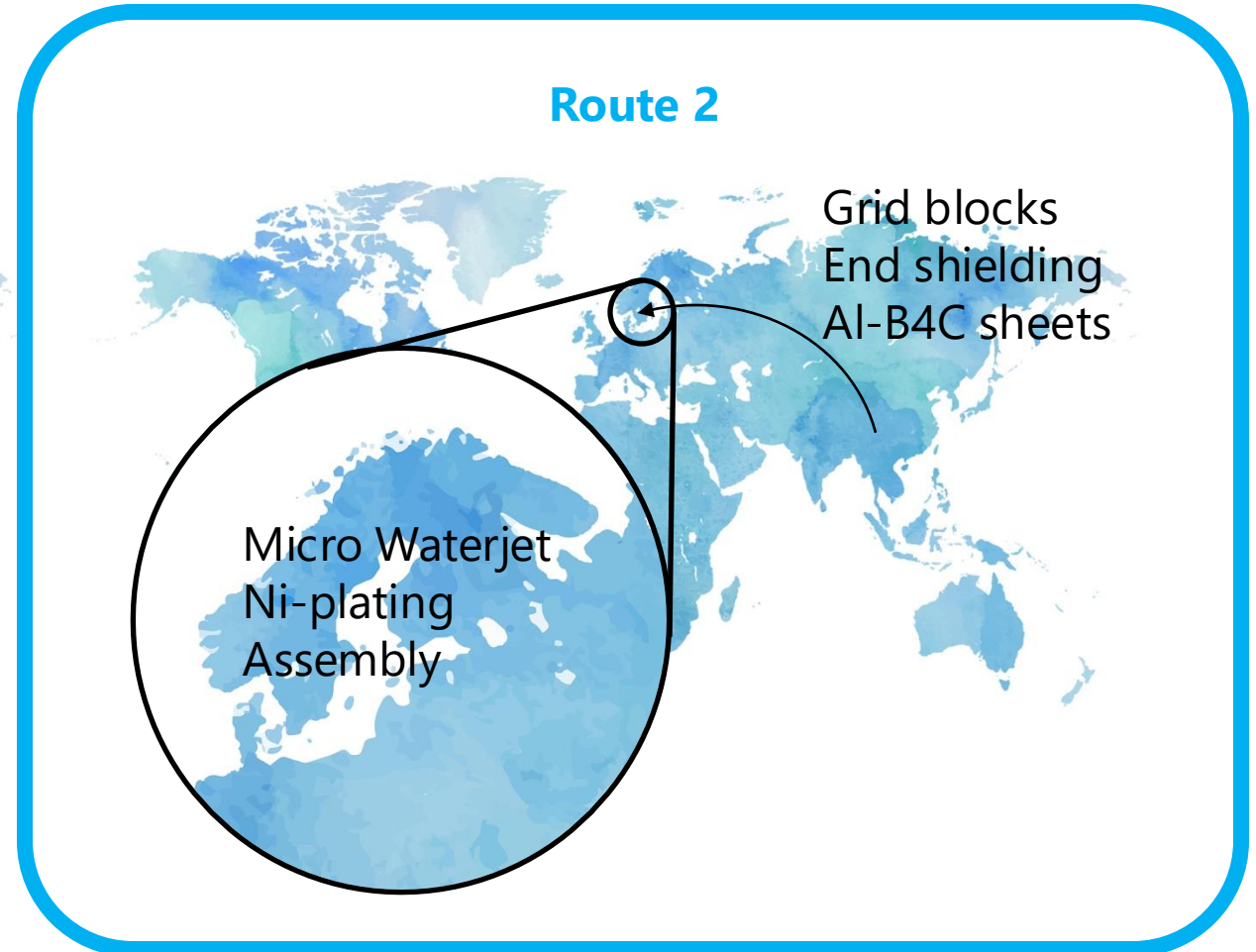
3. Production

Grid production route

Route 1

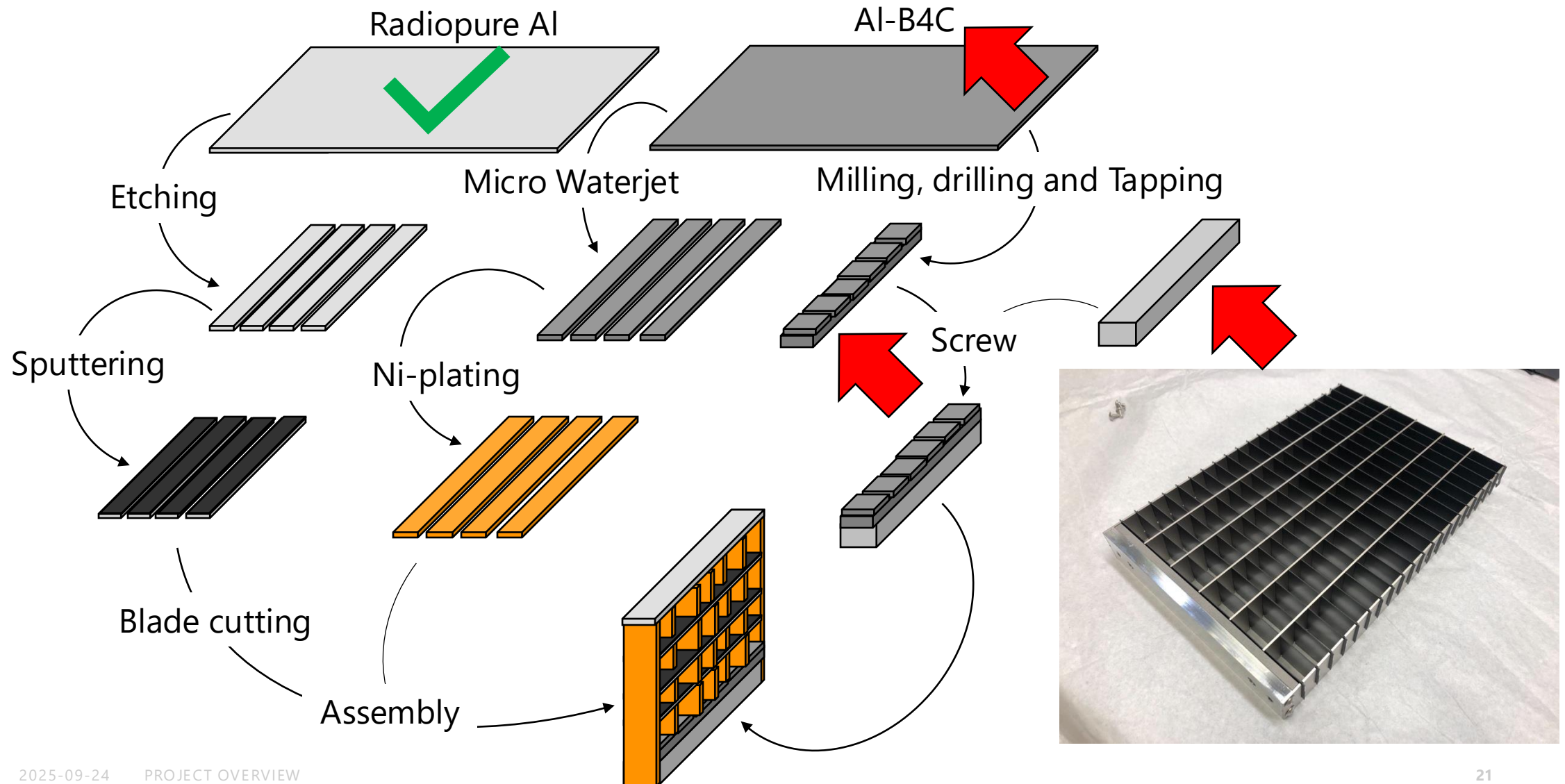


Route 2



3. Production

Grid production route



3. Production

