



**EUROPEAN
SPALLATION
SOURCE**



NSS Update

ICB.24

ROBERT CONNATSER, SUB-PROJECT LEADER

Outline



- General Update on Progress
 - Installations
 - Personnel
- Major Issues
 - Bunker update
 - Mirrotron update
- Other
 - Q gate

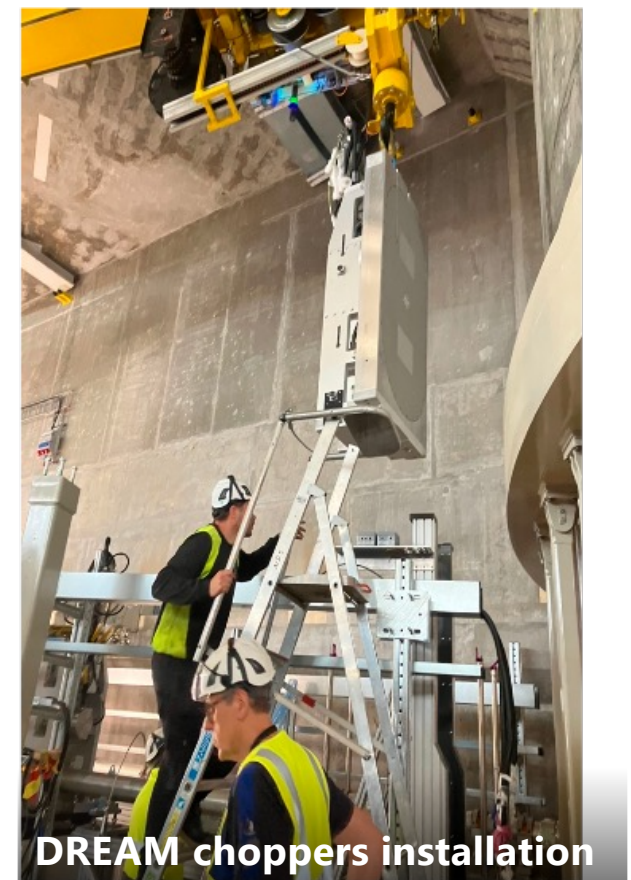
DREAM update



DREAM choppers re-assembly



DREAM detectors

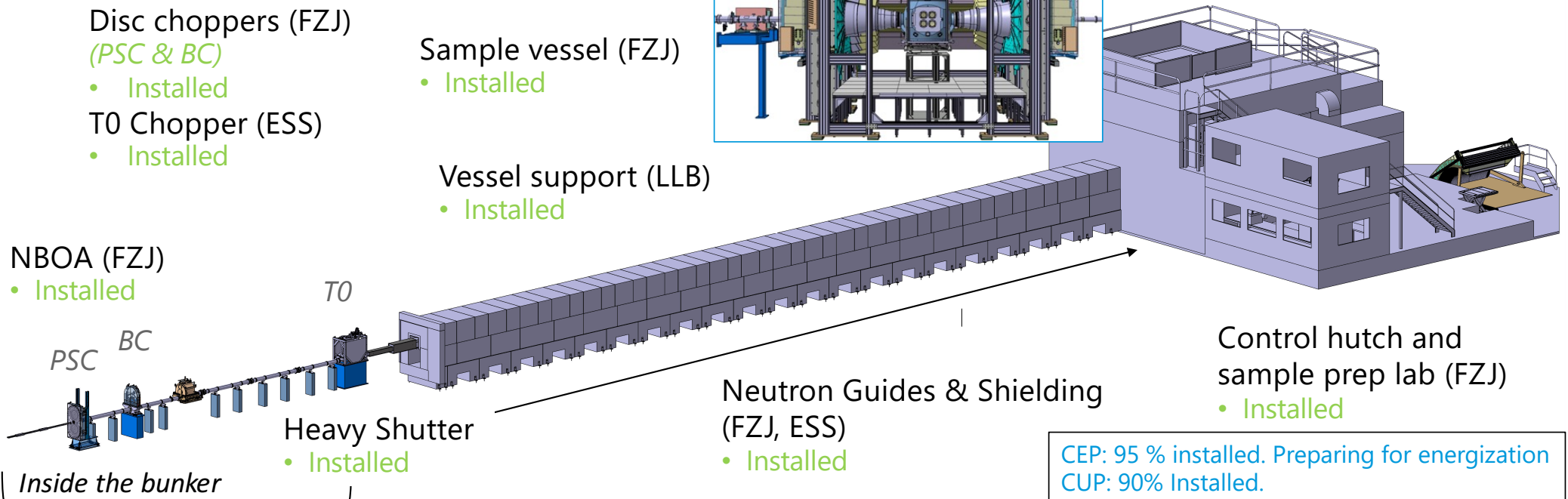


DREAM choppers installation

DREAM Partners: FZJ and LLB

TG5 meeting: April 2025
i-SRR: July 2025

Installed,
In installation/storage,
In manufacturing



Disc choppers (FZJ)
(PSC & BC)
 • Installed
 T0 Chopper (ESS)
 • Installed

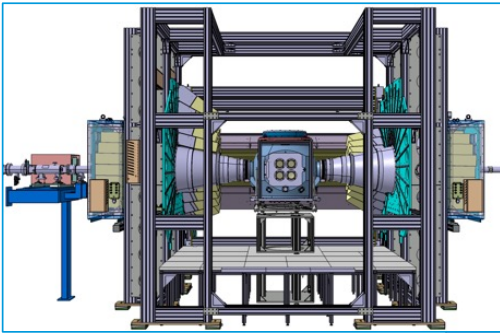
Sample vessel (FZJ)
 • Installed

Vessel support (LLB)
 • Installed

Detectors (FZJ)
 • Installation: Q4 23 - Q4 24
 • 2/3 detectors installed

Detector frame (FZJ)
 • Installed

Experimental cave (LLB)
 • Installed



Neutron Guides & Shielding
 (FZJ, ESS)
 • Installed

Control hutch and
 sample prep lab (FZJ)
 • Installed

CEP: 95 % installed. Preparing for energization
 CUP: 90% Installed.
 PSS: Installation after CUP/CEP
 Racks delivery (MCA, BM...)



