

Quarterly collaboration-wide MG.T-REX update chat – May 2026

📅 Wednesday 27 May 2026, 14:00 → 15:30 Europe/Stockholm

📍 Titanium (ESS)

👤 Alexander Backis (European Spallation Source ERIC)

Description *Join Zoom Meeting*

<https://ess-eu.zoom.us/j/61861009045?pwd=n70zzbAcw8dhqRGabvXoN5fOqqEINa.1&from=addon>

Meeting ID: 618 6100 9045

Passcode: 888462

14:00 → 15:00 **Project update**

🕒 1h

Speakers: Alexander Backis (European Spallation Source ERIC), David Hansson (European Spallation Source ERIC), Dr Kenneth Livingston (University of Glasgow)

15:00 → 15:30 **Q&A**

🕒 30m



University
of Glasgow



Science and
Technology
Facilities Council



JAGIELLONIAN UNIVERSITY
IN KRAKÓW



Project overview



PRESENTED BY ALEXANDER BACKIS, DAVID HANSSON AND KENNETH LIVINGSTON

2026-05-27

Agenda



1 Overview

2 Updates

3 Production

4 Testing

5 Documentation

6 Summary

1.

Activities



1. Overview

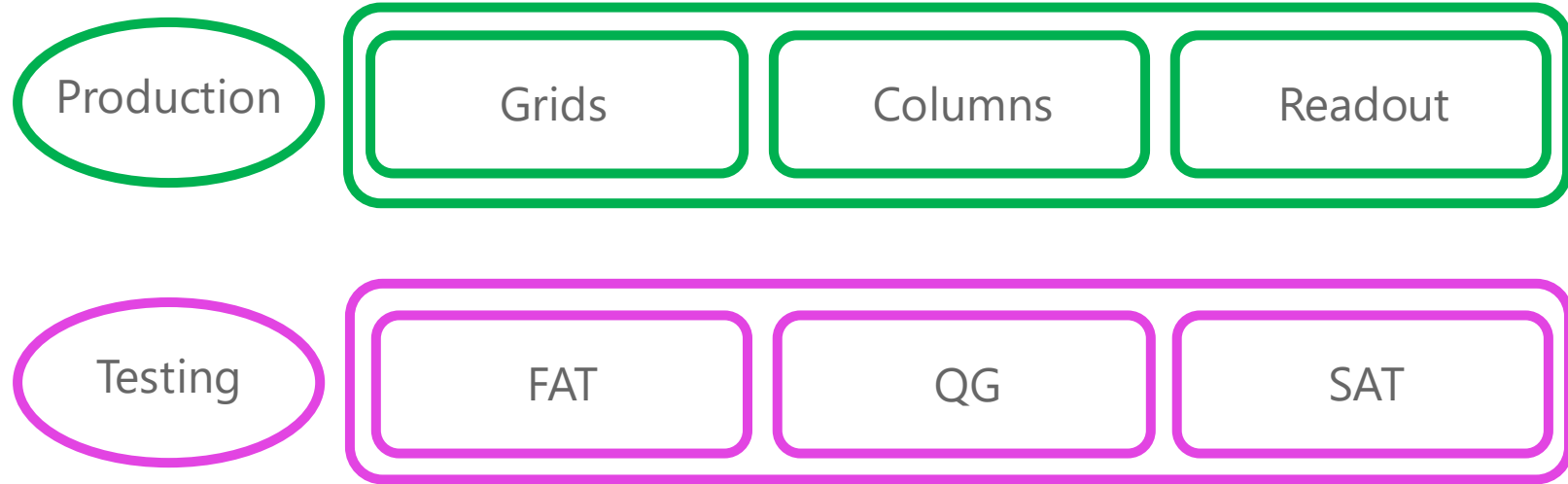
Activities





1. Overview

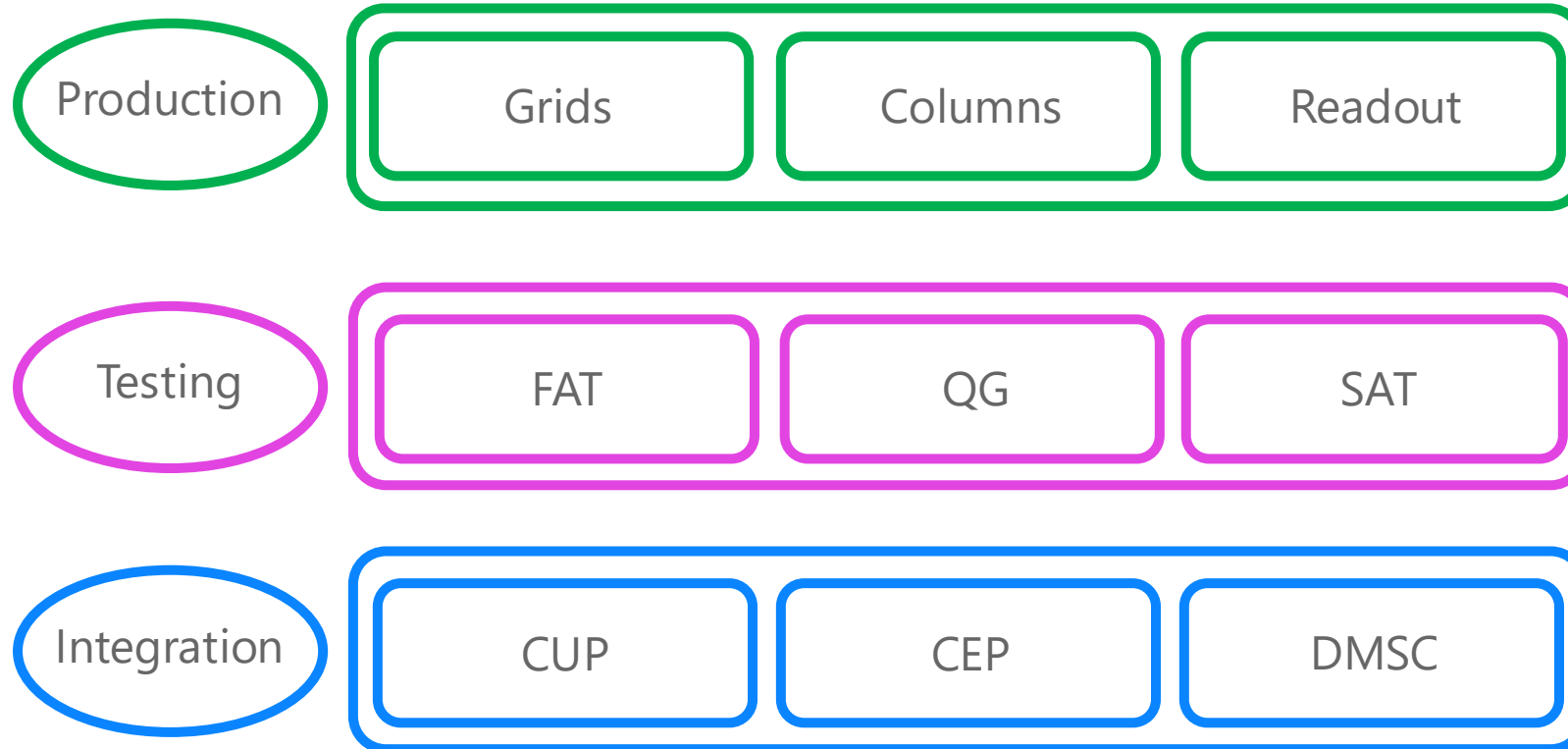
Activities





1. Overview

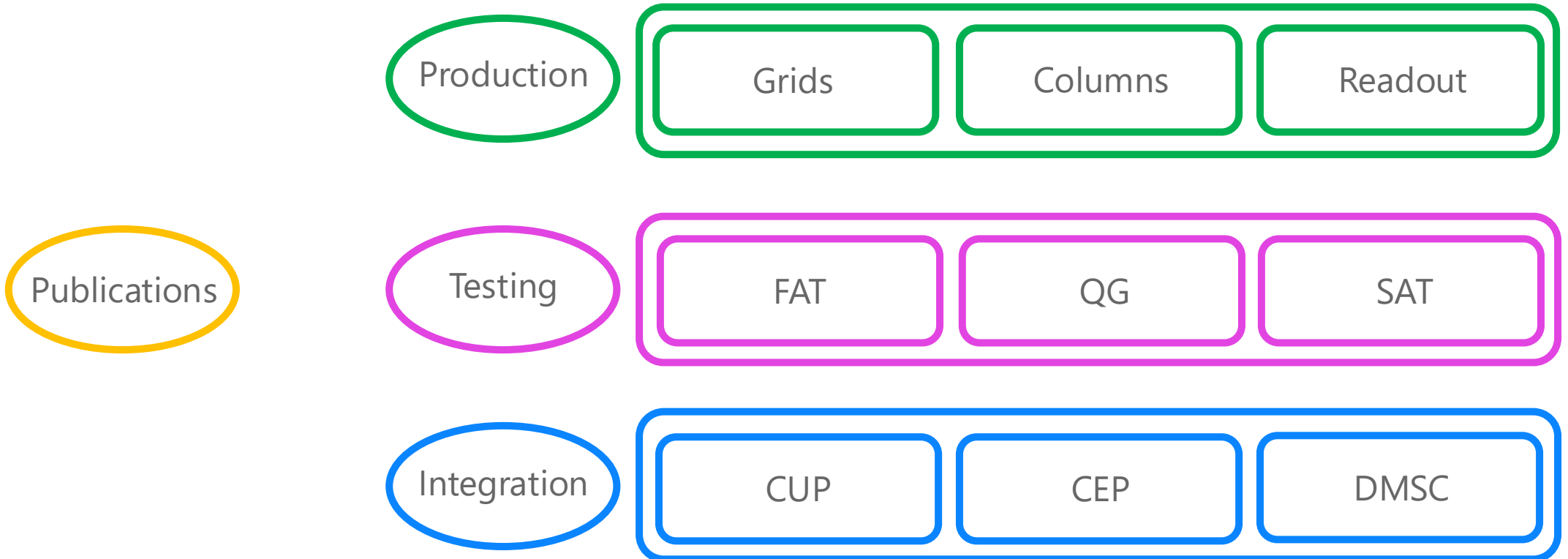
Activities





1. Overview

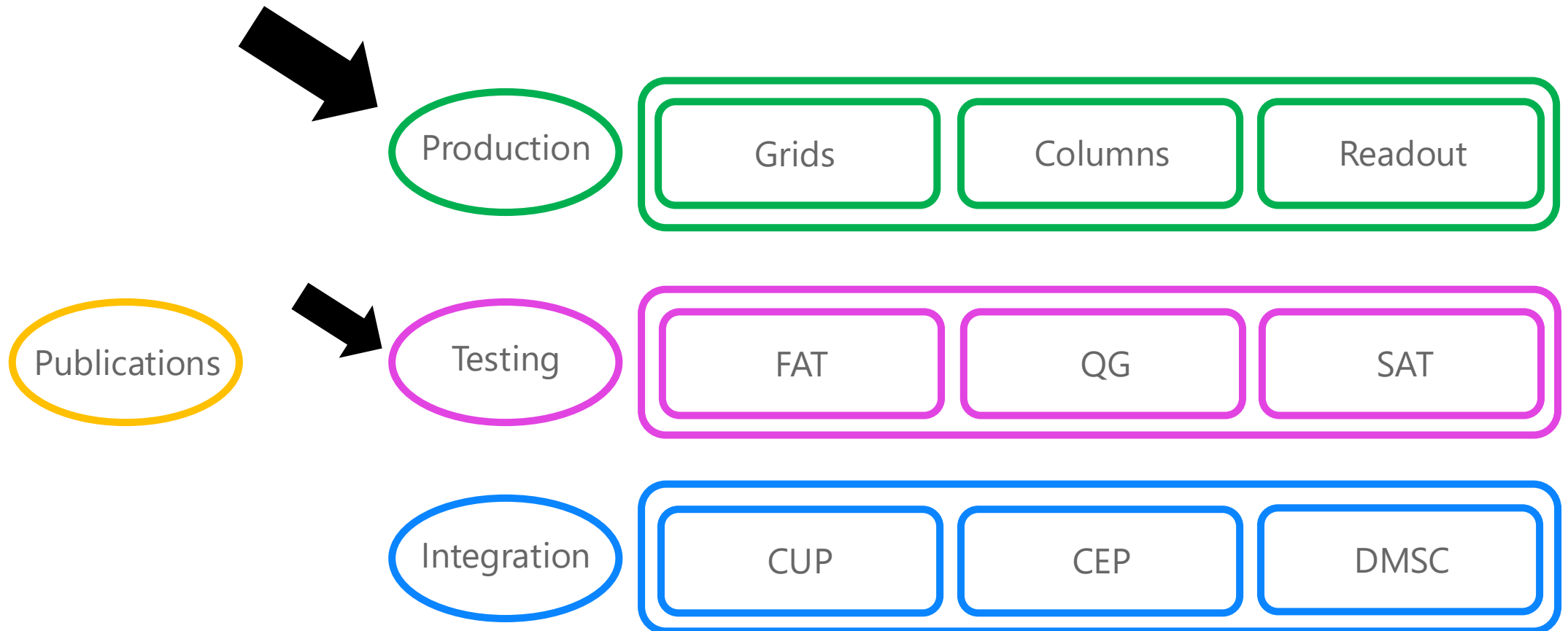
Activities





1. Overview

Activities



2.