Al-B4C sheets, end shielding and grid blocks



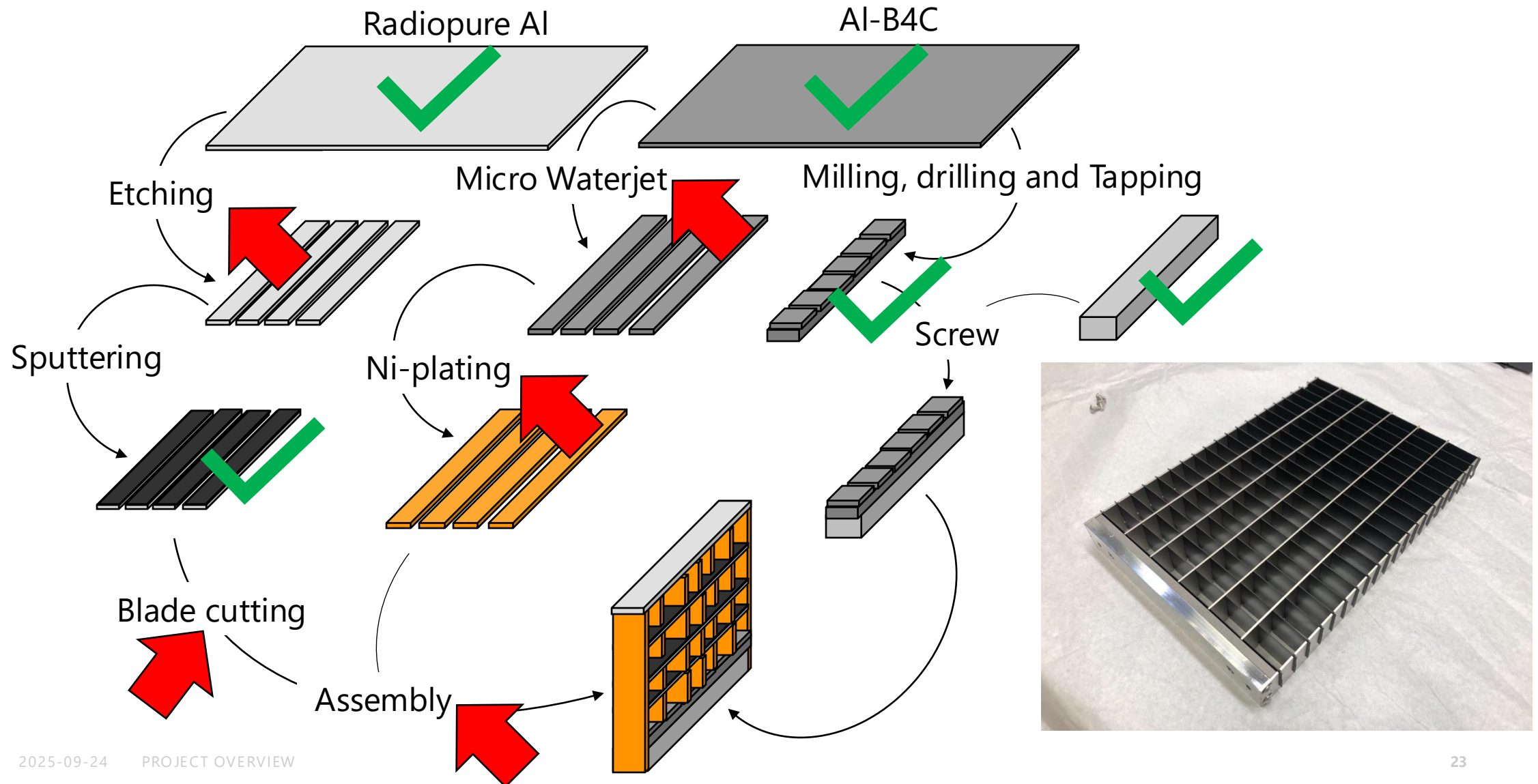
Large order for initial scope

- Al-B4C sheets
- End shielding
- Grid blocks

First batch due first or second week of October

3. Production

Grid production route: next steps



3. Production

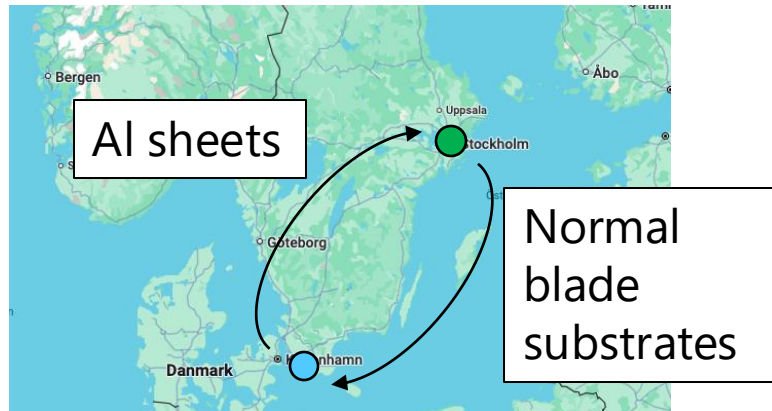
Grid production: discussions with local companies