ODIN update



ODIN cave



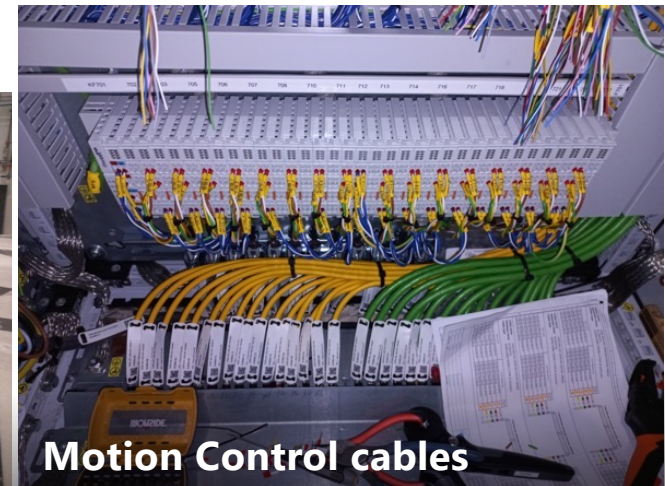
ODIN external cave door



ODIN internal cave door



ODIN stages in the cave



Motion Control cables

ODIN Partners: TUM (lead), PSI

TG5 meeting: Mar 2025
i-SRR: June 2025

Other components/activities:

- T0 chopper (ESS): in design (not part of TG5)
- CUP (ESS): CDR held, installation starting Nov '23
- CEP (ESS): PDR held. CDR in Sept, installation starting in Oct '23
- MCA (ESS): installation of motion cabinets 2-6 ongoing
- PSS (ESS): in design



Installed,
 In installation/storage,
 In manufacturing

Choppers:
 Bottom housings installed
 Installation of choppers ongoing
 NEW ISSUE choppers/guides clash

Common shielding:
 Partly installed,
 partly in storage

Cave walls:
 Installed August '23

Cave interior components:
 Installation in progress

Cave roof, beamstop and stairs:
 Installation planned during
 Oct-Nov 2024

NBOA:
 installed

Remote handling area
 guides
 BBG with BGOA installed

In bunker guides: Installed
 NEW ISSUE choppers/guides clash

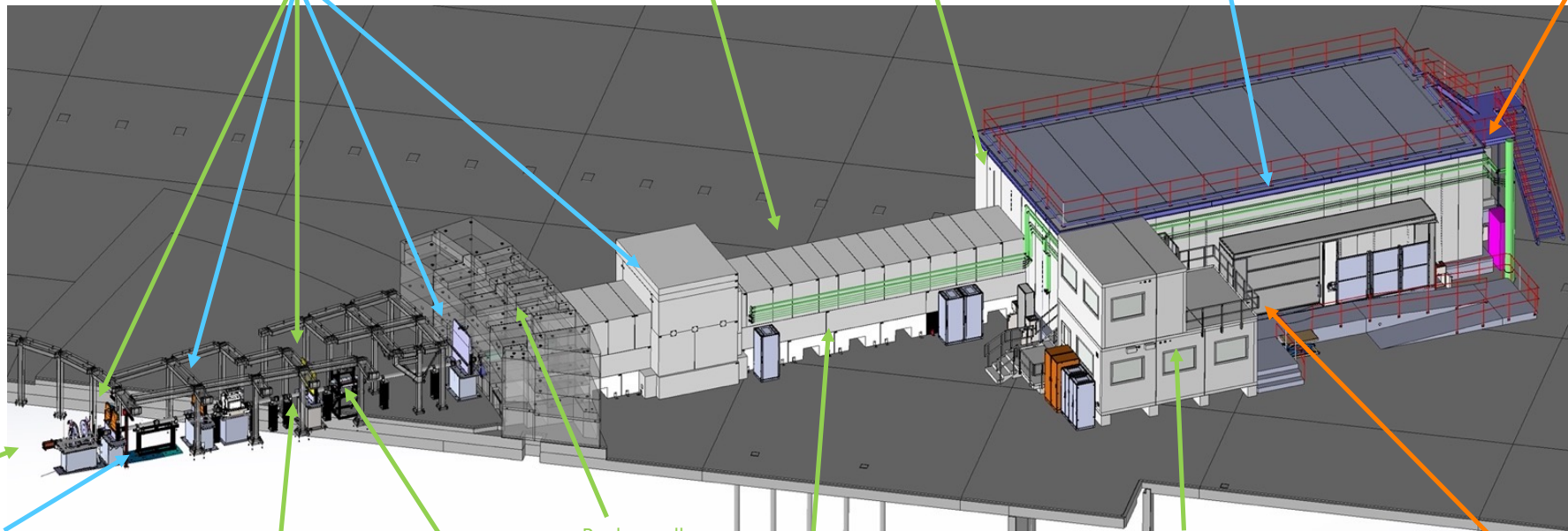
Heavy
 shutter:
 Installed

Bunker wall
 feedthrough:

Out-of-bunker
 guides Installed

Control hatch:
 Installed Feb '22

Cave internal door: Installed June 2024
 External door: installed Aug 2024



LoKI update



LoKI positioning of hoses with the cabling inside the detector vessel



LoKI collimator



LoKI positioning the collimation blocks inside the vacuum vessel



LoKI chopper

LoKI Partners: ISIS, ESS.

