

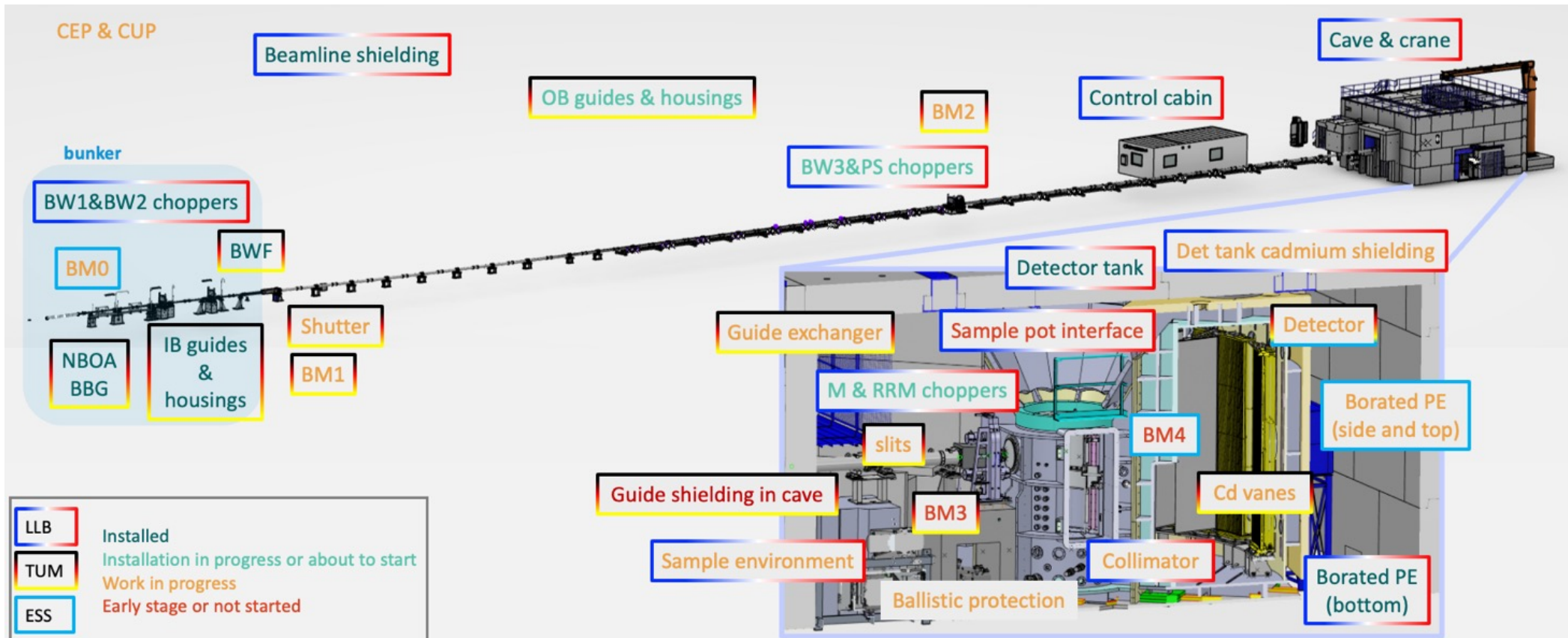
CSPEC update

Daria Noferini & Fernando Moreira

ICEB, 05.05.2026

Overview & summary of the current status

TG5: Nov 2027



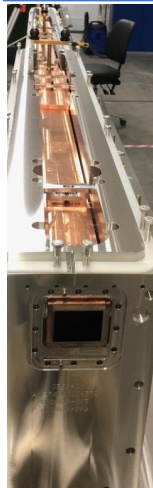
Guides [TUM]



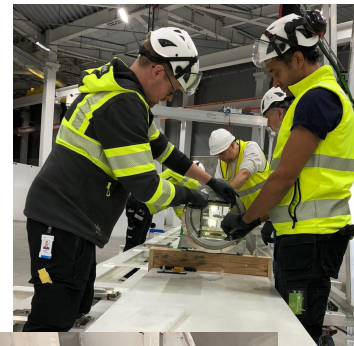
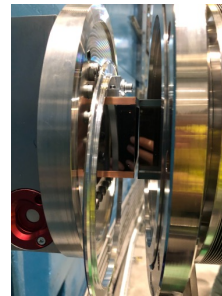
TUM in-bunker guide:
Installation completed