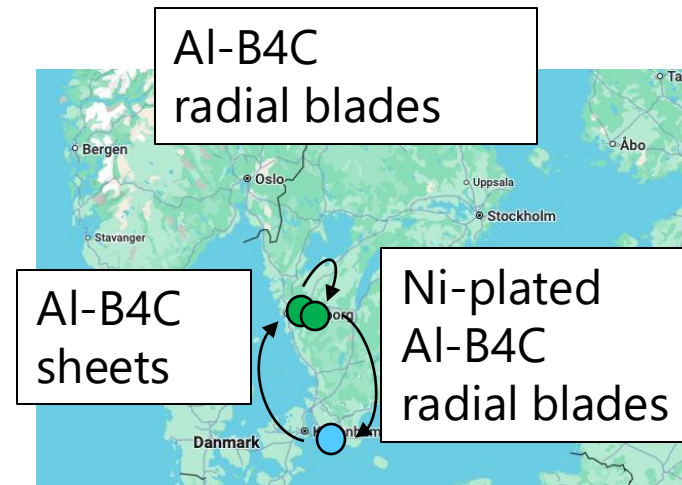
3. Production

Grid production: logistics

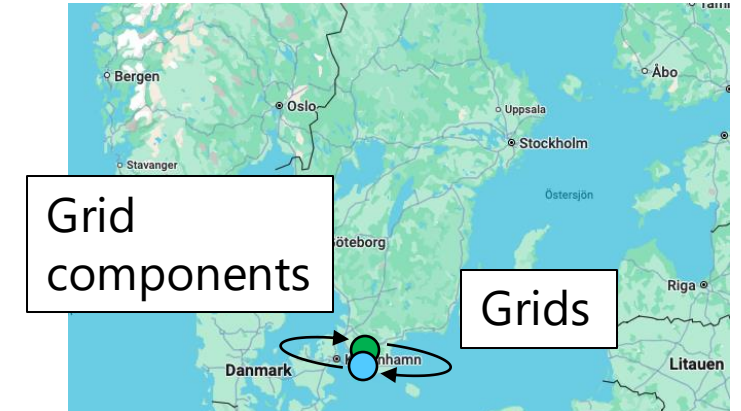
Normal blades



Radial blades



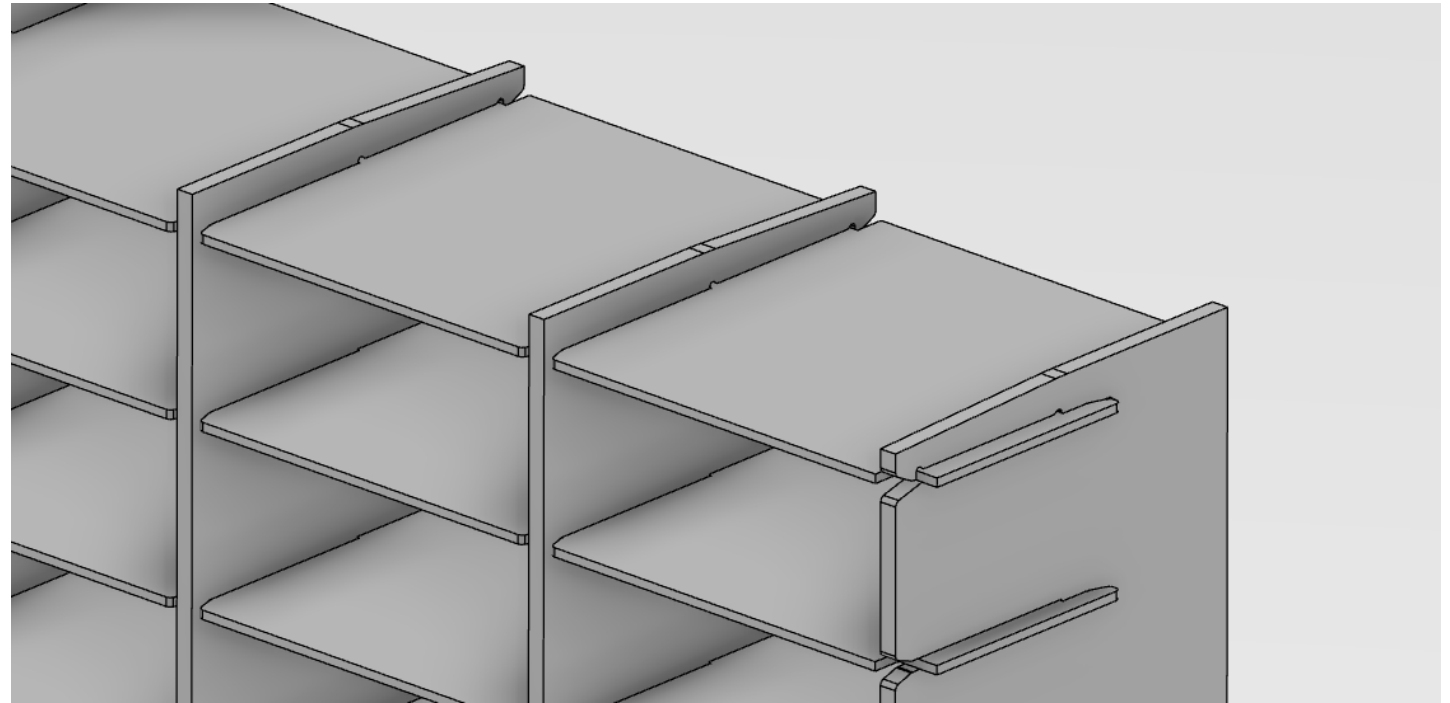
Grids



3. Production

MG.T-REX Procuring machined parts

- The grid design has now been finalized.
- No glue or welding needed.
- The grid is held together with an interplay between the top normal blade, the shielding block and the interlocking build order.
- Now Click-in only on top. Click-in on the sides is no longer needed.