TG5 meeting: Mar 2025
i-SRR: June 2025

Awaiting final design review/delivery ;
awaiting/ongoing installation ;
installed

Cave shielding

- Installed 2023

Disc chopper #2

- Installed: June 2023

Bunker wall feedthrough

- installed: March 2022

Neutron Guides

- Installed March 2024

NBOA

- Installed: 2022

Hutch

- Installed 2022

Detectors

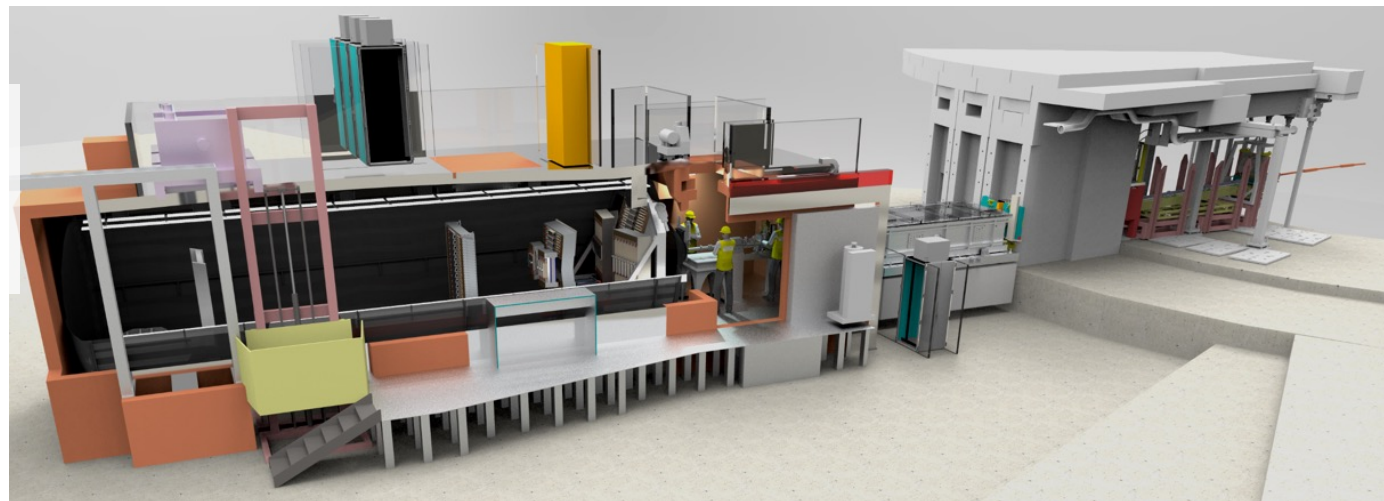
- Installation in progress
- Awaiting quality approval

Detector vessel

- Installed: Dec 2021

Detector cabling

- On-going installation: Est. Finish Oct2023



Electrical:

- Awaiting energisation

Utilities:

- On-going installation

Network:

- On-going installation

PSS:

- On-going installation

Fast shutter, Pre-sample Snout

- Awaiting installation: Dec 2024

Sample stage

- Installation in Oct2024

Collimator vessel

- Installed June 2023

Collimator selector

- Internals complete, ready to be vac tested and MCA tests under vacuum

Door & Roof

- Installed Aug2024

Jaw sets

- Installed June2024

In-bunker equipment:

- Heavy Shutter
- Guide section (SNAG)
- Disc Chopper #1

- Installed April-June2024

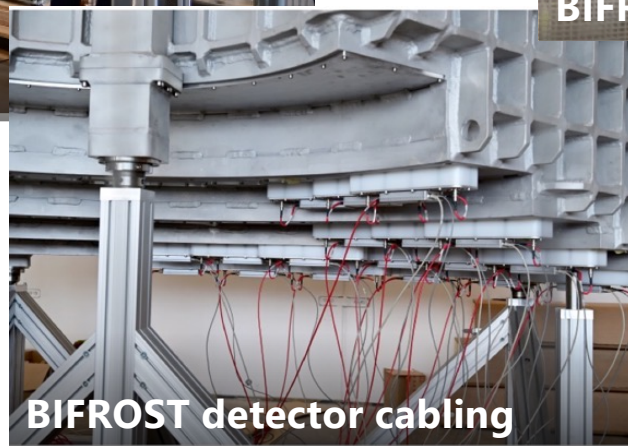
BIFROST update



BIFROST detector testing



BIFROST's analysers



BIFROST detector cabling

BIFROST

TG5 meeting: April 2025
i-SRR: June 2025

Installed,
In installation/storage,
In manufacturing

Infrastructure (ESS)
 Installation finalized:
 Q4 24

Hutch structure (DTU)
 installed Feb '19

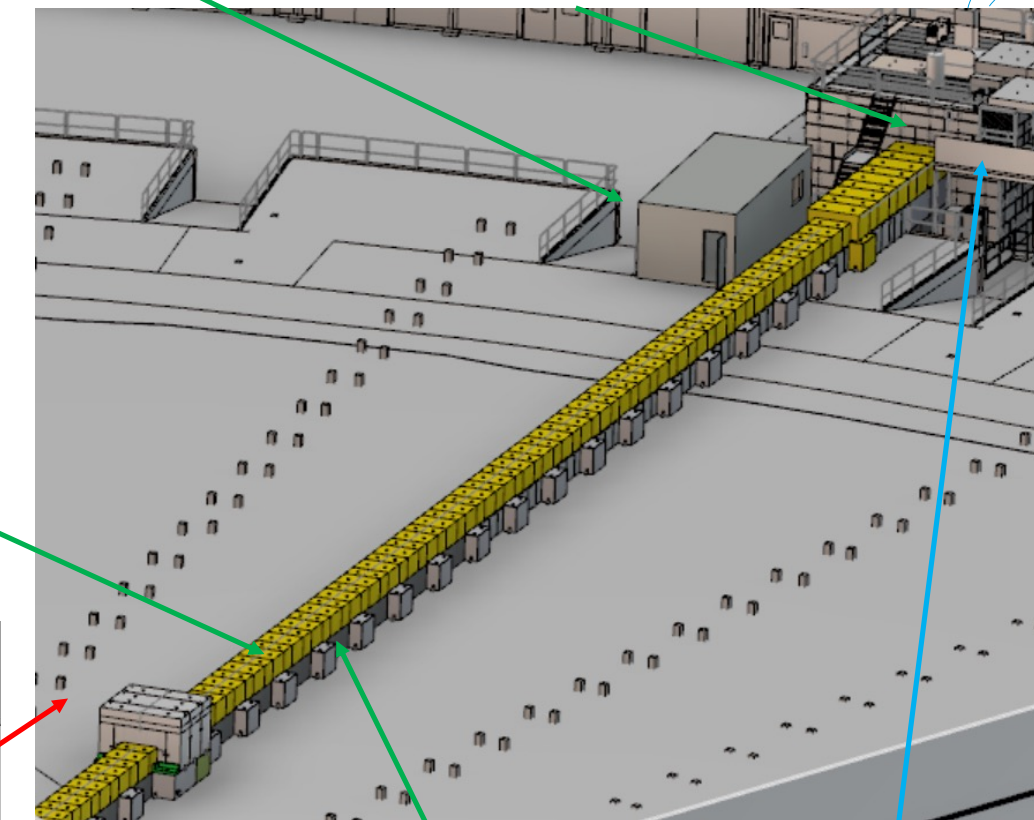
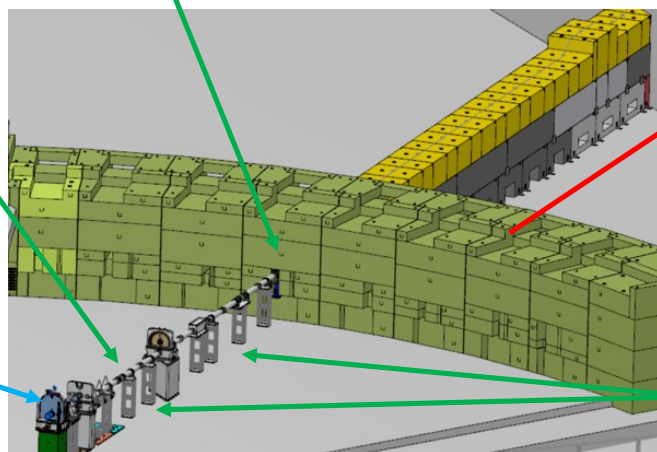
Cave shielding (IFE)
 Installed Oct '21

BWI
 Installed Feb '22

Out of bunker guides (PSI)
 Installation: Nov '22

In Bunker guide (PSI)
 Installed Jun '22

PSC choppers (ESS CP)
 Installed Aug 2024



Common shielding (ESS CP)
 Final installation: Oct '23

FOC choppers (ESS CP)
 Installed March 23

Detectors (LLB) (*He-3*)
 Detector module installation
 complete in June
 Detectors and Analyser
 integration ongoing