TUM outside bunker guides:
installation ongoing (planned end: July)

NBOA: installation completed
BBG: Installation completed
BWF: installation completed



S-DH
SwissNeutronics



Guides [TUM]

Some guides have small pieces of coating peeling off and micro-cracks. The decision was to install them, as in the current situation they should not affect performance, but some pieces will be remanufactured to avoid possible bigger problems in the future (discussion is ongoing).

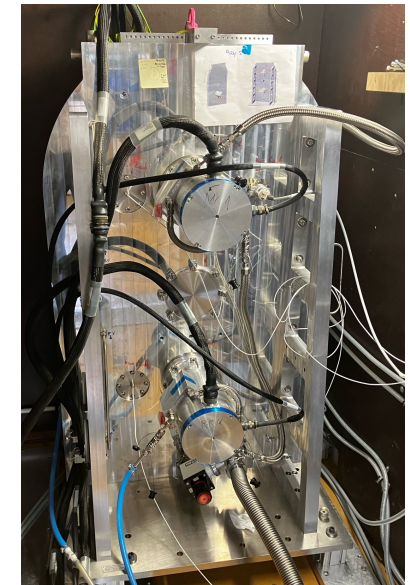
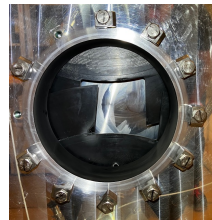


Choppers [LLB]

In-bunker choppers were installed with guides but not tested because of lack of resources from chopper groups.

Out of bunker: installation end of June 26.

Warranty expires in March 2027 → tests in September/October 2026 (tbc) to minimise the risks of problems afterwards.



Detector tank [LLB]

Installed. Some work, mainly on the gate valve is still needed (but not priority).



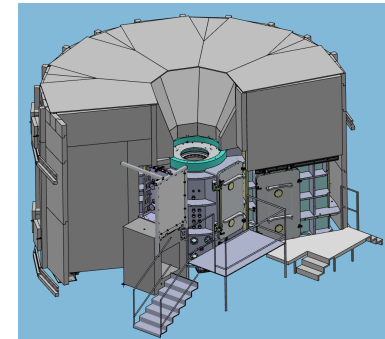
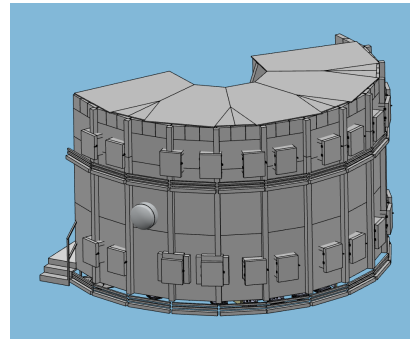
Possible future upgrades of the beam stop were considered (e.g. to define CEP requirements).

Detector tank shielding [LLB+ESS]

Borated PE: installed under the tank [LLB]. Some preliminary design work for side and top (Christofer/NSS pool + Fernando), to ensure compatibility with CEP and CUP for PDR.

ESS contingency to procure and install bottom and side (together with other spectrometers). The work is managed by a common NSS project. Workshop in February, work on CSPEC started, the design is advanced enough to make more detailed considerations for the back wall for CEP and CUP. Current estimate for installation: December.

More details from Tobias!