Updates



2. Updates

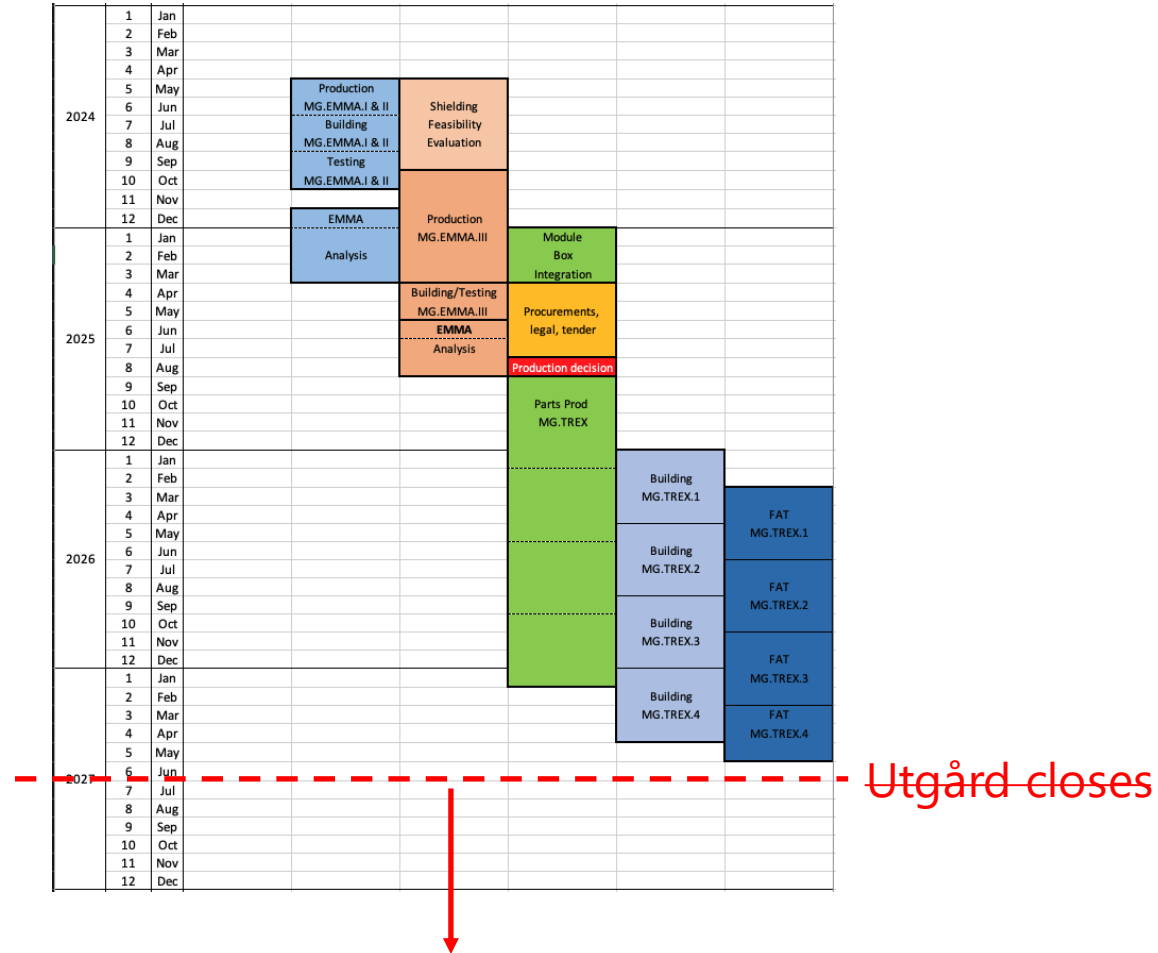
Publications

- The alpha rate paper has now been uploaded to ArXiv: <https://arxiv.org/abs/2605.22230>
- The paper has also been submitted to JINST
- Next in line are the EMMA 2025 measurements and a publication on the Geant4 and Garfield++ studies



2. Updates

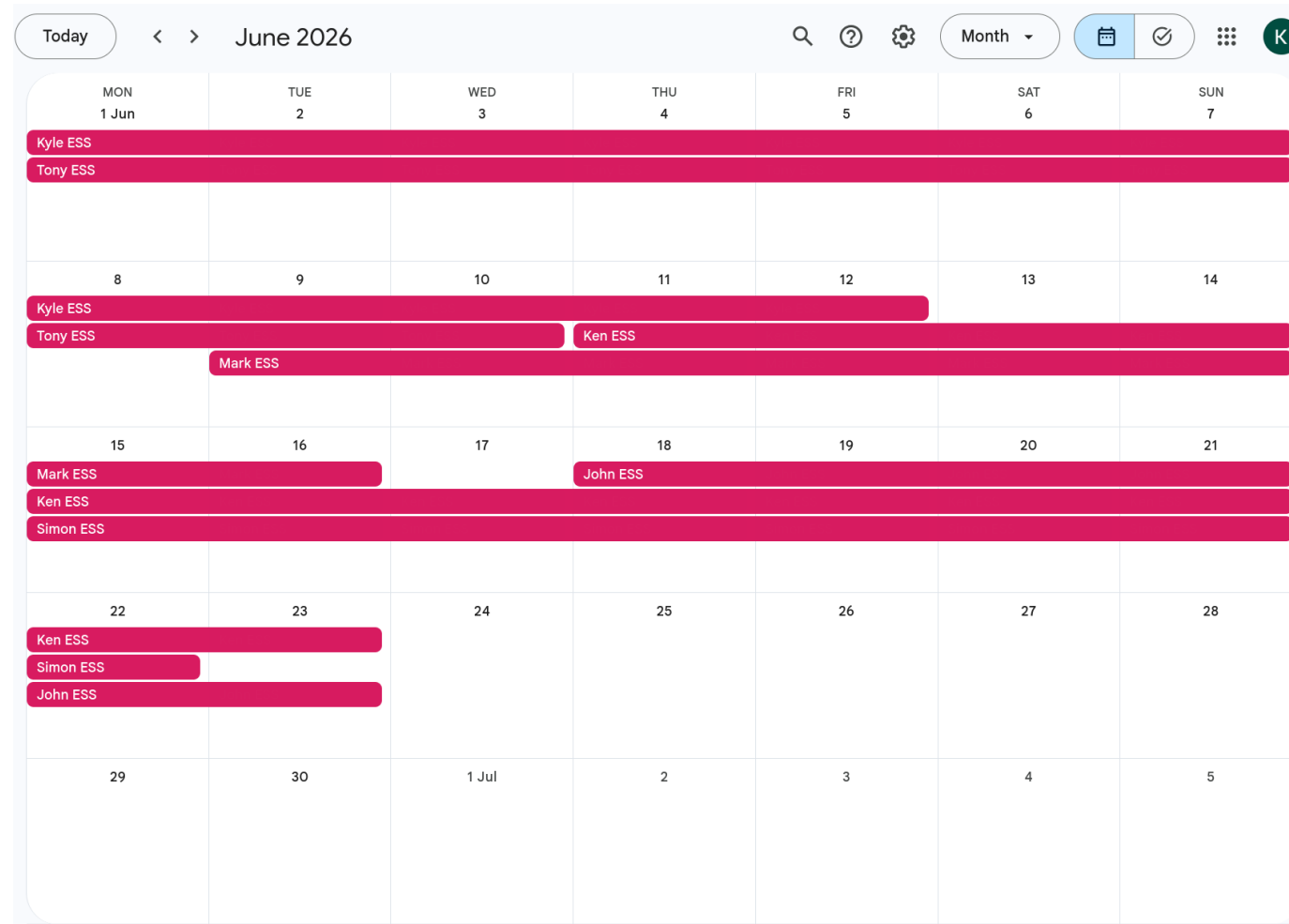
Utgård contract extended until 2030





2. Updates

Upcoming University of Glasgow visits



2. Updates

Update from Ken

Glasgow visitors. Looking forward to working with you in ESS

Technical
Tony, Kyle, Mark

Scientists
Ken, John, Simon, Rachel

PhDs
Andrew (3rd yr), Gregory (Starting 1st Sept)






Mark

the rest of us



Making a start on ... 24 columns with >2000 Grids, >3000 wires
..... possibly many more.



Spend time getting the tooling set up ... but where to stop ?
Hopefully next week sometime.

Eg. How high should a table be ?



2. Updates

Next quarterly meeting

- The Glasgow team is hosting the next quarterly meeting September 24, 2026 (updated calendar invitation will be sent out shortly)
- As usual, there will also be a Zoom link to the meeting



2. Updates

Alex summer vacation

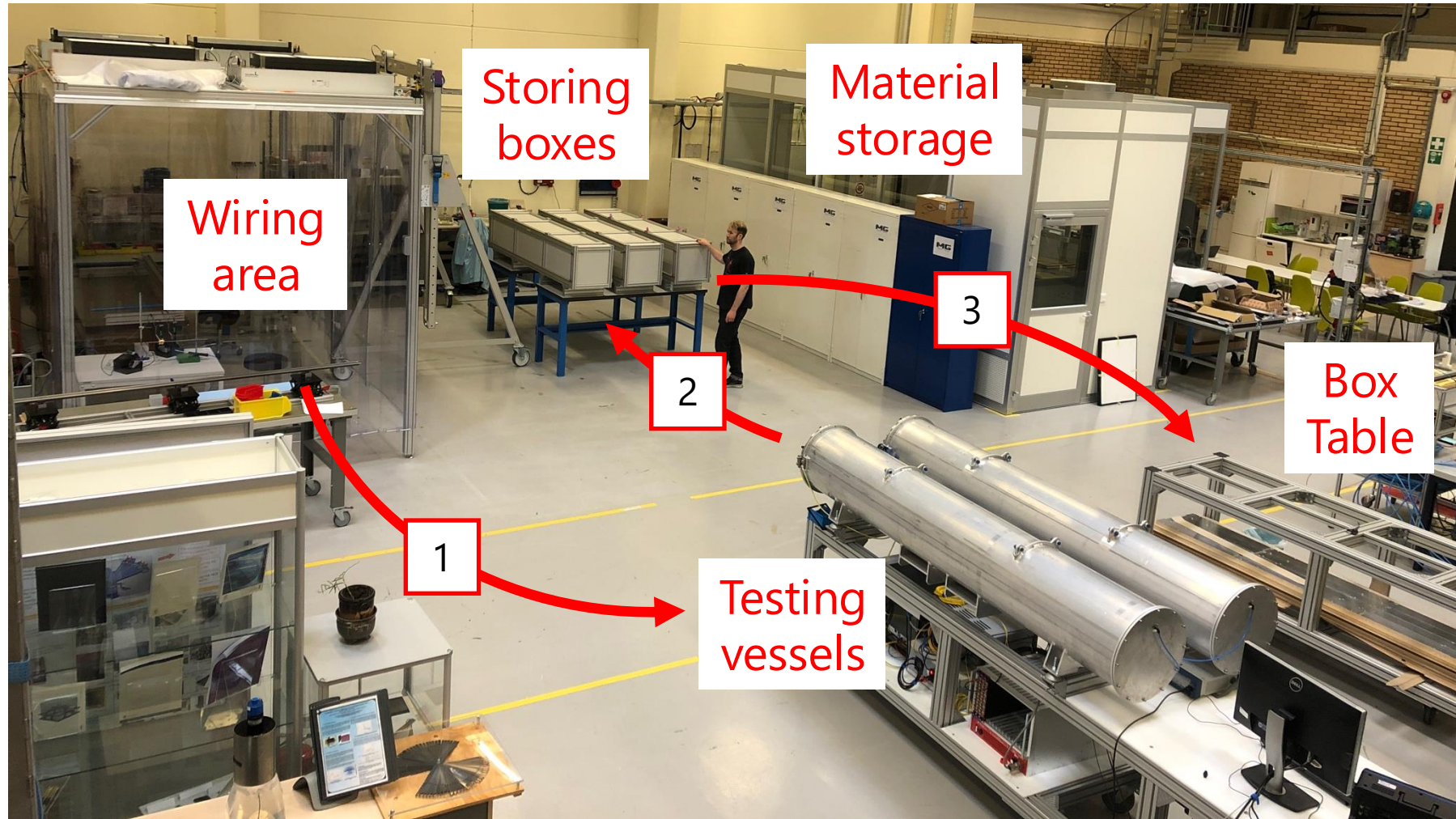
- Will be on vacation between **June 27 – July 26**
- Please let me know before then if there is anything that needs attention during this period

3.