2024-10-21

Bifrost Instrument review

ESTIA Update



ESTIA chopper pit preparation and installation



ESTIA MIDDLE FOCUS

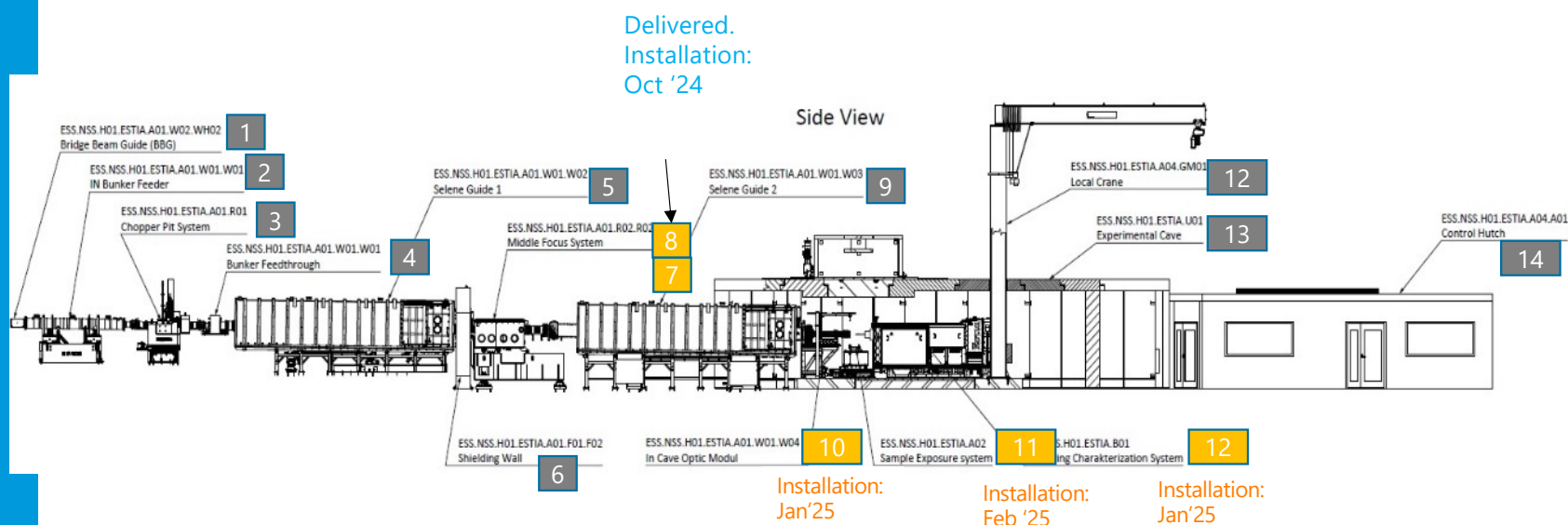


ESTIA MIDDLE FOCUS

ESTIA Partner: PSI



TG5 meeting: Oct 2025
i-SRR: Jan 2026



Installed,
In installation/storage,
In manufacturing

CEP infra Installation start: Dec 24

CUP Installation start: Nov 24

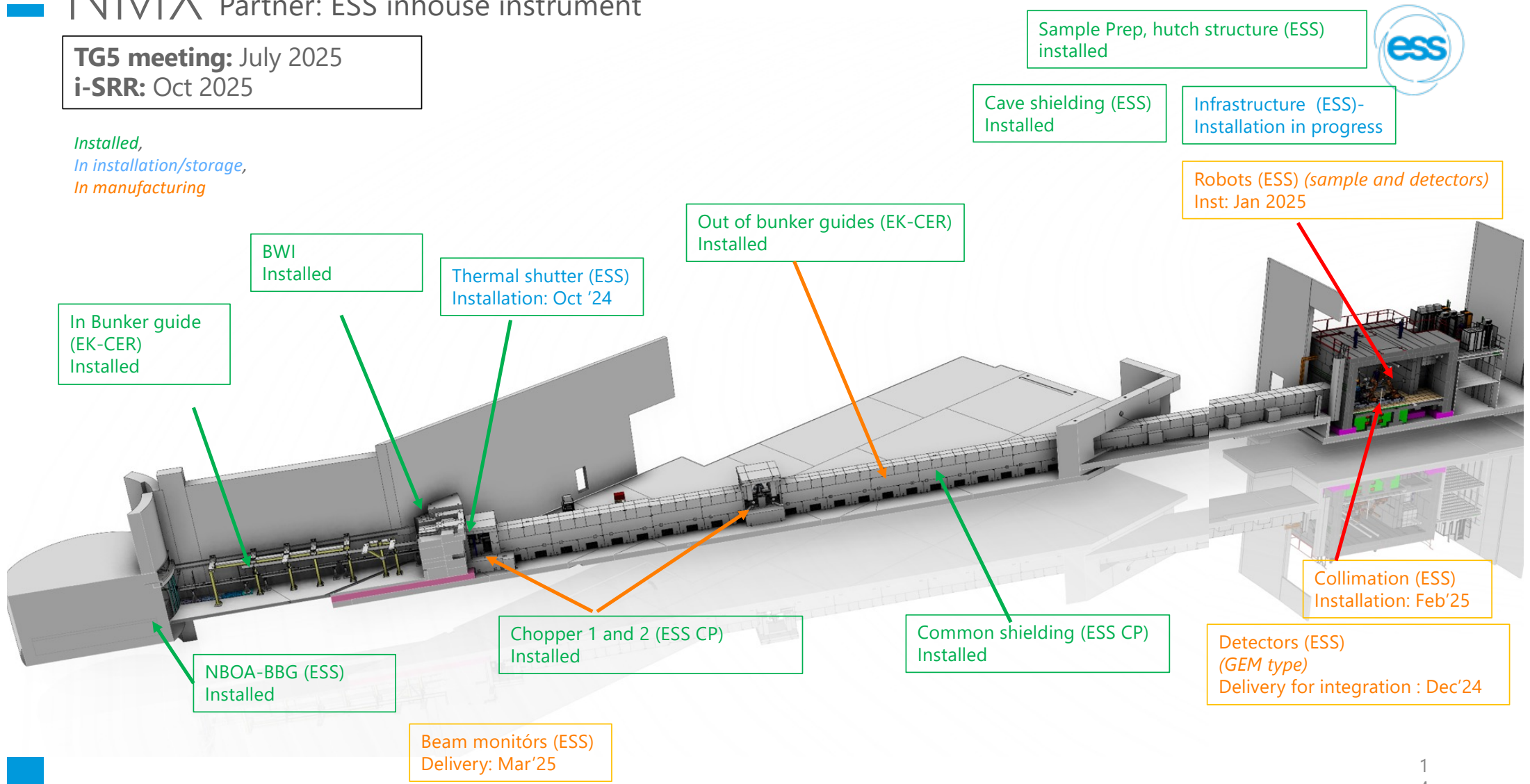
MCA Installation start: Nov 24

Ref.	Component
1	BBGOA
2	In bunker feeder
3	Chopper pit system
4	Bunker Wall Feedthrough
5	Selene Guide 1
6	Shielding Wall
7	Shutter
8	Middle Focus System
9	Selene Guide 2
10	In Cave Optics
11	Sample Stage
12	Detector and Support
13	Local Crane
14	Experimental Cave
15	Control Hutch