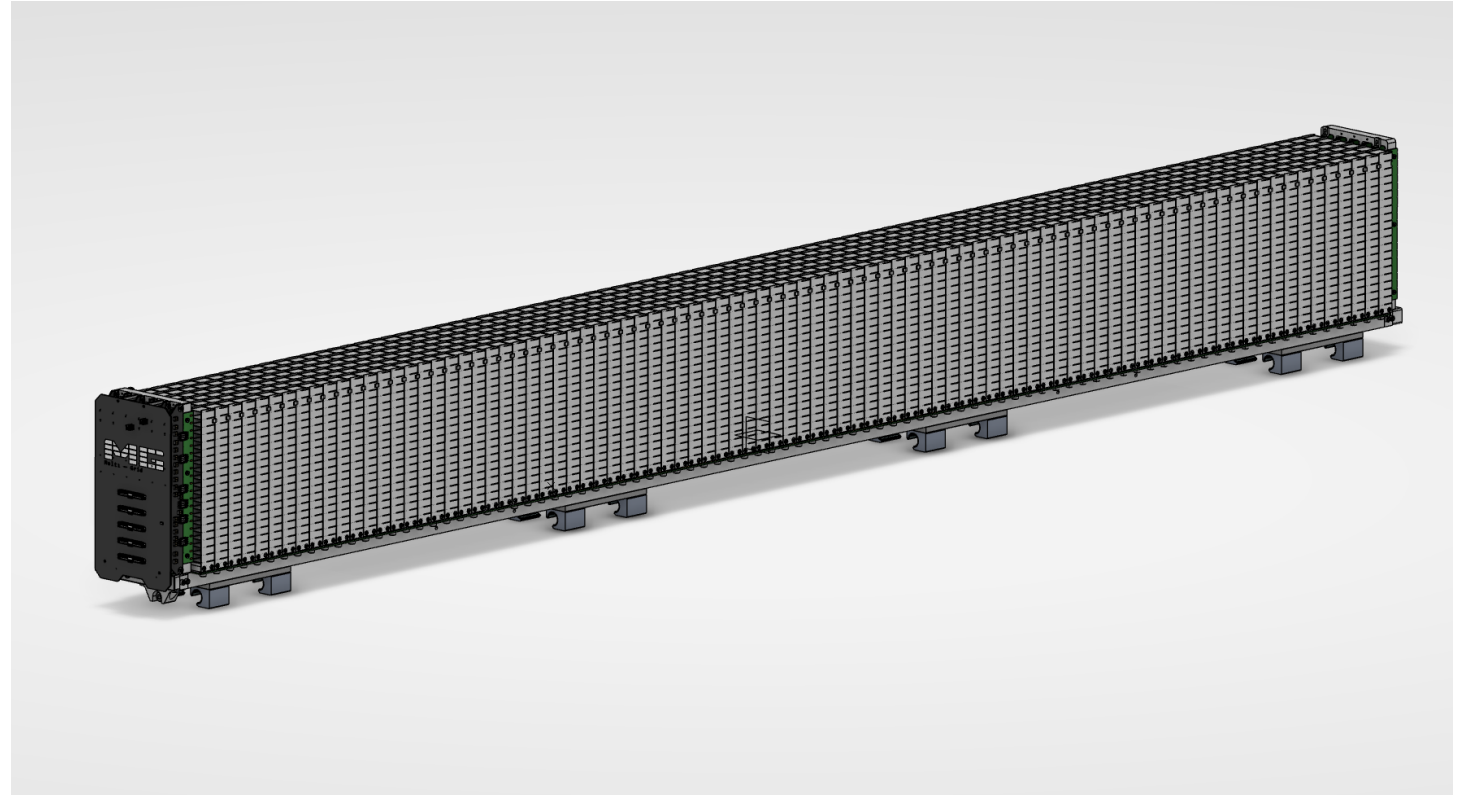
3. Production

MG.T-REX Procuring machined parts

- The design for every machined part for T-Rex, such as **Backbone, End-grids, insulator** e.t.c is **finalized** and the purchase order for them is out.