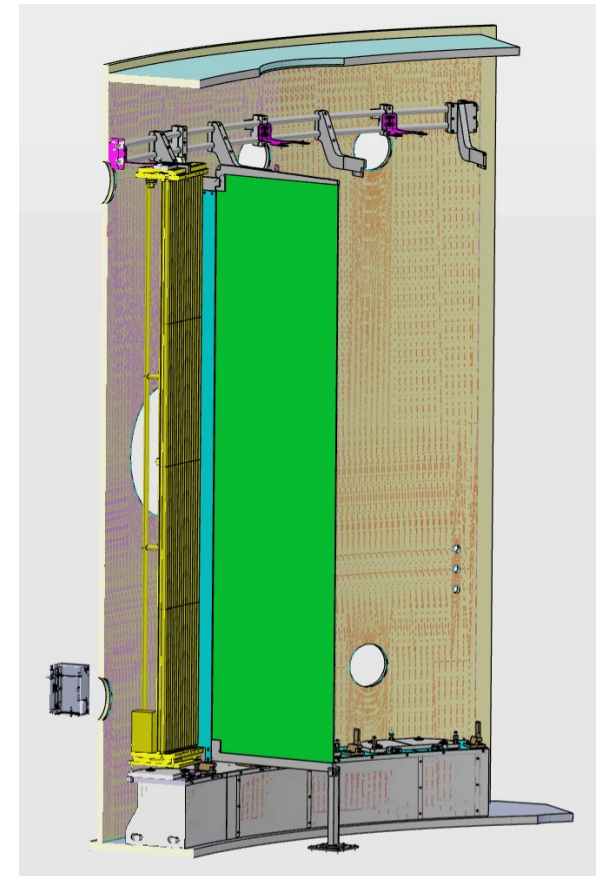
Cd sheets: procured; installation planned in August-September

Detector interfaces [TUM]

Detector **shelf**: some delays from the manufacturer (welding upside down, problems with one machine...). The considered contingency time for not clashing with cadmium installation, detector handling tests etc is almost consumed. New delivery date tbc by the manufacturer.

Detector **mounting**: the internal crane was tested, tests with a detector dummy in June.

Cd vanes: at least a first one built and tested by the end of the year, then installation following the detector timeline.



Detector [TUM+ESS]

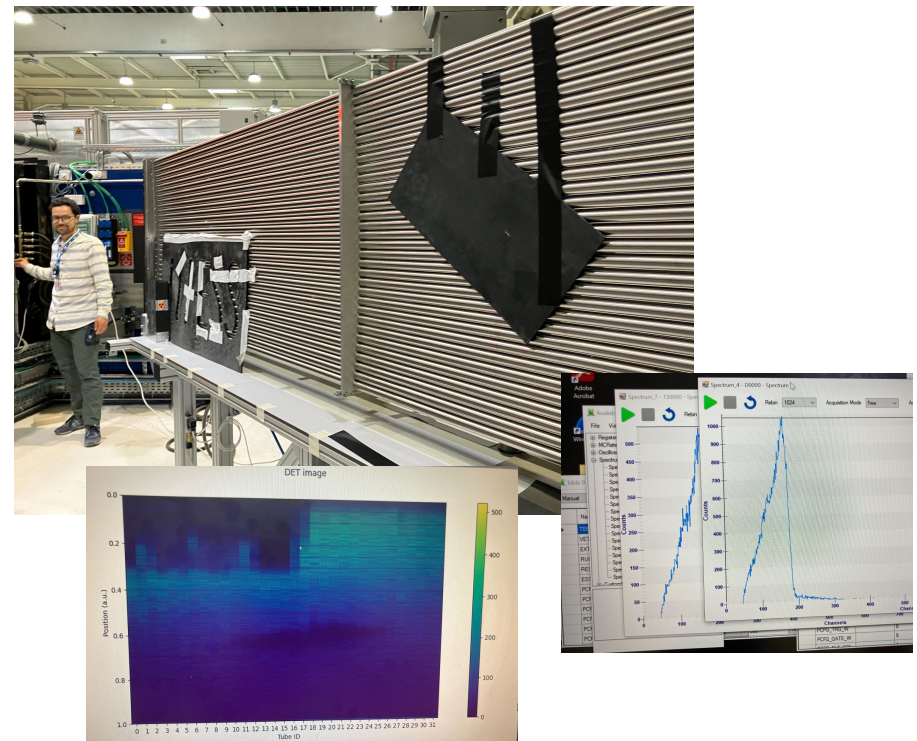
Multitube modules (MTM): detector performance tests at the ILL on-going, including ESS DAQ. Good preliminary results, detailed evaluation in the coming weeks.