NMX Partner: ESS inhouse instrument

TG5 meeting: July 2025
i-SRR: Oct 2025

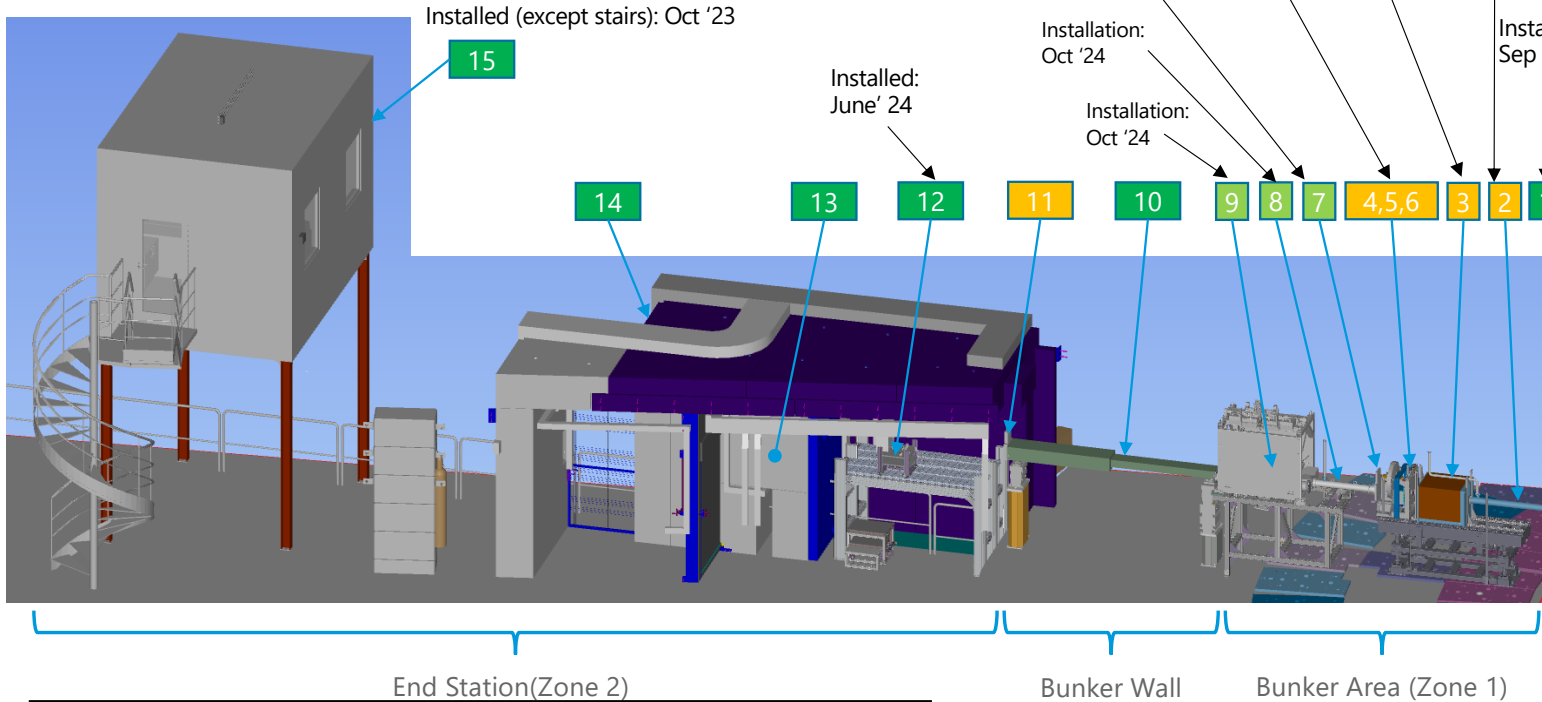
Installed,
In installation/storage,
In manufacturing



Test Beamline (TBL)

TG5 meeting: Apr 2025
i-SRR: May 2025

Installed, At ESS, In manufacturing, In design

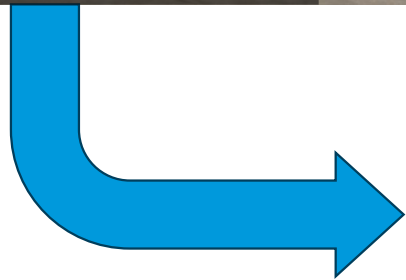


Ref.	Component
1	Bridge Beam Guide (BGOA)
2	Flight Tube 1
3	Fixed Collimator
4,5	adjustable Collimator
6	Chopper
7	Beam Monitor 1
8	Filter stage
9	Heavy Shutter
10	Bunker Wall Feedthrough
11	Beam Monitor 2
12	Detector Table
13	Beam Stop
14	Experimental Cave
15	Control Hutch

Infrastructure installed:
 CEP: In-bunker: Installation completed in Sep / Out of bunker: Installed
 CUP: In-bunker/Out of bunker: Installed
 MCA: In-bunker/Out of bunker: Installation started in Sep 24