Production

3. Production

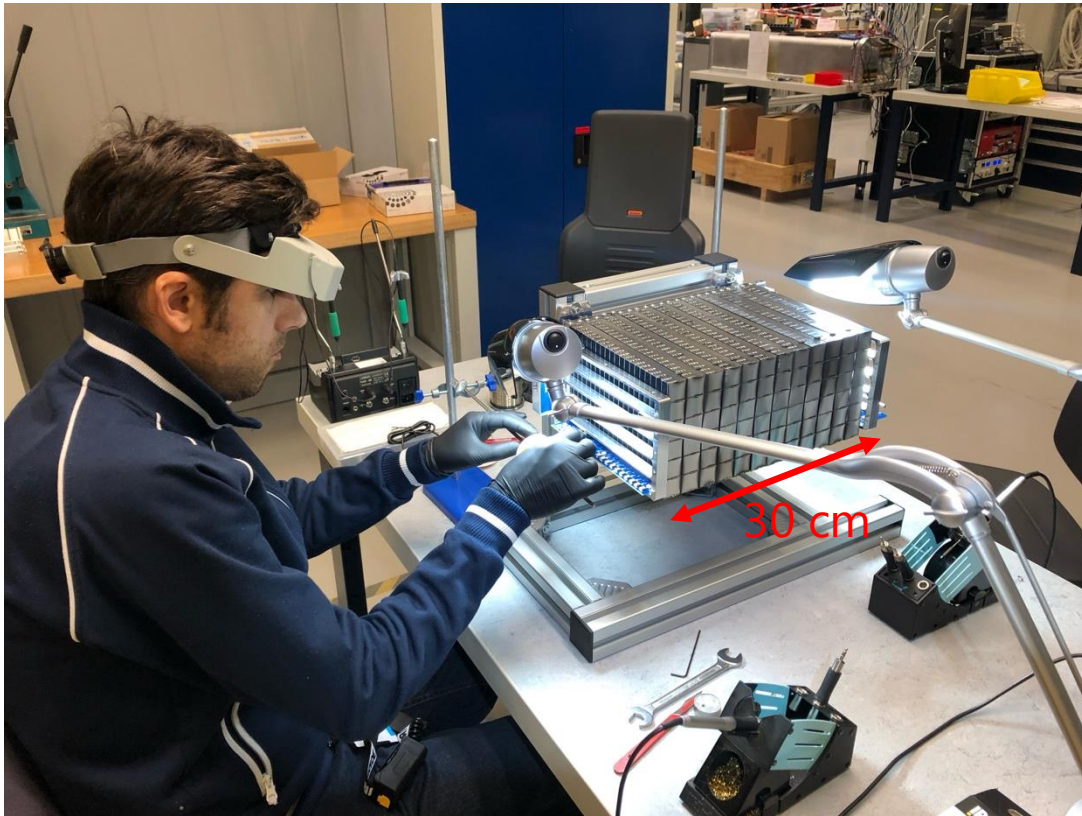
Production area



3. Production

From prototype to final detector

2025

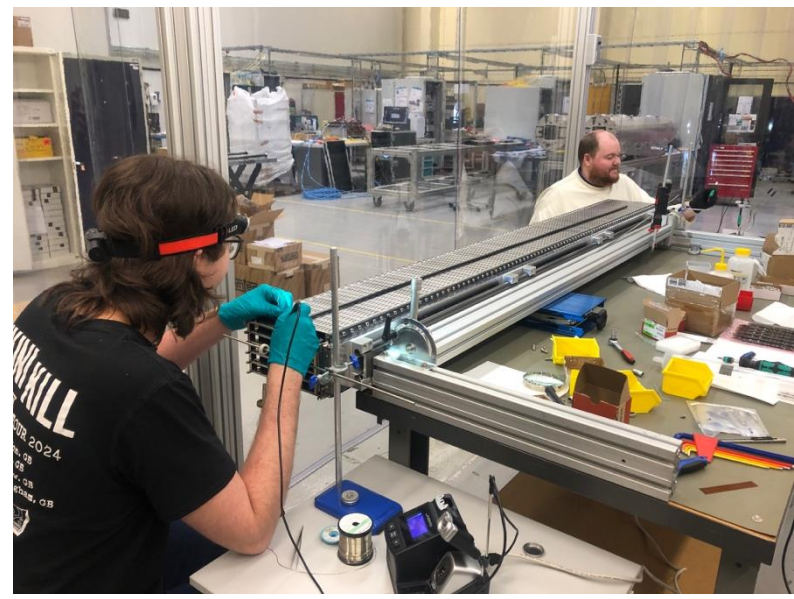


2026



3. Production

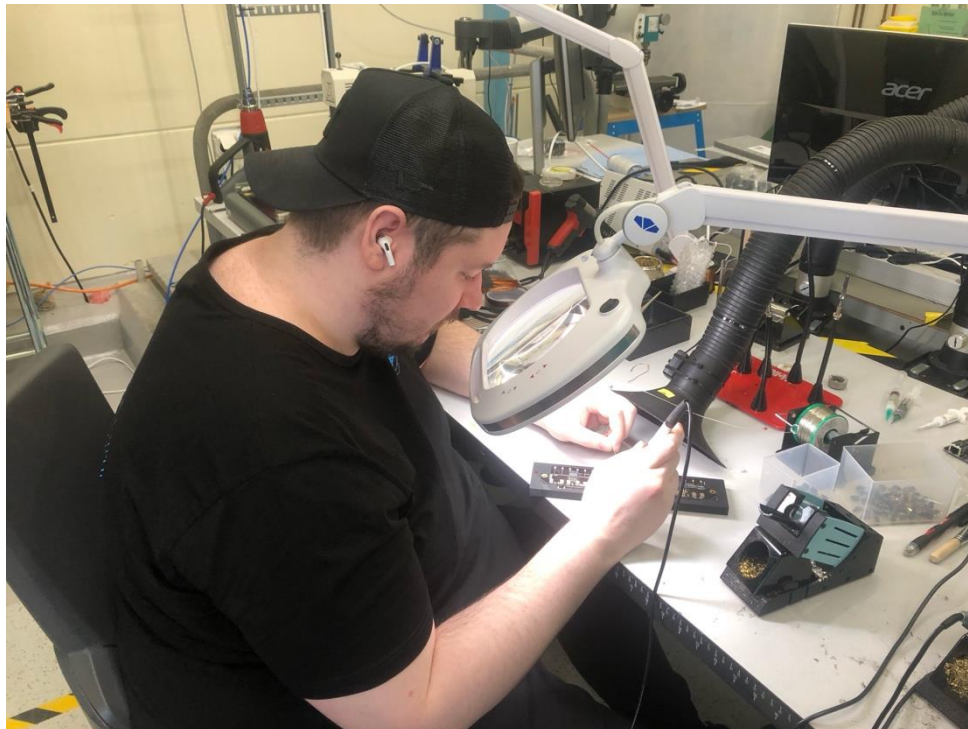
Building of the first column



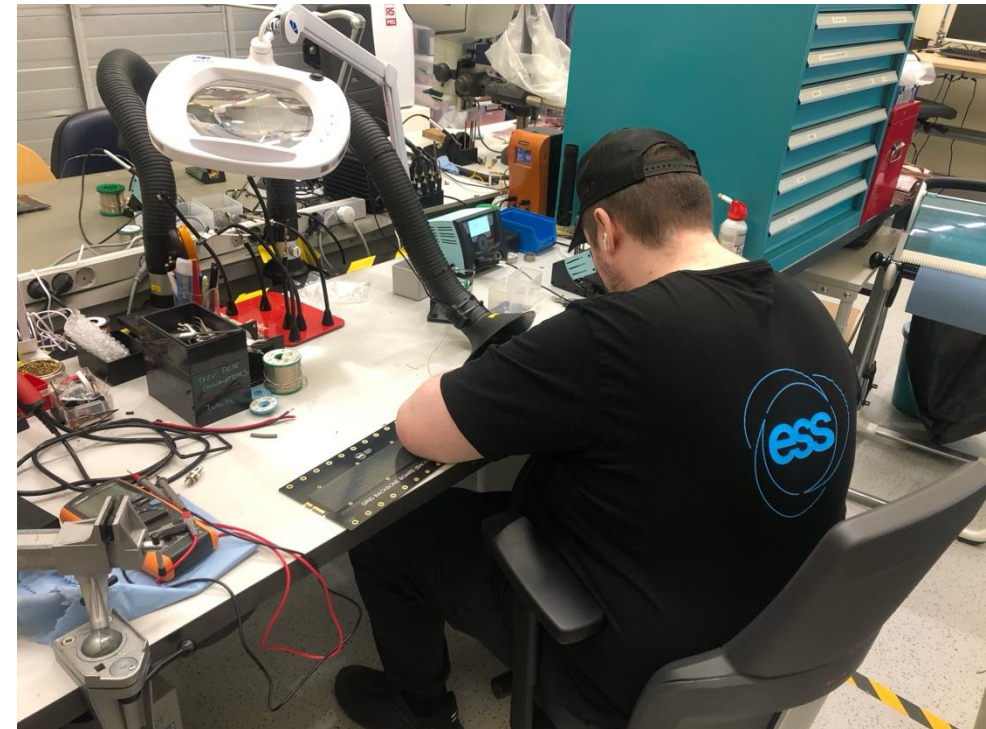
3. Production

Soldering components to PCBs

Wire PCB connectors



Backbone PCB resistors



3. Production

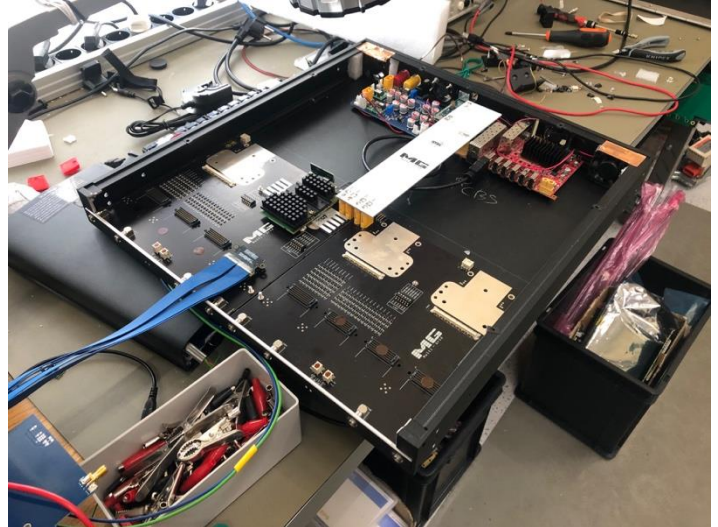
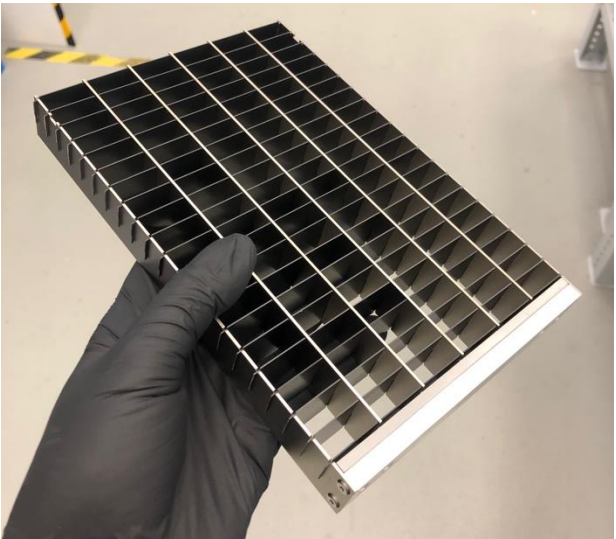
New wiring table + storing boxes



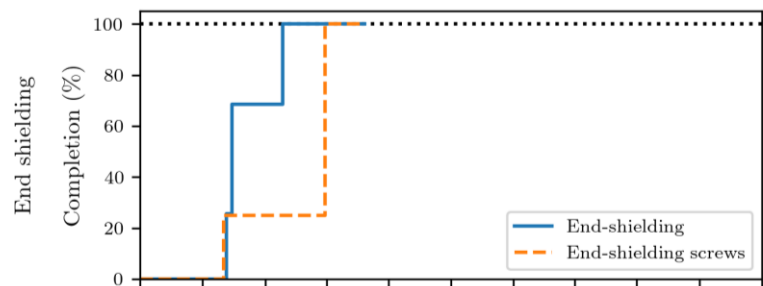
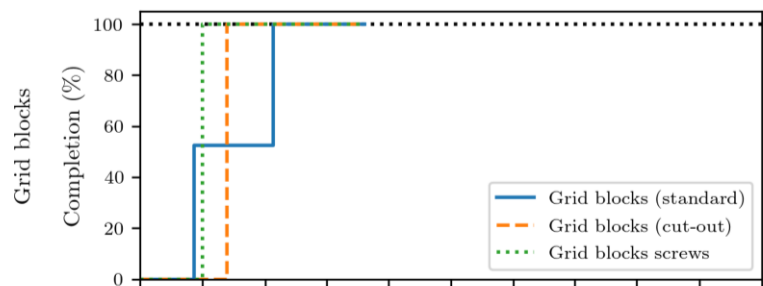
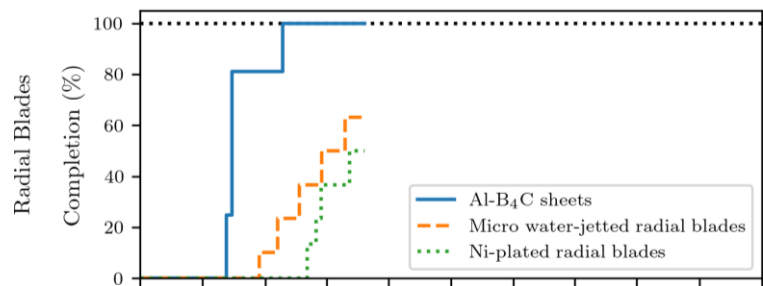
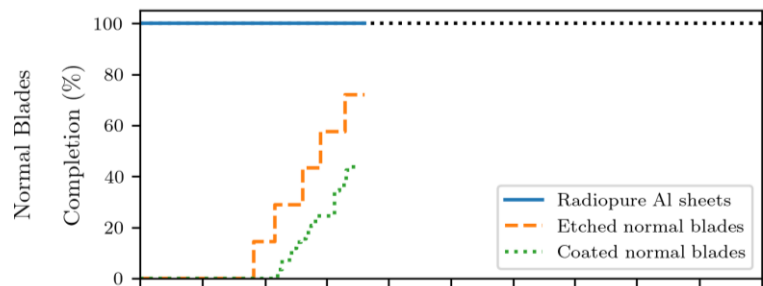
Grids

Columns

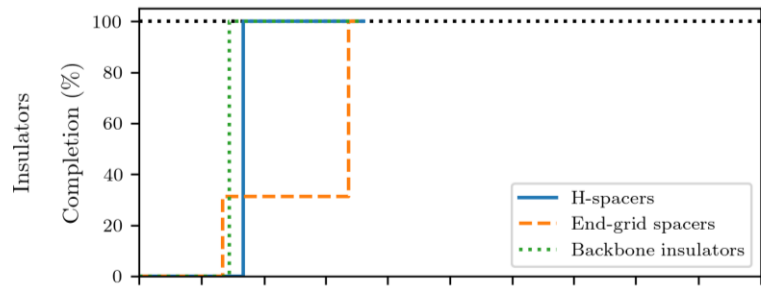
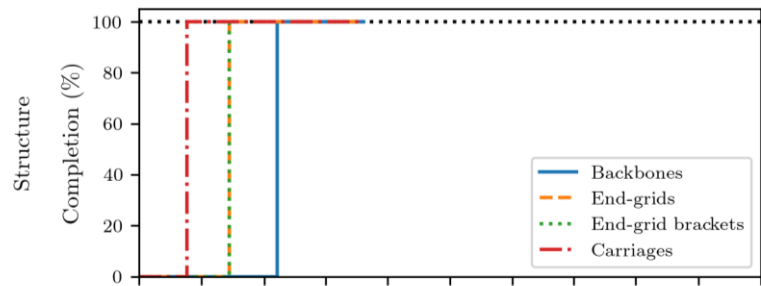
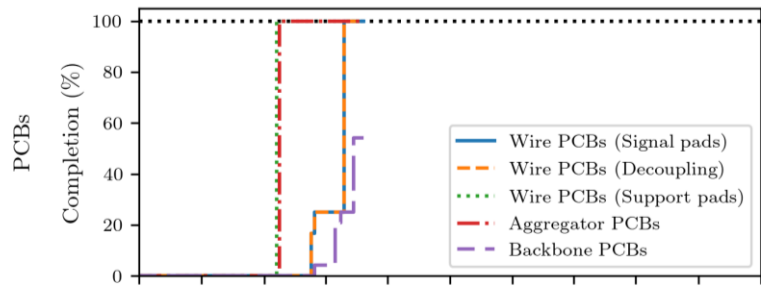
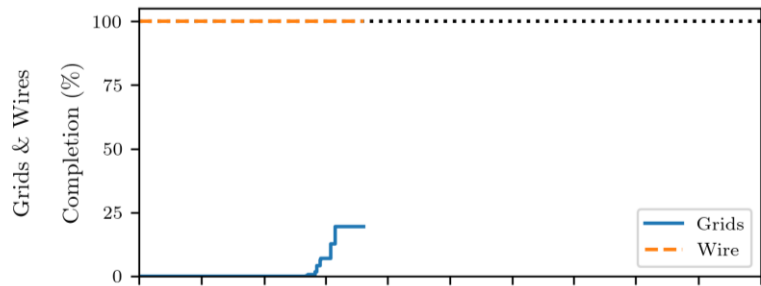
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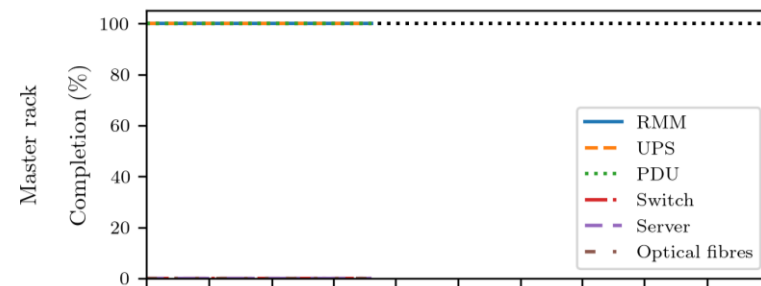
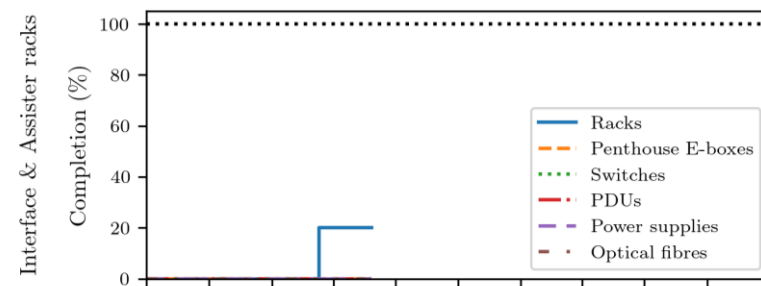
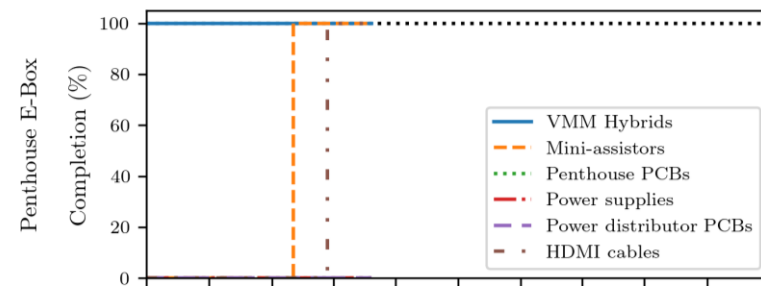
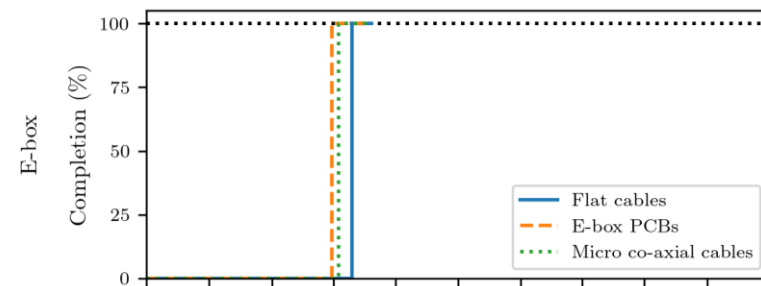
Grids