Expected to arrive in January

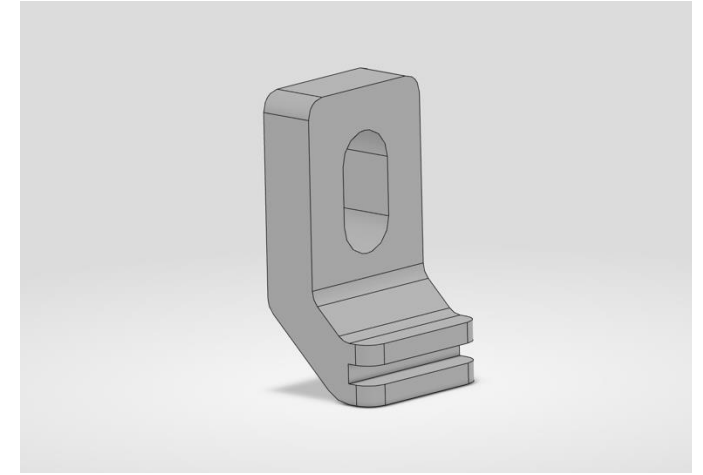
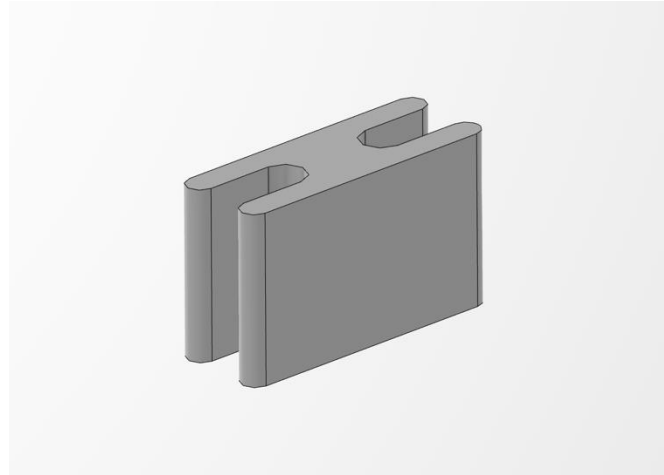
- A test batch for one **single module** have also been purchased that will arrive last week of **October**.



3. Production

MG.T-REX Procuring machined parts

- The design for the **H-spacer** is finalized, and the purchase order is out.
- The design for the **End-Grid Spacers** are also finalized and purchase order for them is out.
- **Carriages** for all the modules (4 per module) have been purchased.



3. Production

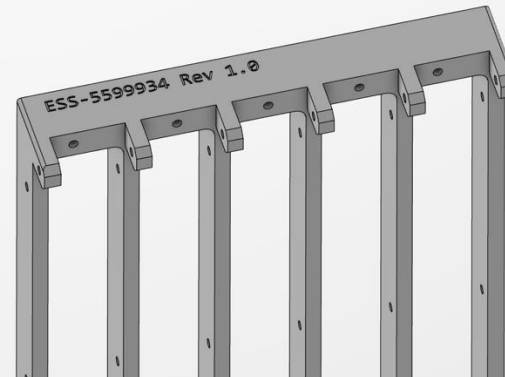
MG.T-REX Tracking of parts

- As many parts as possible will have part number **engraved**.
- We've started discussing how to track the parts of the grid.

Labelling the **sheets** from the producer.

Adding **stickers** corresponding to those sheets.