Recent achievements

SKADI Cave installation



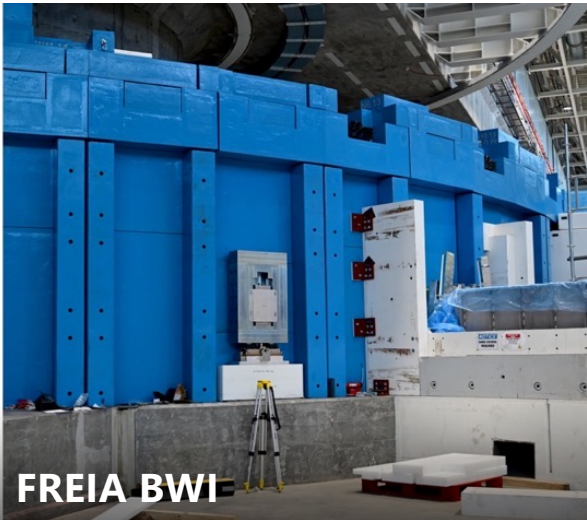
Recent achievements

MAGIC Cave



Recent achievements

FREIA, HEIMDAL, and SKADI BWIs



FREIA BWI



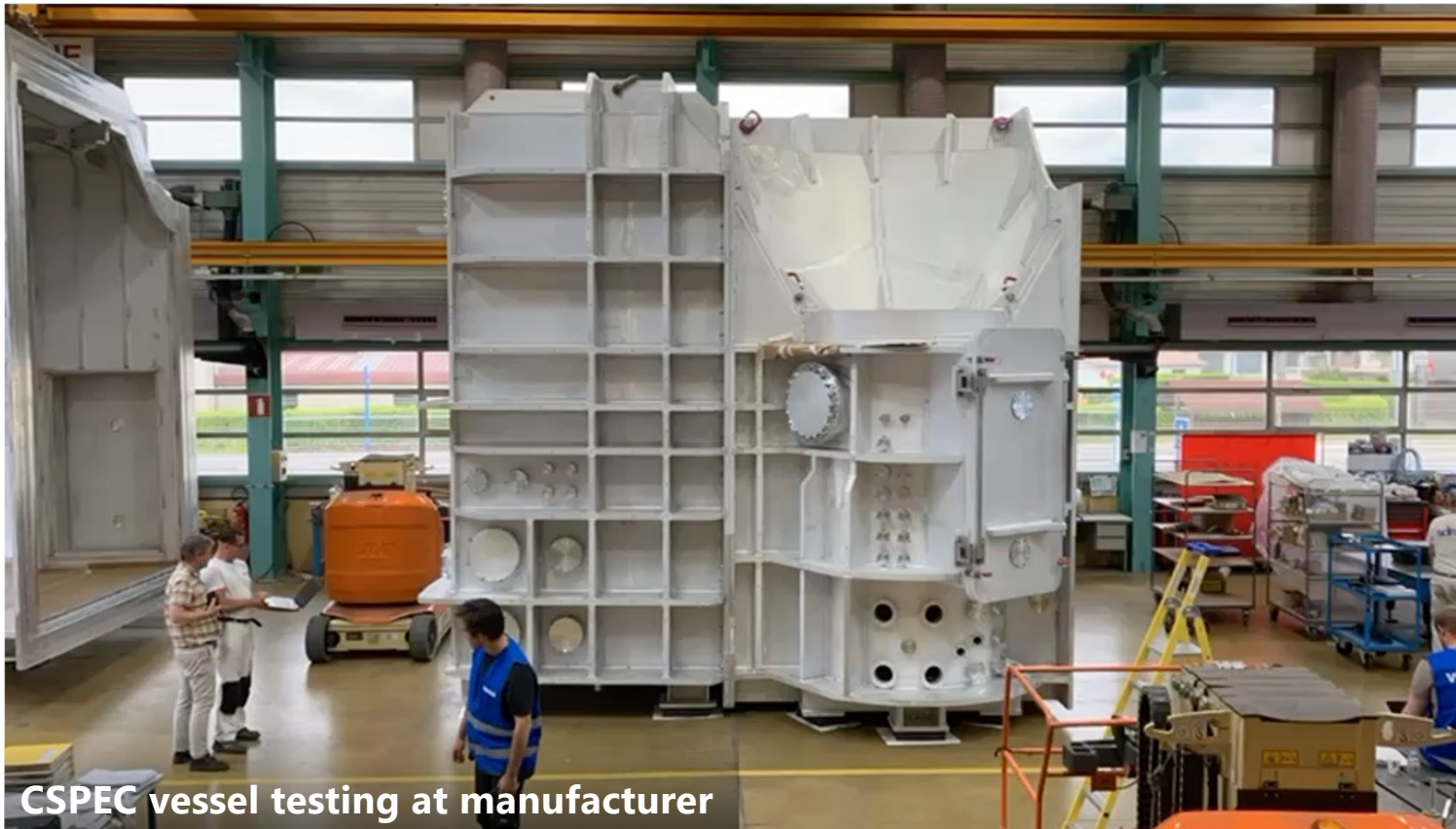
HEIMDAL BWI



SKADI BWI

Look Ahead

BIG VESSELS headed our way - CSPEC



Look Ahead

BIG VESSELS headed our way - MIRACLES



MIRACLES vessel is ready to go

Look Ahead

BIG VESSELS headed our way - T-REX



T-REX vessel



T-REX vessel FAT

Installation Progress Update

Bridge Beam Guide Optical Assemblies



Instrument	Assembly	Installation
E2 ESTIA	Complete	Complete
E3 SKADI	Complete	Complete
S2 ODIN	Complete	Complete
S3 DREAM	Complete	Complete
N5 FREIA	Complete	Complete
N7 LOKI	Complete	Complete
W11 TBL	Complete	Complete
W1 NMX	Complete	Complete
W2 BEER	Ongoing	Not started
W3 C-SPEC	Complete	Complete
W4 BIFROST	Complete	Complete
W5 MIRACLES	Complete	Complete

BBGOA vacuum issue was solved, enabling installations to proceed.