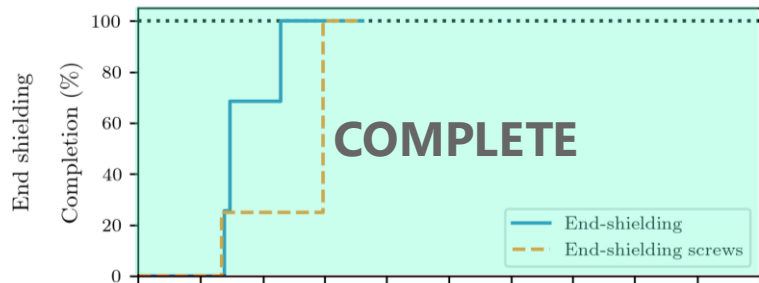
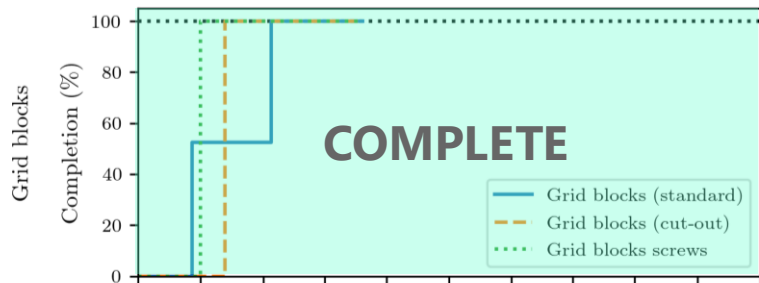
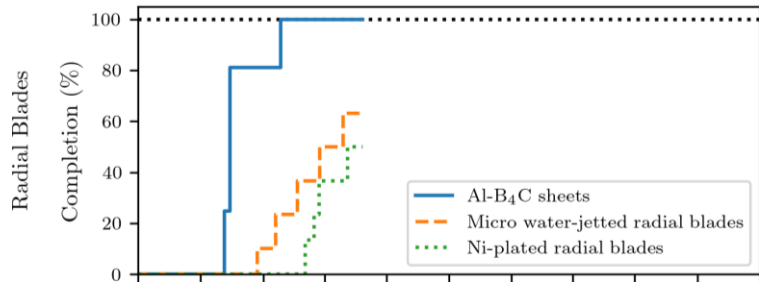
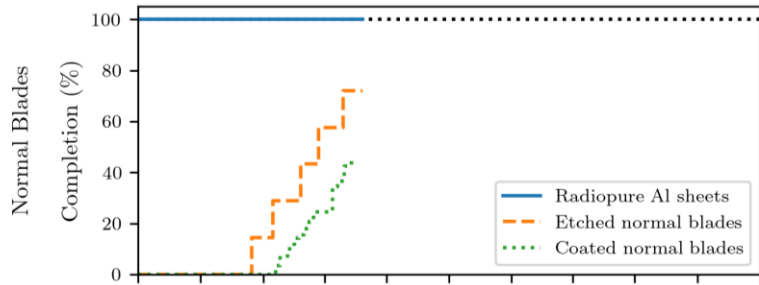
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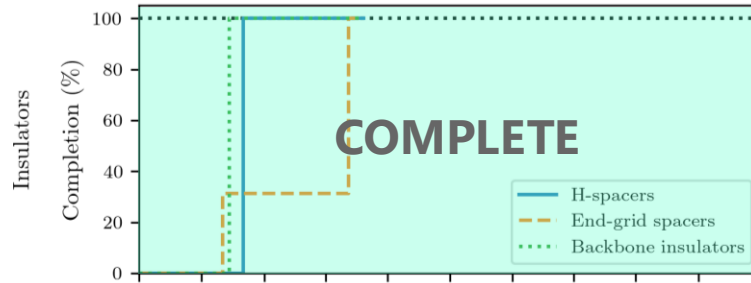
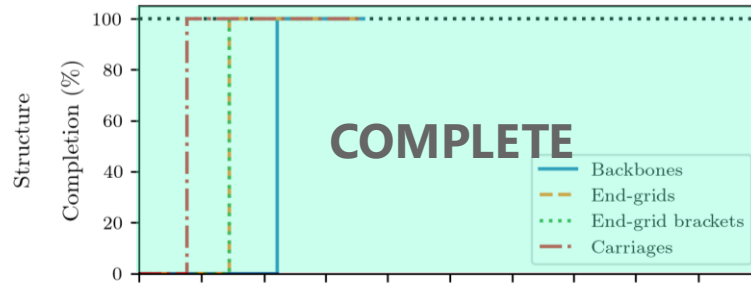
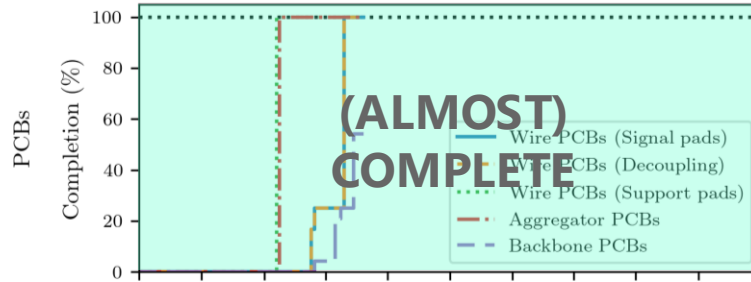
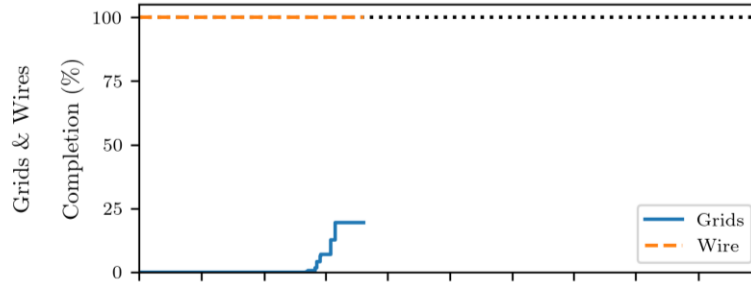
Readout



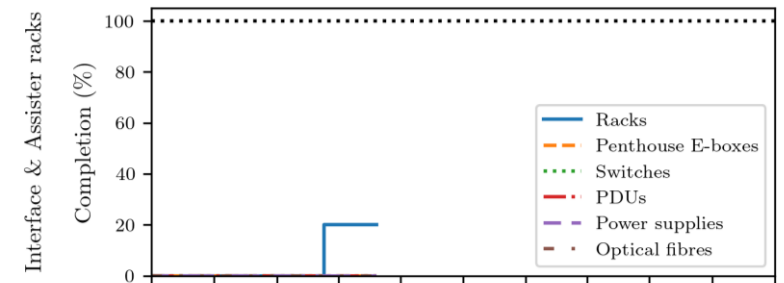
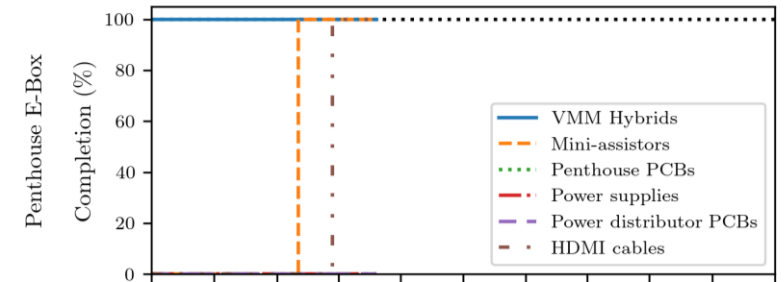
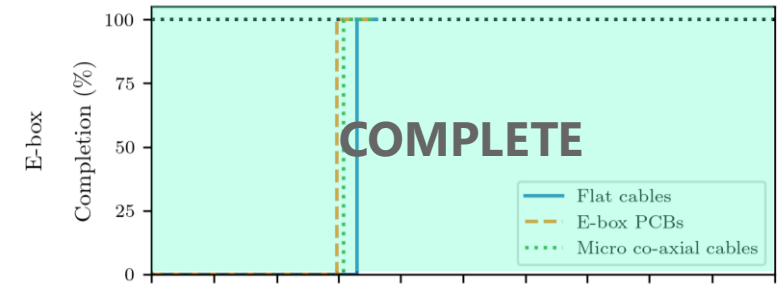
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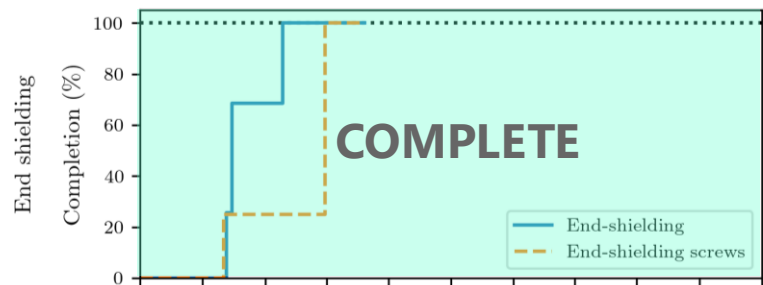
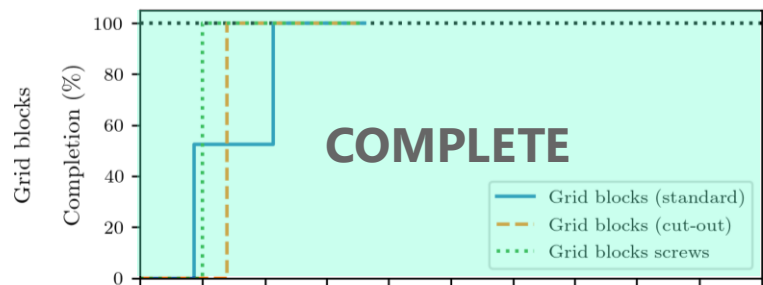
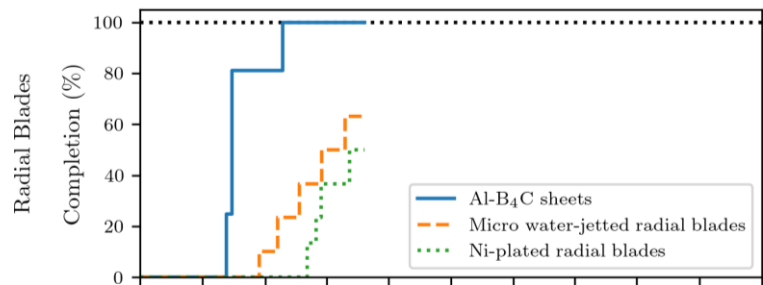
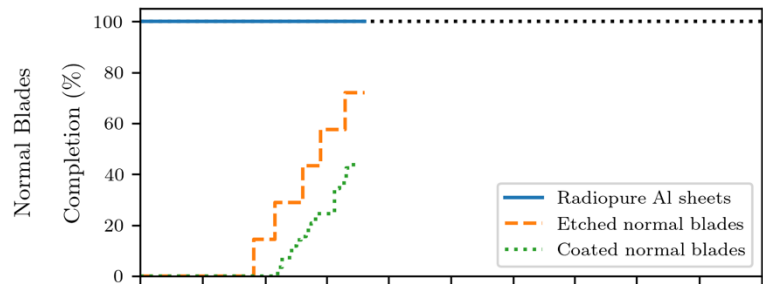
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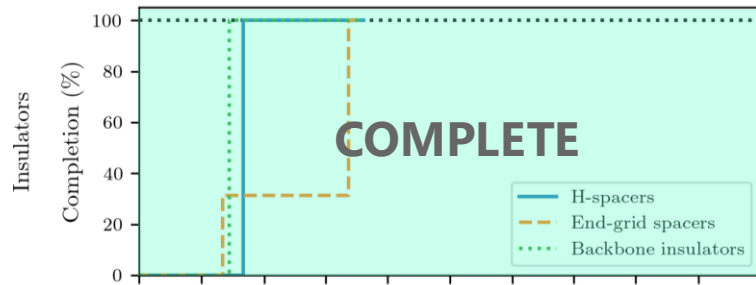
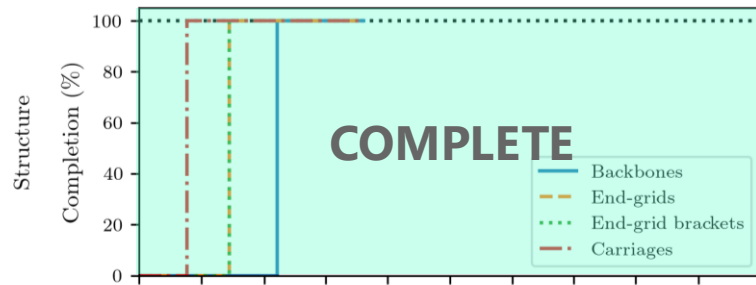
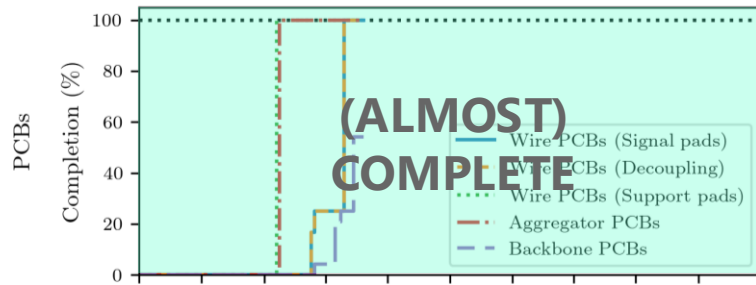
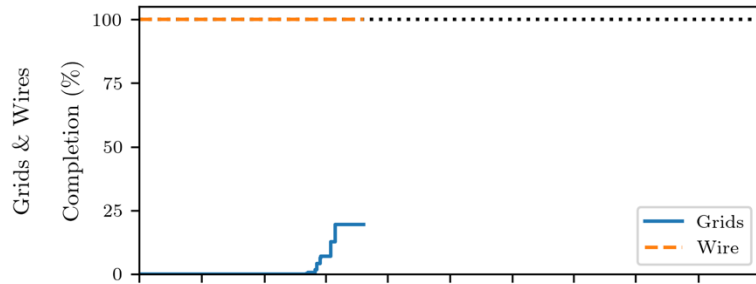
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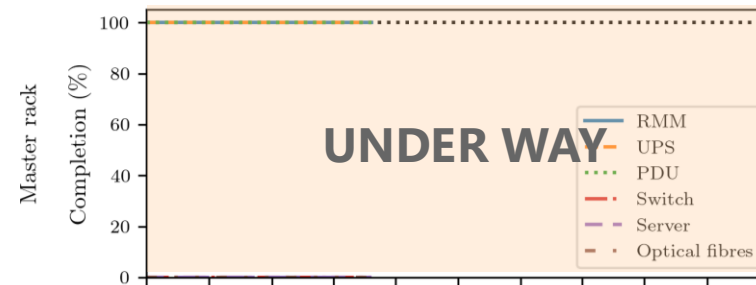
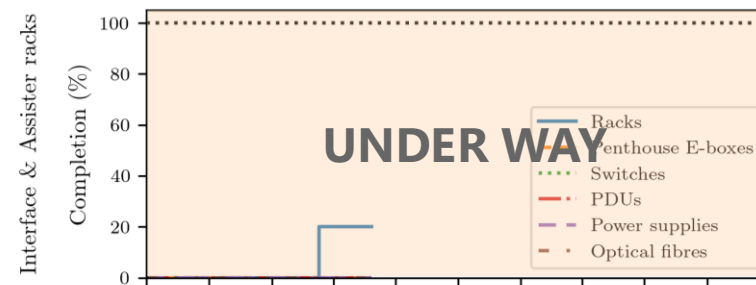
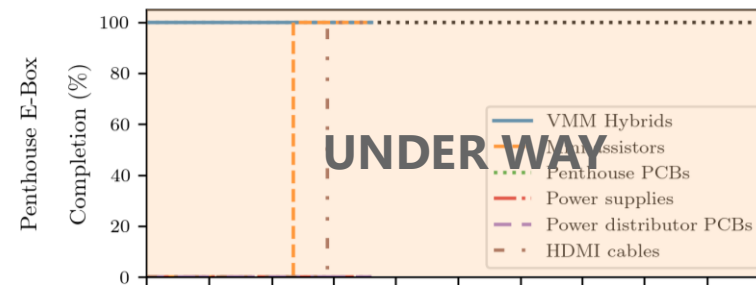
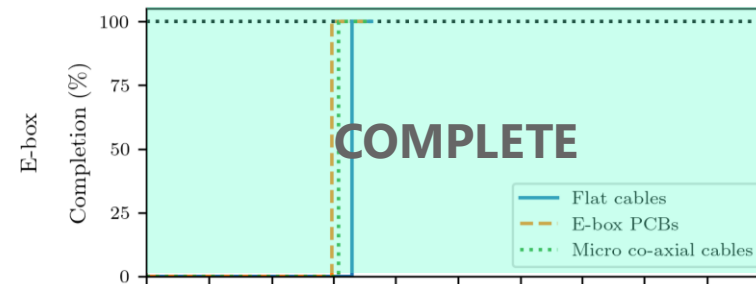
Grids