Mechanical performance: leak test still under discussion. We might need to do it in the CSPEC tank.

FAT in June. Some delays on the delivery of the tubes to the ILL, the delivery schedule might change. Current schedule, from contract (July 24): Nov 26 → MTM 1-4; May 27 → MTM 5-8; Nov 27 → MTM 9-13

³He gas: order placed for full scope amount. Gas sufficient for the 1st module is at the ESS, then delivery according to the MTM schedule.

Gas transfer system: some technical problems (→ failed FATs), now solved and new FAT planned for next week.



Cave and control cabin [LLB]



Installed (excluding energisation).

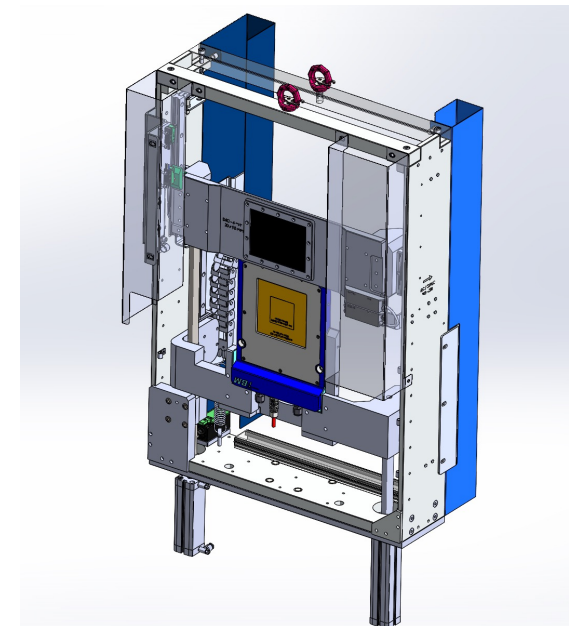
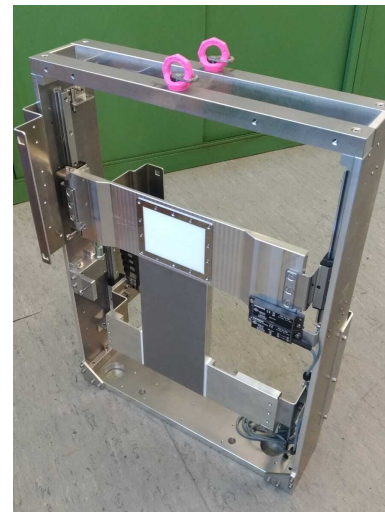
Safety issues on the side door fixed.



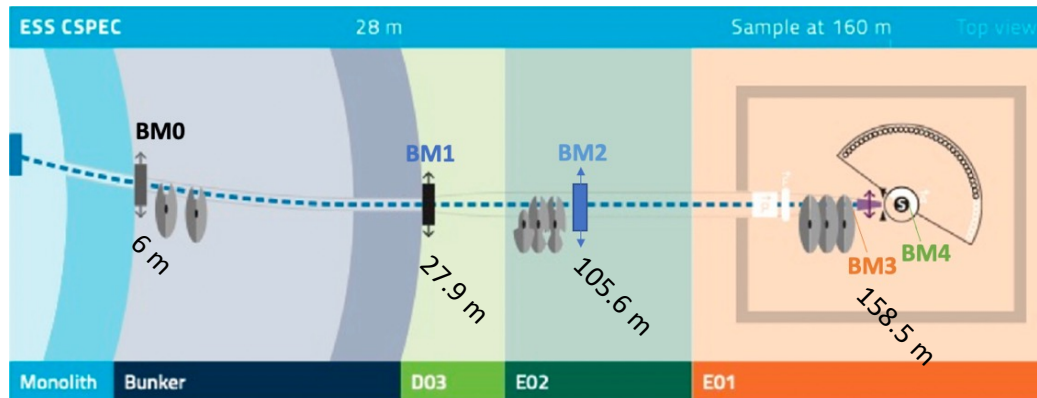
Shutter [TUM]

A temporary plug was designed, procured and installed (with Q-gate procedures etc), to match previous BOT dates.