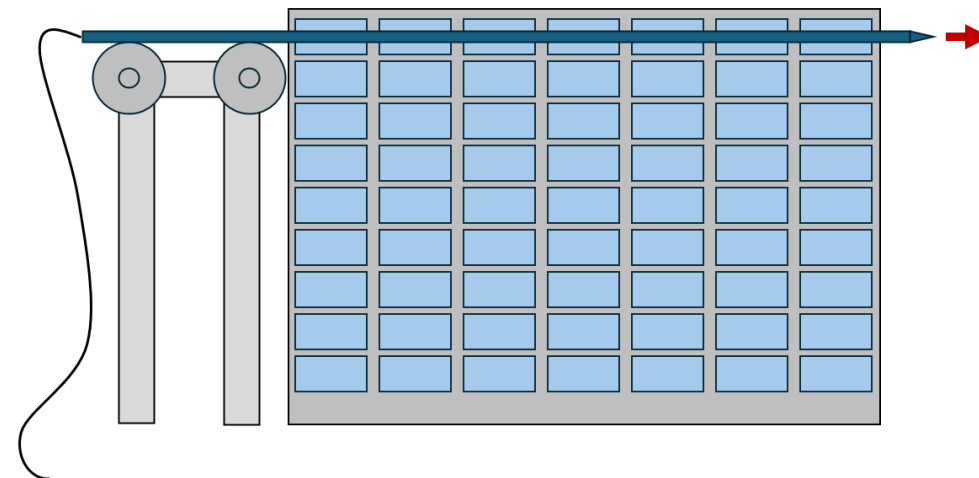
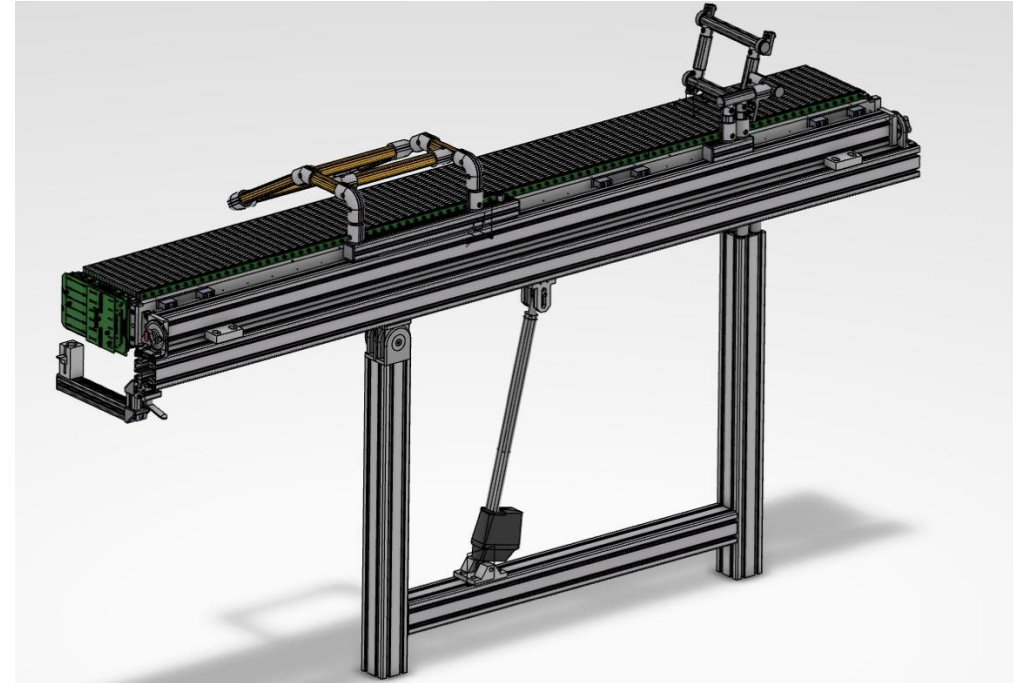
If something is wrong with a grid, in this way it will be easier to find which grids or which parts that's faulty and **trace** the cause of it.



3. Production

MG.T-REX Wireing table

- **Wiring table** will not be **tilted vertically** for wiring (for the first scope).
- The idea will be investigated further for the **second scope**.
- The mechanism for **flipping it on the side** will persist.
- The module will be fed with wire by using a thin pipe.
- Actual design work for the latest wiring table concept has not started yet.



3. Production

MG.T-REX Testing vessel

- All parts for testing vessel have arrived.



3. Production

University of Glasgow



- Column Assembly
- Column wiring
- Testing (FAT/SAT)
- Analysis and simulations
- QA and Documentation



3. Production

Procurement

- Many of these orders are high-value procurements, which require special attention
- A huge thank you to Procurement for all their great work in helping with this!

4.

Summary

4. Summary

- Internal shielding decided: Ni-plated Al-B₄C
- Publications are underway, lead by the University of Glasgow
- Production route decided: raw material from Alumeco and local companies for cutting, Ni-plating and assembly
- Discussions with University of Glasgow for involvement in building and testing
- Procurement is ongoing

4. Summary

- **Scientists:** Francesco, John, Ken, Kevin, Lai and Me
- **Mechanical Engineers:** Jan and David
- **Electronics Engineers:** Aleksandr and Angel
- **Technicians:** Kyle, Ross, Erlis, Alexander and Marina
- **Project Management:** Susanna
- **Procurement:** Charlotte and Mirko
- **Coordinator:** Josef
- **Planner:** Lena
- **Administrative support:** Zsuzsa
- **Technical support:** Roy, Lisa, Fabio S, Jack and Doro
- **Documentation Engineers:** Fabio F