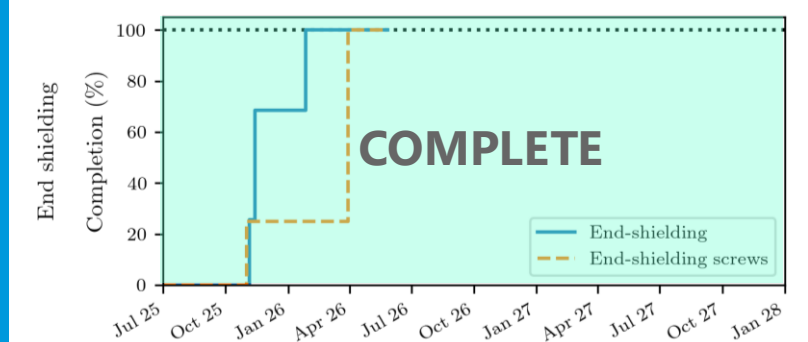
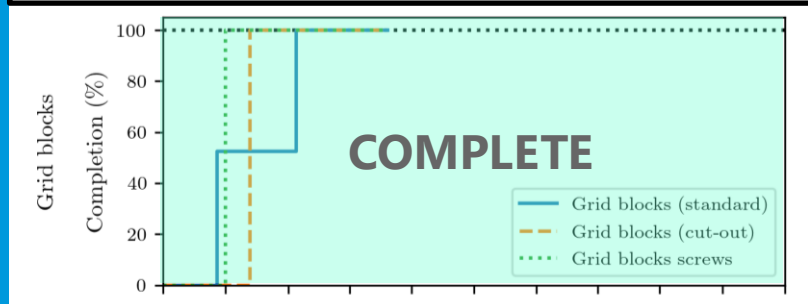
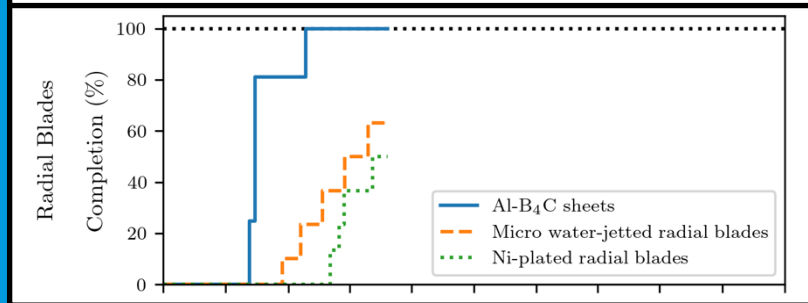
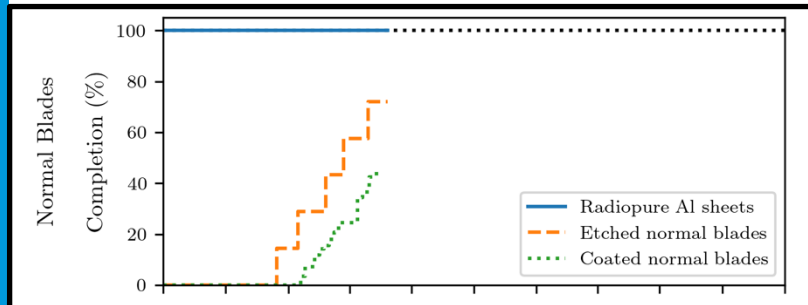
Columns



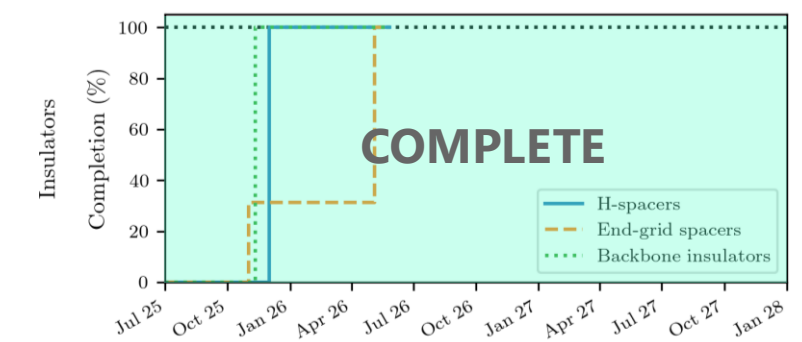
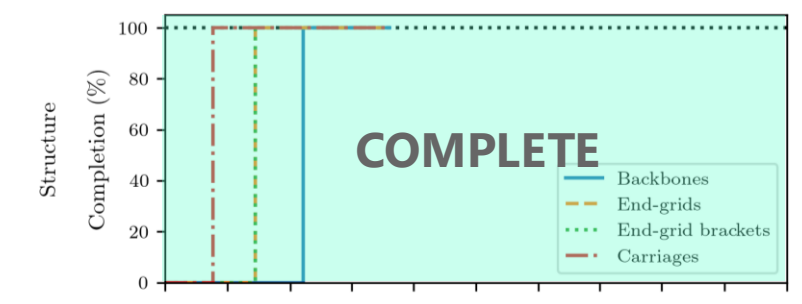
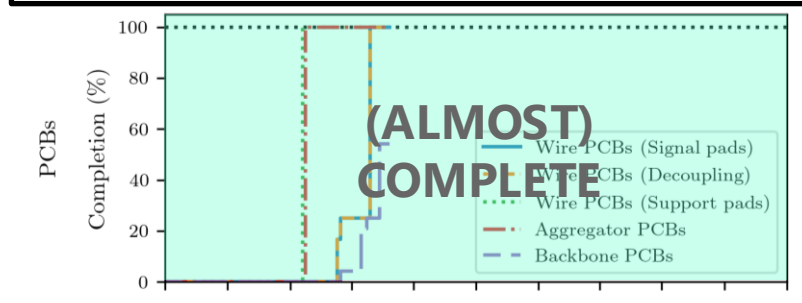
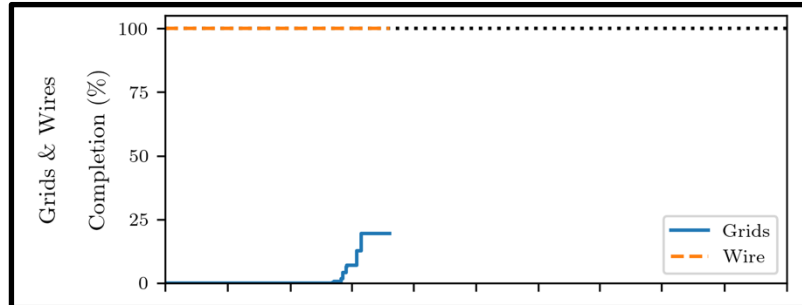
Readout



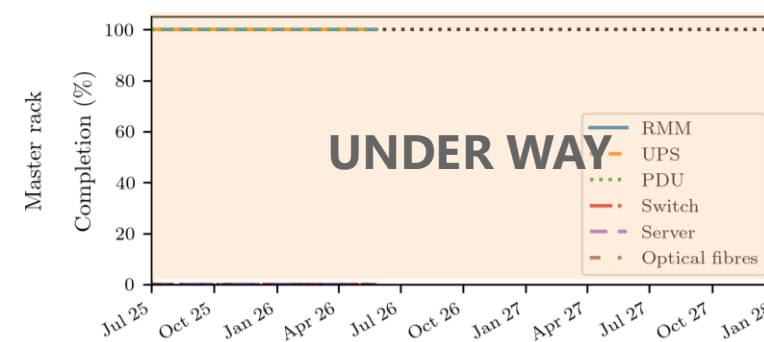
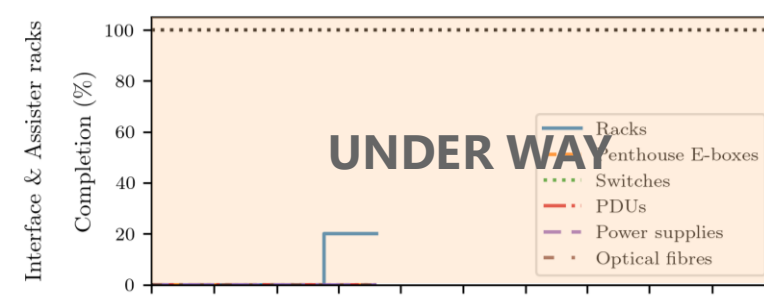
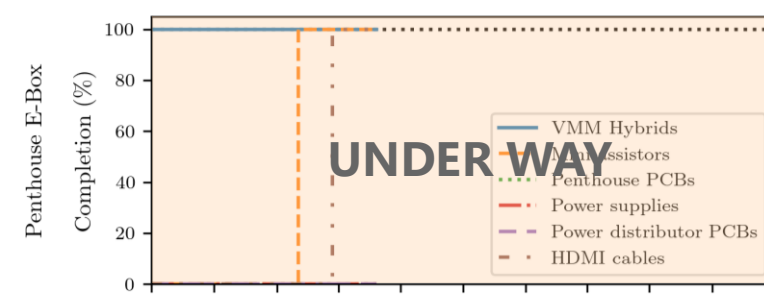
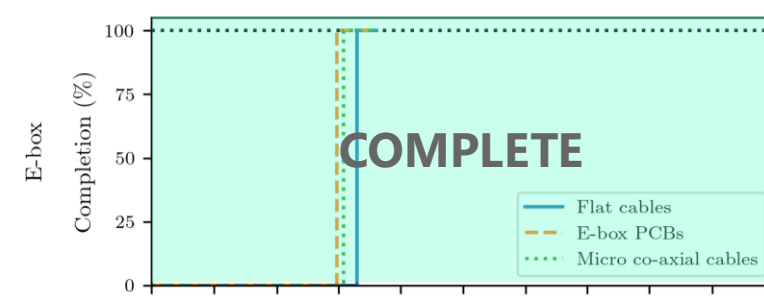
Grids



Columns

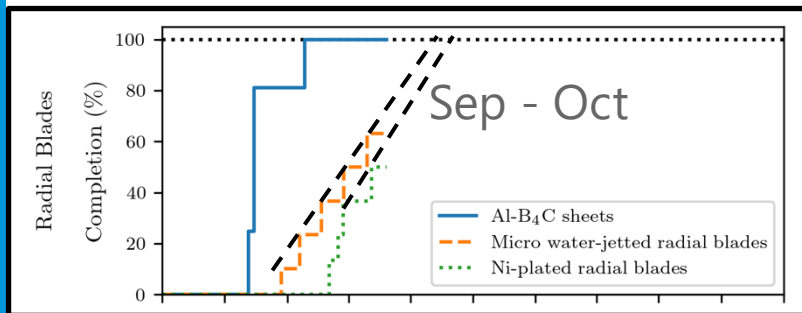
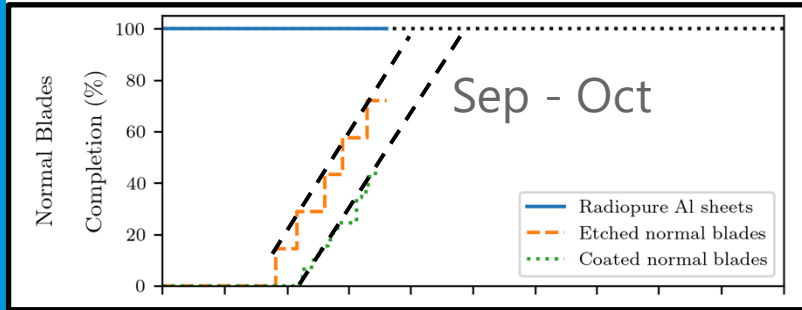