Corrections on the shutter are ongoing (Jackson + Fernando), with more iterations and needed time than anticipated (problems with stability → change of brackets...). Quality problems were also discovered (wrong materials for activation). Check with 3D printer parts and tests in the next weeks.



Monitors (common project) [TUM+ESS]



Advanced requirements defined with BM scientist.
Offer received end of March, CR “almost signed”.

- BM0 (in-bunker, fixed): ionisation beam monitor (IBM). ESS scope (CR ongoing).
- BM1 (removable, with shutter assembly): IBM (CSPEC).
- BM2 (removable, lift design on hold) and BM3 (fixed for scientific requirements but on carriage to add safety position for the choppers): micromegas (CSPEC).
- BM4 (after sample): neutron camera (shared with other spectrometers), plus possibility for a transmission monitor (tbd) for commissioning, via spectroscopy/det group (considered within CEP requirements).

CEP, CUP, MCA (common projects) [TUM]

CEP: PDR done, CR "almost signed". Almost ready for CDR.

CUP: PDR planned next week, CR "almost signed".

MCA: offer received but some corrections to the scope are needed to reflect the latest updates. Some last modifications to be incorporated (on-going). Coming soon: signature of CR and PDR.

In general, more CSPEC engineering time than anticipated.

Other components

- **Ballistic protection for fast chopper & in-cave shielding:** design work started (Thomas and Nikolaos/NSS pool)
- **Guide exchanger [TUM]:** after TG5. Some work done to ensure integration, removed the safety position and added it to the BM4 (conceptual design done)
- **Focussing nose [TUM]:** after TG5. (Ongoing McStas – scientists)
- **Slits [TUM]:** conceptual work done (Thomas/NSS pool). After TG5?
- **Sample environment support stack [LLB]:** after TG5; on hold
- **Collimator [LLB]:** the collimator is manufactured and at the ESS. Thomas just started to work on the mounting. The drive will be outsourced to external company (details regarding the residual work for CSPEC to be defined with the company)
- **Sample environment [LLB]:** after TG5 (cryofurnace needed for hot commissioning).
Cryofurnace [under procurement], ^3He insert [on hold], 14T Magnet [under procurement, shared with TREX], Automatic Sample Changer [on hold].

“Post TG5” components

- Cryofurnace [LLB] (early hot commissioning, or a temporary cryostat to cool down to a few K during HC)
- Slits (?) [TUM] (early HC)
- Detector modules 2-13 [TUM+ESS] (schedule according to the detector contract, possible revisions needed)
- Collimator drive [LLB] (HC)
- Side and top borated PE [ESS] (HC, back wall possibly before to avoid complications with installation of cables, electronic boxes and compressed air for detectors)
- ^3He insert [LLB] (first science)
- Sample environment support stack [LLB] (SOUP)
- Guide exchanger and focussing nose [TUM] (SOUP or later)
- Sample changer [LLB] (SOUP or later)
- BM3 lift [TUM]

Risks

Top 5 Risks				
Title	Rating	Category	Partner	Treatment
Staffing resources	16	Schedule	ESS	Reduce
PSS	16	Schedule	CSPEC	Transfer
CE marking	15	Schedule	ESS Project	Reduce
Detector delivery	10	Schedule	ESS Project	Observe
Cadmium installation inside the tank	10	Cost	LLB	Reduce

Top 5 Issues						
Title	Rating	Category	Partner	Cost	Delay	Quality
Design resources	9	Schedule	LLB	25-100k€	4-6 months	N/A
Common project development	9	Cost	CSPEC	100-300k€	4-6 months	N/A

Some final remarks

We start looking like an instrument!

Documentation is still an open problem.

Engineering resources: we have seen worse times, and we appreciate the resources from the NSS pool, but it is still an issue. The scientists help but have different roles and competences.

How do we deal with (late) post-TG5 components? Let's talk in the afternoon!



Thanks!