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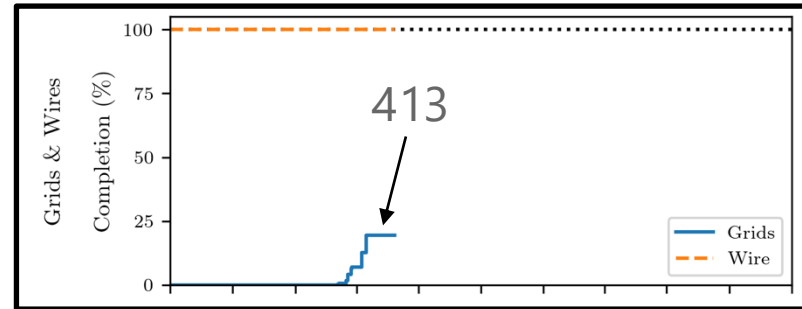




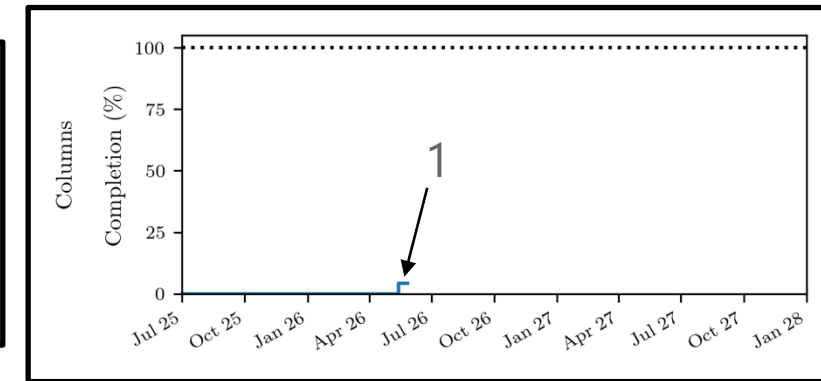
Blades



Grids

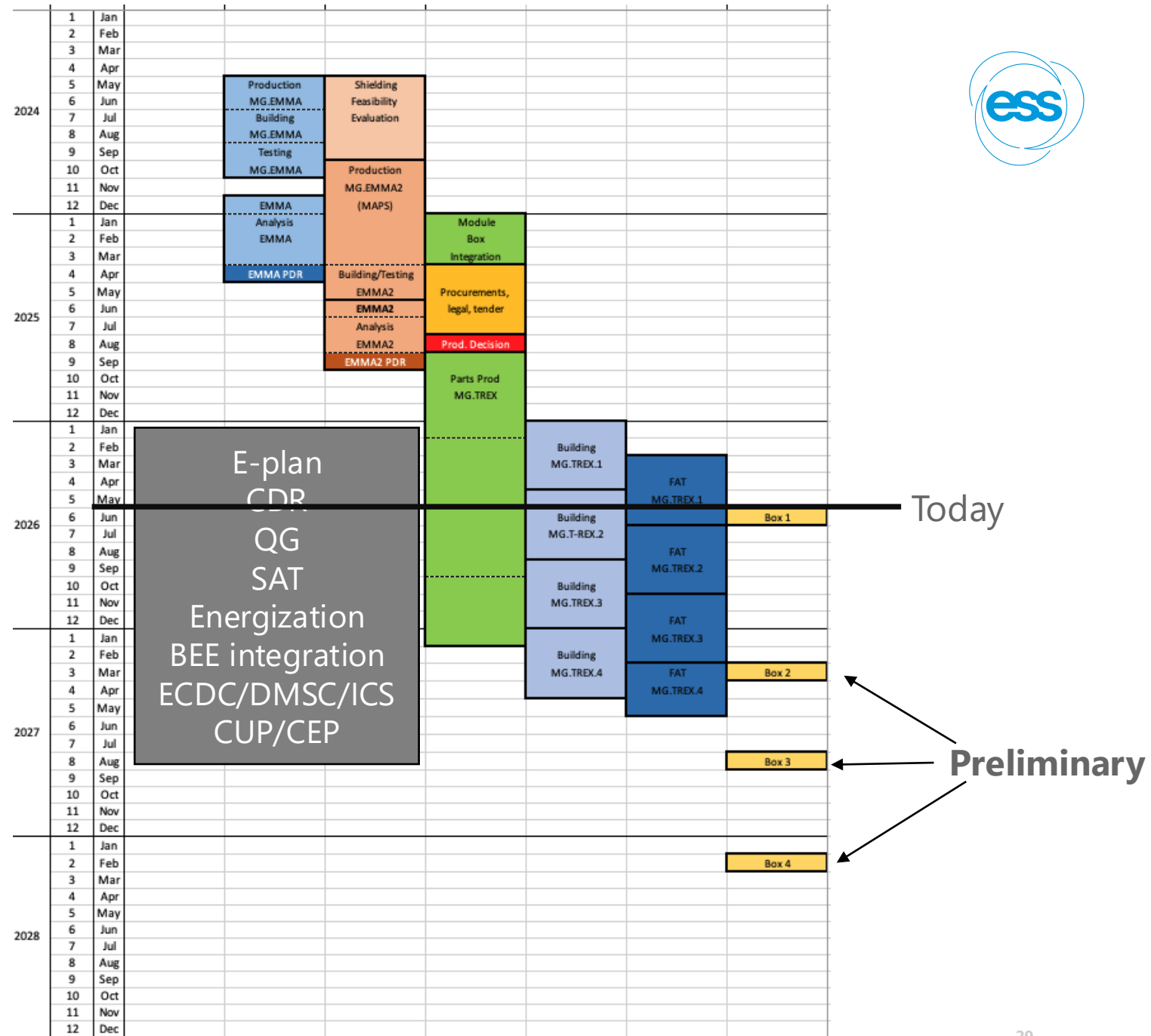


Columns





- Part production will be finished 2-3 months earlier than planned
- First detector Box is expected to arrive at Utgård in June
- A bit behind our timeline (1 out of 6 columns was finished by April). Will not affect TG5.
- Aim is to adhere to the original timeline to the largest extent possible

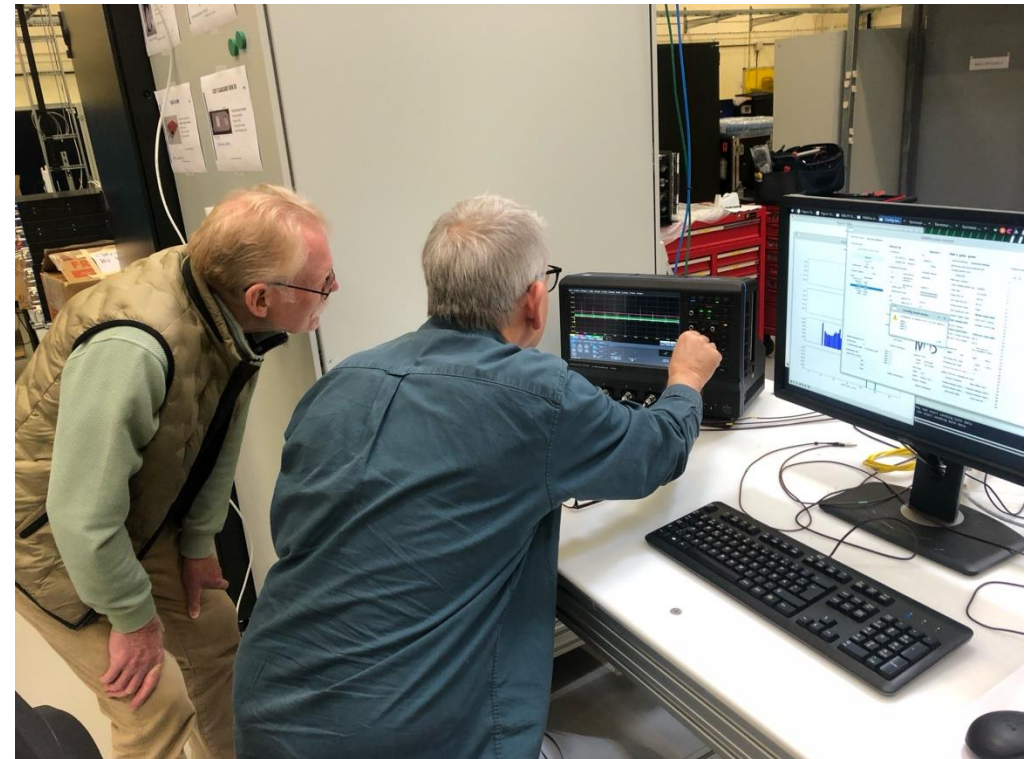
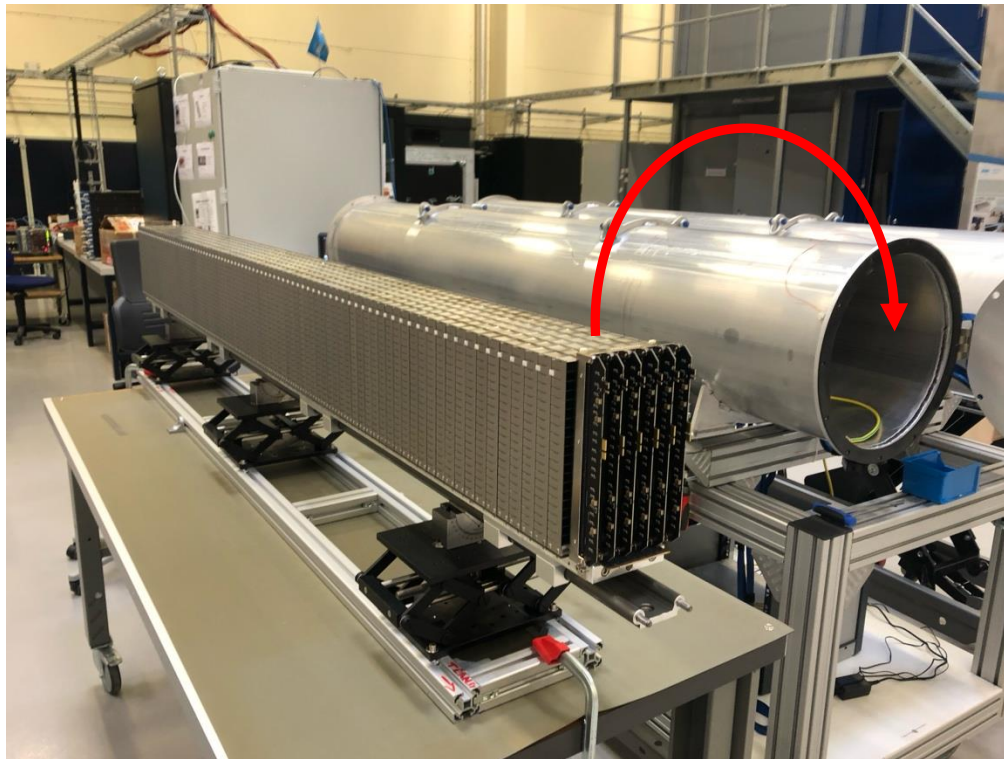


4.

Testing

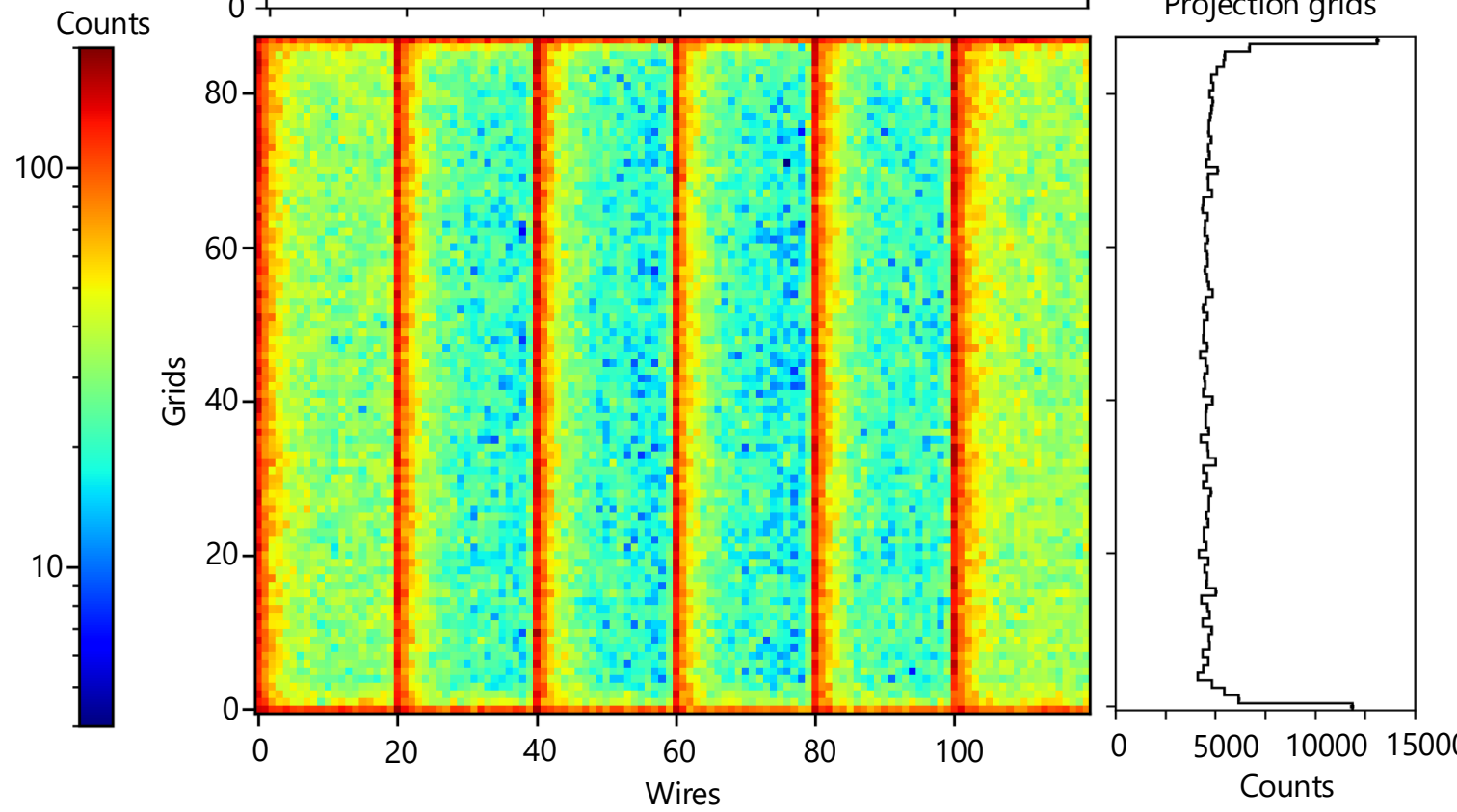
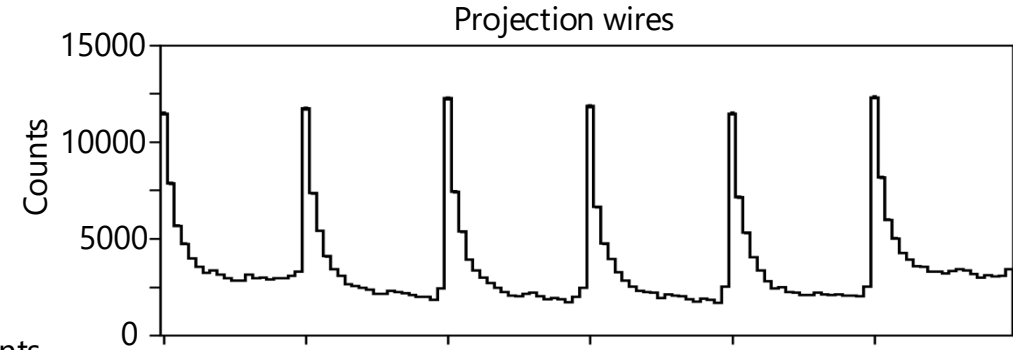
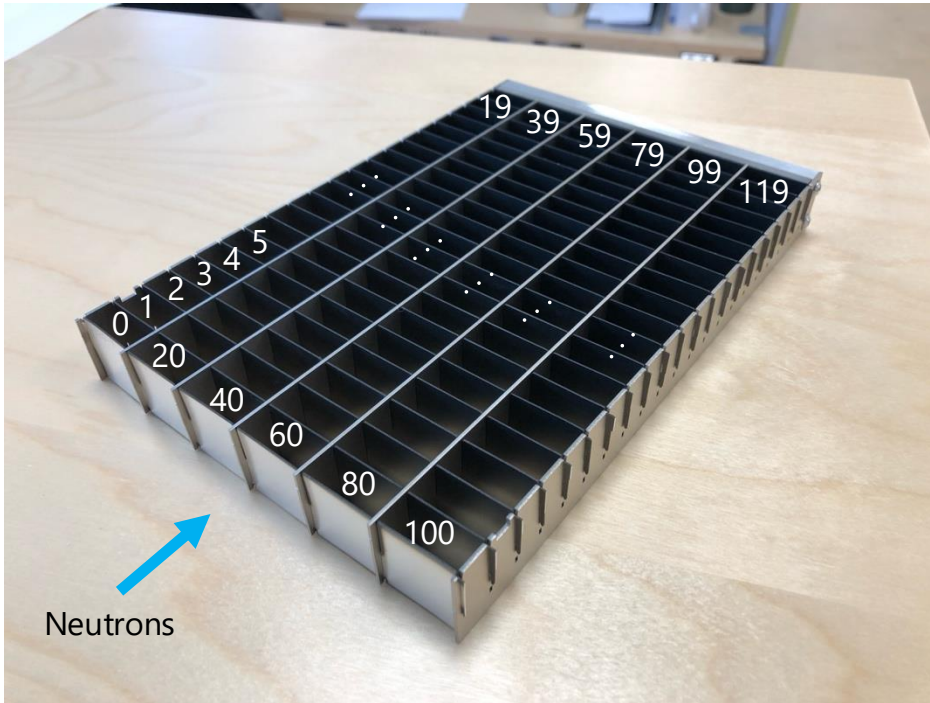
4. Testing

Testing of the first column



4. Testing

Testing of the first column

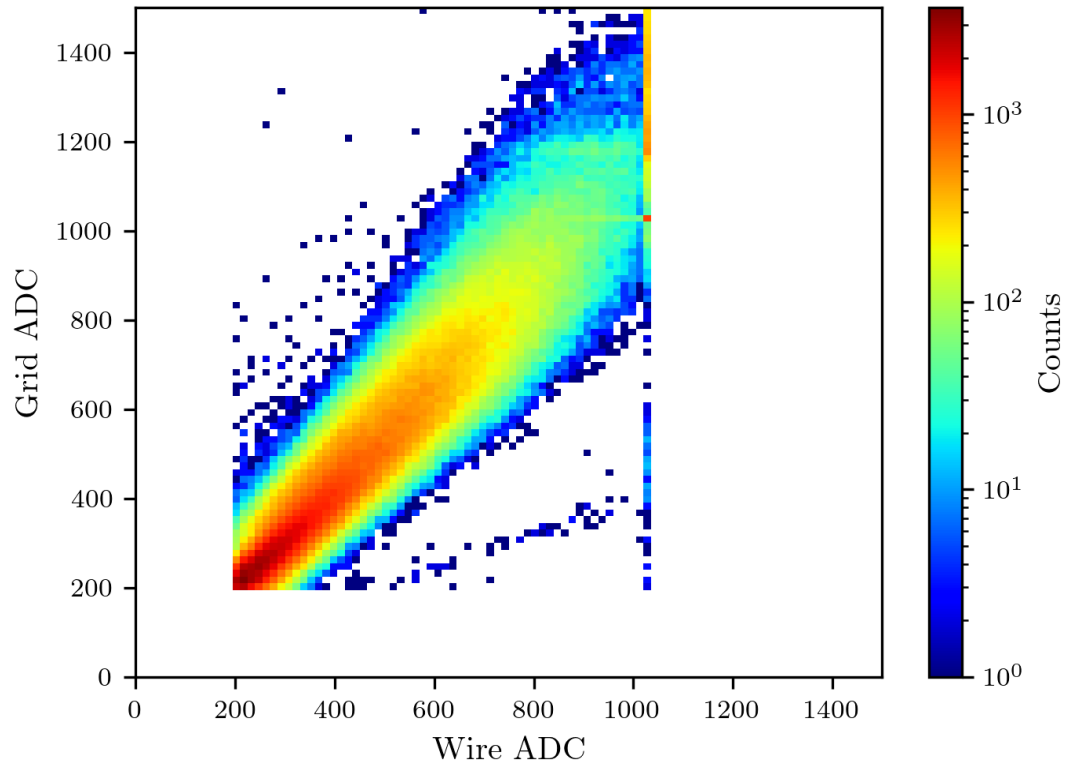




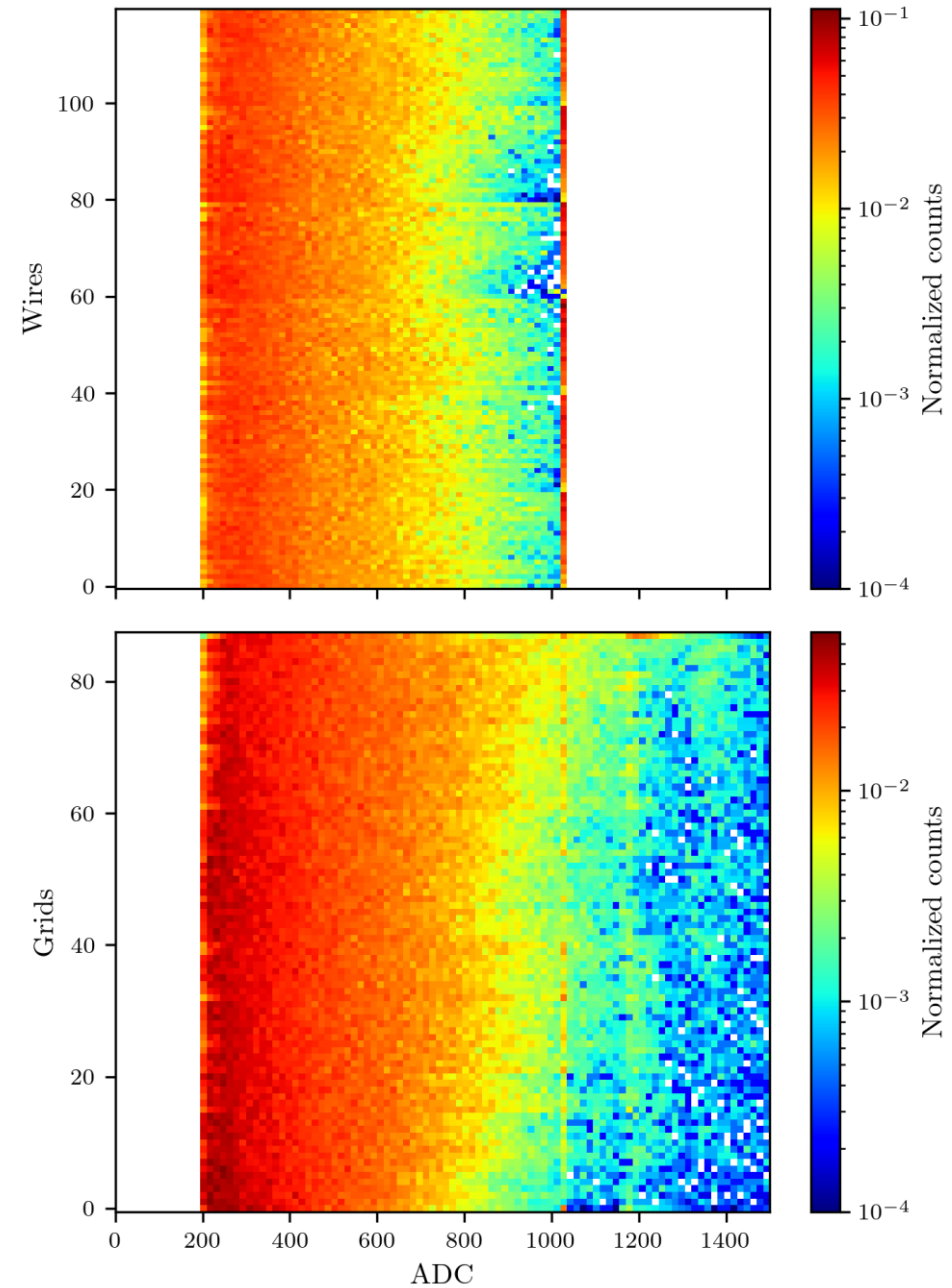
4. Testing

Testing of the first column

PHS correlation: wires vs grids

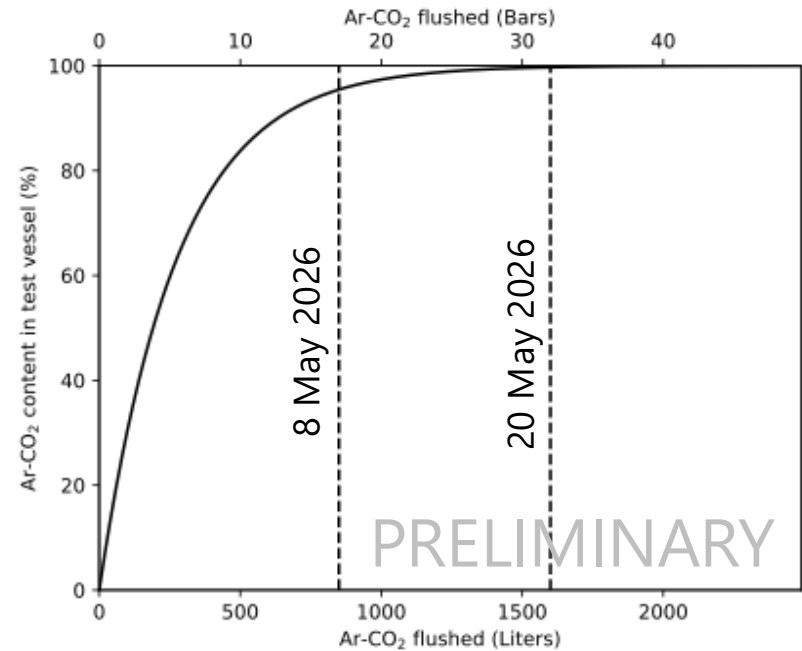
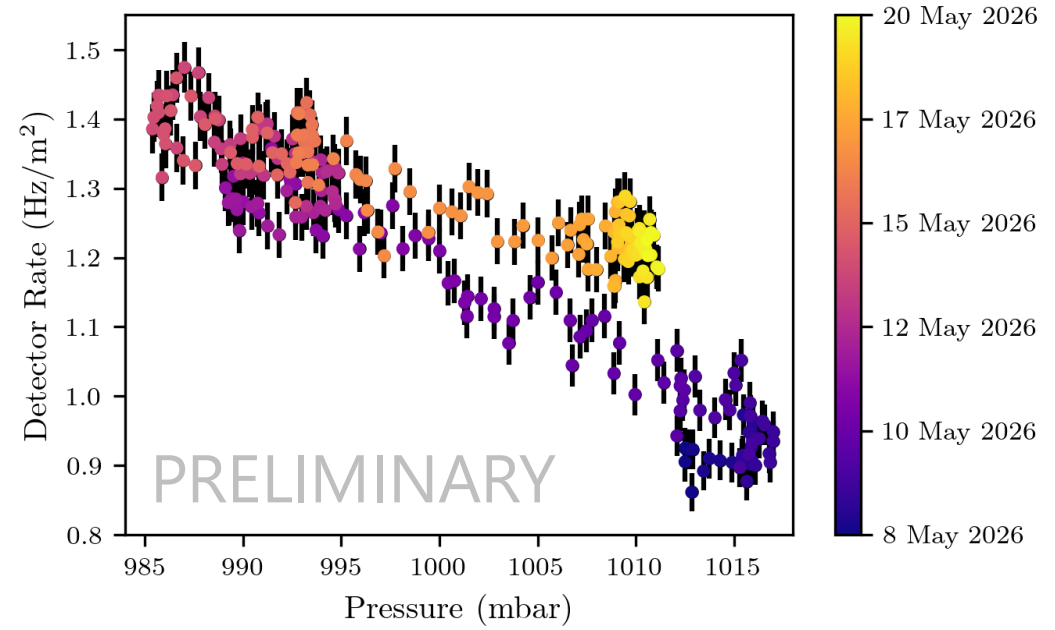
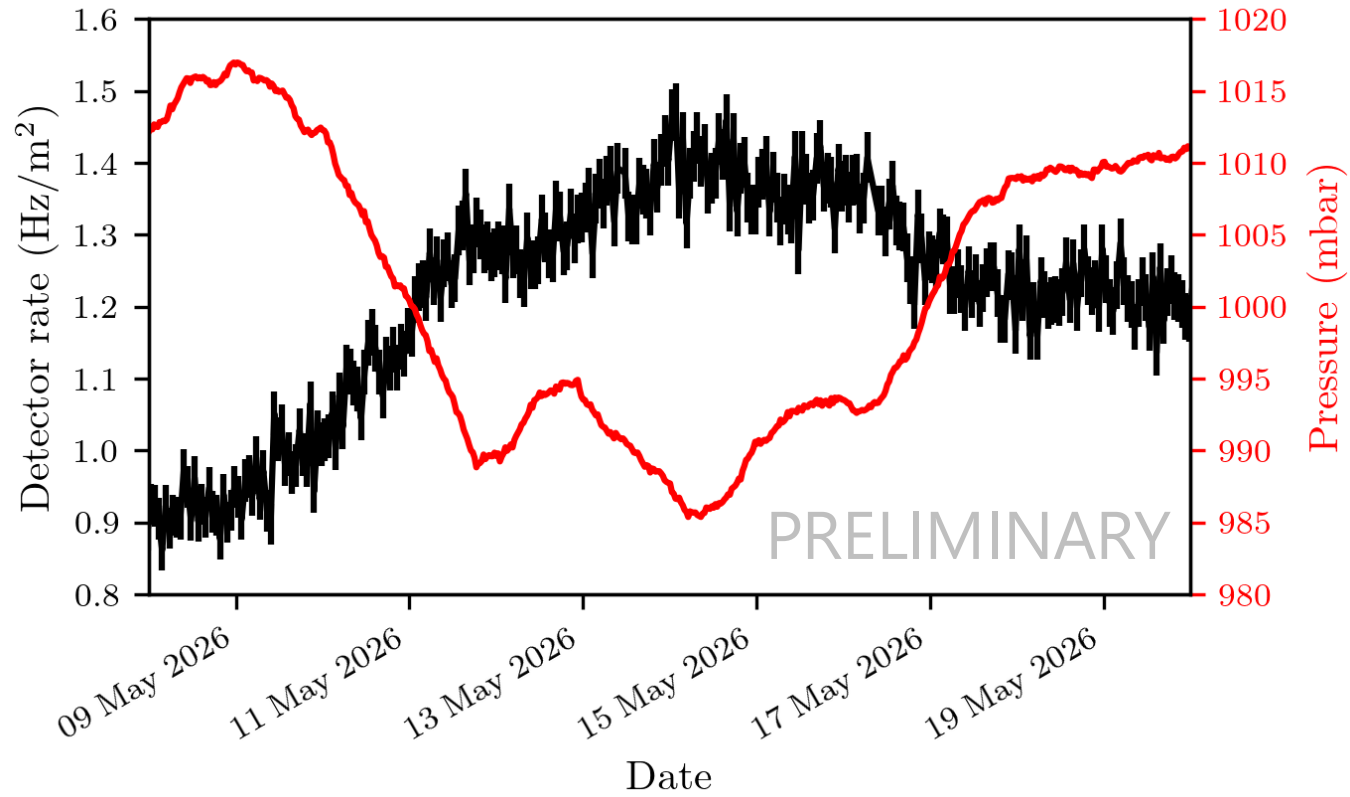


Normalized PHS per channel



4. Testing

Testing of the first column




5.

Documentation



5. Documentation

CEP




**EUROPEAN
SPALLATION
SOURCE**

Document Type: Requirement Specification
 Document Number: ESS-5507090
 Date: Apr 7, 2026
 Revision: 1
 State: Released
 Confidentiality Level: InternalInternal
 Page: 1 (29)


ELECTRICAL REQUIREMENT FOR THE T-REX DETECTOR RACKS

**PRE - ELECTRICAL
REQUIREMENT**



	Name	Role/Title
Owner	Alexander Backis	Detector Scientist - Detector Group
Reviewers	Najib Ahmadi	Project Engineer - Mechanical Engineering, Technology & Analysis Group
	Alejandro Tobias	Lead Integration Engineer - Technical Projects Group
Approver	John Segal	DetG Subsystem Lead

UNCONTROLLED COPY: ESS-5507090 Doc. 1, Released: 2026-04-07 Internal: 1, No. pages: 1 (29)
<https://hws.ess.eu/veroview/ESS-5507090.1.1.13708.15.146.02024.2003>



RELEASED

Template: System Requirement Specification (ESS-0004789 Rev: 4, Active date: May 26, 2020)



5. Documentation

CUP

 EUROPEAN SPALLATION SOURCE

Document Type: Requirement Specification
Document Number: ESS-0005435
Date: Feb-13, 2026
Revision: 1 (1/1)
State: Preliminary
Confidentiality Level: Internal
Page: 1 (8)

T-REX DETECTOR GAS SYSTEM REQUIREMENT SPECIFICATION

	Name	Role
Owner	Alexander Backis	Detector Scientist
Authors	Alexander Backis	Detector Scientist
	Francesco Piscitelli	Detector Scientist
Reviewers	Per-Olof Svensson	Detector Group Technician
	Jesper Ringner	Project Lead CUP
	Mohamed Aouane	T-REX Instrument Scientist
	Christian Franz	Lead T-REX Instrument Scientist
Approver	John Segal	Detector sub-system specialist

Template: Specification (ESS-0000992 Rev: 3, Active date: Feb 20, 2020)

5. Documentation

CDR






EUROPEAN SPALLATION SOURCE

Document Type Report
 Document Number ESS-5939652
 Date Nov 26, 2025
 Revision 1 (E/1)
 State Preliminary
 Confidentiality Level Internal
 Page 1 (7)

CRITICAL DESIGN REVIEW FOR THE MULTI-GRID DETECTOR FOR T-REX




	Name	Role/Title
Owner	Alexander Backis	Detector Scientist
Author	Alexander Backis	Detector Scientist
	David Hansson	Detector Design Engineer
	John Annand	Honorary Senior Research Fellow – University of Glasgow
	Kenneth Livingston	Senior Research Fellow – University of Glasgow
	Francesco Piscitelli	Detector Scientist
Reviewer	Mohamed Aouane	T-REX Instrument Scientist
	Christian Franz	Lead T-REX Instrument Scientist
Approver	Kevin Fissum	Detector Group Leader

Template: Report (ESS-0060987 Rev. 4, Active date: Feb 20, 2020)



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 State Preliminary
 Confidentiality Level Internal
 Page 1 (4)

MULTI-GRID DETECTOR SYSTEM REQUIREMENTS FOR T-REX




	Name	Role/Title
Owner	Alexander Backis	Detector Scientist
Author	Alexander Backis	Detector Scientist
	David Hansson	Detector Design Engineer
	John Annand	Honorary Senior Research Fellow – University of Glasgow
	Kenneth Livingston	Senior Research Fellow – University of Glasgow
	Francesco Piscitelli	Detector Scientist
	Mohamed Aouane	T-REX Instrument Scientist
Reviewer	Christian Franz	Lead T-REX Instrument Scientist
	Kevin Fissum	Detector Group Leader

Template: Description (ESS-0060920 Rev. 3, Active date: Feb 20, 2020)



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 Document Number ESS-6001716
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 Confidentiality Level Internal
 Page 1 (28)

MULTI-GRID DETECTOR SYSTEM DESIGN DESCRIPTION




	Name	Role/Title
Owner	Alexander Backis	Detector Scientist
Author	Alexander Backis	Detector Scientist
	David Hansson	Detector Design Engineer
	John Annand	Honorary Senior Research Fellow – University of Glasgow
	Kenneth Livingston	Senior Research Fellow – University of Glasgow
	Francesco Piscitelli	Detector Scientist
	Mohamed Aouane	T-REX Instrument Scientist
	Christian Franz	Lead T-REX Instrument Scientist
Approver	Kevin Fissum	Detector Group Leader



Template: Description (ESS-0060920 Rev. 3, Active date: Feb 20, 2020)



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ASSEMBLY AND MAINTENANCE MANUAL FOR MULTI-GRID COLUMNS

	Name	Role/Title
Owner	Alexander Backis	Detector Scientist
Author	Alexander Backis	Detector Scientist
	David Hansson	Mechanical Engineer
	John Annand	Honorary Senior Research Fellow – University of Glasgow
	Kenneth Livingston	Senior Research Fellow – University of Glasgow
	Francesco Piscitelli	Detector Scientist
Reviewer	Mohamed Aouane	T-REX Instrument Scientist
	Christian Franz	Lead T-REX Instrument Scientist
Approver	Kevin Fissum	Detector Group Leader

Template: Description (ESS-0060920 Rev. 3, Active date: Feb 20, 2020)

5. Documentation

QG

BOM list

D	E	F	G	H	I
					DIN 912 M2,5x6 A2
					Ultra low cap head screw M3x10
					Normal Blade
					T-Rex Grid Shielding Block
					T-REX GRID BLOCK 23.5mm (With cut
					MG Outer Radial Blade
	T-REX Grid (With cut-out Grid Block)	ESS-5813923	2.0	4	
	Washer M4 9x4,3x0,8 Stainless A2	ESS-5919360	1.0	6	
	HEXAGON SOCKET BUTTON HEAD CAP SCREW M4x8 ISO 7380 - STAINLESS STEEL A2	ESS-5919358	1.0	6	
	Cable Clip dia 6,4 COPUM5	ESS-5914787	1.0	6	
	LK55x10-SUS	ESS-5867118	1.0	4	
	Backbone PCB Back	ESS-5817504	1.0	1	
	Backbone PCB Middle	ESS-5817503	1.0	1	
	Backbone PCB Front	ESS-5817500	1.0	1	
	T-REX End-grid spacer	ESS-5629003	2.0	4	
	Aggregator PCB	ESS-5723852	1.0	1	
	SLSBG6-33-M3-N3	ESS-5687647	1.0	4	
	Wire Add-on PCB front	ESS-5668521	1.0	6	
	H-Spacer 1 mm Ceramic	ESS-5615555	3.0	174	
	Wire PCB Back	ESS-5628980	1.0	6	
	End-Grid Back	ESS-5601655	1.0	1	
	SHR-ZYL-DIN7984-A2/070-IS2-M3X6	ESS-5643961	1.0	48	
	Washer M3 dia 9	ESS-5601650	1.0	12	
	Wire PCB Front	ESS-5628939	1.0	6	
	End-Grid Front	ESS-5599934	1.0	1	
	Hexagon Socket Head Cap Screw Low M6x14	ESS-5646836	1.0	2	
	HEXAGON SOCKET HEAD CAP SCREW M8x20 DIN 912 A2	ESS-5377058	1.0	1	
	T-Rex 88-Grid stopper bracket	ESS-5488538	1.0	1	
	HEXAGON SOCKET HEAD CAP SCREW M6x14 DIN 912 A2	ESS-5445746	1.0	4	
	HEXAGON SOCKET HEAD CAP SCREW M4x12 A2	ESS-5487960	1.0	8	
	mf6s M3x16 A4 ISO10642	ESS-5363298	1.0	60	
	HEXAGON SOCKET HEAD CAP SCREW DIN 912 M8x40 A2	ESS-5364555	1.0	16	
	HEXAGON SOCKET HEAD CAP SCREW DIN 912 M5x8 A2	ESS-5372456	1.0	176	
	End-Grid Bracket Bottom	ESS-5473095	1.0	1	
	End-Grid Bracket	ESS-5472829	1.0	1	
	Drylin_Carriage	ESS-5364532	1.0	4	
	Insulator T-Rex 88-Grid mid	ESS-5472808	1.0	1	
	Insulator T-Rex 88-Grid	ESS-5472807	1.0	2	
	88-Grid Backbone Single	ESS-5488105	2.0	1	

Material certificates

AMAG
Abnahmeprüfung 3.1 (EN 10204)
Inspection certificate - mill certificate
Rev. 6
Nr.: 8530418 01 1
1 von 13
Datum: 2025-09-12

Bestellgeber / customer: T. Eiserich (17) 1000000000
Abnehmer / customer: AMAG, SP_300001 TopPlate-NBT, Rev. 10, April 2022
Material: 304L
Materialnummer: 304L
Materialnummer / assignment: 304L
Material: 304L
Materialnummer: 304L

Produkt / product: T. Eiserich (17) 1000000000
Bestellungen / items: AMAG, SP_300001 TopPlate-NBT, Rev. 10, April 2022
Materialnummer / assignment: 304L

AB-Prüf- und-Mess-Größen	Einheit	Prüf- und-Mess-Part	Größe	Prüf- und-Mess-Größe	Kennwert	Prüf- und-Mess-Größe	Prüf- und-Mess-Größe	Prüf- und-Mess-Größe	Prüf- und-Mess-Größe	Prüf- und-Mess-Größe
02	mm	02	02	02	02	02	02	02	02	02
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02	mm	02	02	02	02	02	02	02	02	02
02	mm	02	02	02	02	02	02	02	02	02

INNOVATICS CERAMICS
Material certificate
2025-07-01

Customer: ...
Material: ...
Quantity: ...

Material	Lot	Quantity	Unit
...

ATH
Inspection Certificate 3.1
According to EN 10204
Certificate No. 491-000-0000-000-0
Date: 2025-09-12

Material: ...
Quantity: ...

Material	Lot	Quantity	Unit
...

Zwick / Roell
Test report
Customer: ...
Material: ...
Quantity: ...

Material	Lot	Quantity	Unit
...

alimex
Inspection Certificate 3.1
According to EN 10204
Certificate No. ...
Date: 2025-09-12

Material: ...
Quantity: ...

Material	Lot	Quantity	Unit
...

Zwick / Roell
Test report
Customer: ...
Material: ...
Quantity: ...

Material	Lot	Quantity	Unit
...

6.

Summary



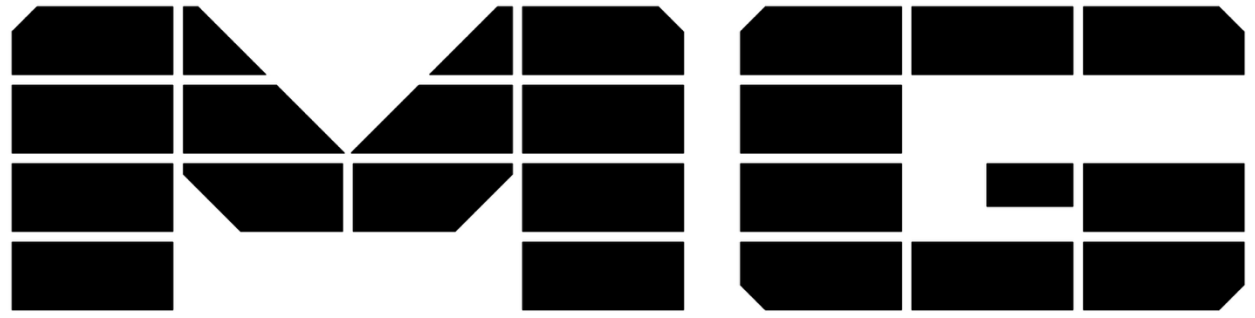
6. Summary

- Part production is progressing ahead of schedule
- The first MG.T-REX column is built and tested (**big milestone**)
- Major building and testing effort upcoming in June
- Documentation work is under way

6. Summary

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





Multi - Grid