TREX: delivery and installation in Q4 2024 (so should be ok before BOT)

MAGIC: delivery and installation Q1 2025 (most likely ok for BOT)

Heimdal and VESPA: Delivery in Q2 2025 - might not be installed before BOT

Personnel Update

Ramping staff up

additional staff on site

Choppers Group - Technician

NSS Instrument Installation - IPLs

NSS Technical Projects Group - Engineers

ECDC – FPGA Engineer

Planning and Coordination – SubPM and Planners

more staff coming

NSS Instrument Installation – IPL & Technicians

NSS Technical Projects Group - Engineers

ECDC – Software Scientists/Engineers

Detector Group – Scientist and Engineer



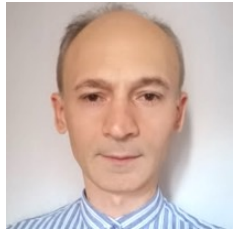
New NSS Personnel since ICB23



Technical Projects Group



Sneha Srinivasan
Documentation Engineer,
Technical Projects Group



Ciprian Crisan
Electrical Designer,
Technical Projects Group



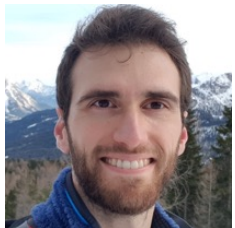
Nicolae Popescu
ESTIA Integration Engineer,
Technical Projects Group



Siamak Kianzad
Heimdal Project Lead
Technical Projects Group



Alexandra Schönbeck
LOKI Integration Engineer,
Technical Projects Group



Daniele Ebri
CAD Engineer,
Technical Projects Group



Tomas Nylander
CUP Work Unit Lead
Technical Projects Group



Moritz Braun
MAGIC Mech. Engineer,
TPG/Instrument Engineering



Christofer Svensson
TBL Mech. Design Engineer,
TPG/Instrument Engineering

New NSS Personnel since ICB23



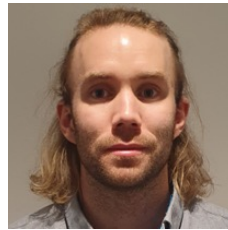
Detector Group



Helen Popland
Mechanical Engineer,
Detector/ Technical Section



Aleksandr Zhirnov
Electronics Engineer,
Detector/ Technical Section



David Hansson
Mechanical Engineer,
Detector/ Technical Section



Antoine Lepine
Mechanical Engineer,
Detector/ Technical Section

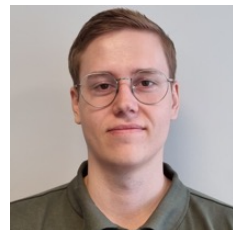


Alexander Johansson
Mechanical Technician,
Detector/ Techniical Section

Motion Control & Automation Group



Erdinch Ahmed
Electrical Designer,
MCA Group



Jakob Nilsson
Electrical Designer,
MCA Group

New NSS Personnel since ICB23



TPG/Quality Gate Team




Jimmy Svensson
Equipm. Acceptance Leader,
TPG/ Quality Gate Team




**Gudmundur
(Mundi) Smarason**
Equipm. Acceptance Leader,
TPG/ Quality Gate Team

Planning & Coordination Group




Hannes Larheden
Subproject Manager,
Planning & Coordination G

Instrument Installation Section



Anders Örtengren
Instrument Package Leader,
Instr. Installation Section

Chopper Group



Casper Riess
Control Systems Engineer,
Chopper Group

New NSS Personnel since ICB23



Became 100% at NSS



Sinan Tiurgut
Electrical ePlan Designer,
Detector Group



Claudio Saldes
Electrical Engineer,
Detector Group



Talal Osman
Support Integration
Engineer,
Technical Projects Group

Arrived to Science:

- Tamires Gallo, Instrument Operations Engineer, Spectroscopy
- Adrien Perrichon, VESPA Instrument Scientist
- Felipe Lopes da Silva, Instrument Operations Engineer, Large Scale Structures
- Richard Ammer, Instrument Operations Engineer, Diffraction and Imaging
- Hannah Bural, Instrument Associate #3

Transferred to a new position within NSS



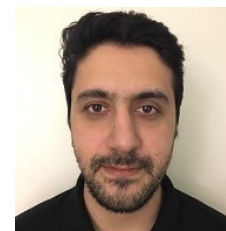
Ourania Sidiropoulou
Detector Scientist He-3,
Detector Group



Alejandro Tobias Quispe Mamani
Lead Integration Engineer,
Technical Projects Group



Bojan Peric
ODIN Lead Engineer,
Technical Projects Group



Siamak Kianzad
Heimdal Project Lead,
Technical Projects Group



Lisa Vergara
Workshop, Testbed and
Build Technician,
Detector Group

Other Issues & Updates

Personnel



- CEP – change in leadership
 - Stuart Birch has left ESS, Tahere Rostami is taking over as WPM
 - There was a gap where Stuart was leaving and Tahere was part time on family leave
 - Design issues with the infrastructure under the North False Floor led to delays in installation, which is impacting primarily BIFROST
- MCA
 - Two resignations, one medium term sick leave

Other Issues & Updates

Personnel



- ODIN & BEER
 - Manuel Morgano left ESS, causing an issue with on-site leadership for ODIN
 - Assigned Bojan Peric @80%, plus added Eglu Luca for IPL support; Robin Waracek later hired as Instrument Scientist
 - Worked with BEER team to ensure movement of Bojan had limited impact, but partners and scientist upset and concerned
- VESPA
 - Adding engineering to help accelerate progress - Rosa Camilleri Lledó

MAJOR ISSUES Update - ECDC



- ECDC staff

- We have had another resignation in the team.
- The search for the new ECDC GL is ongoing.

- Mitigations

- A contractor was brought in to bridge the gap while we search for a replacement for the latest resignation
- We expanded the number of positions to bring in for both experimental control and readout

MAJOR ISSUES Update – Bunker roof blocks



After determining that the cost to repair the blocks would be very high (<2M€) and costly in terms of support and attention, ESS decided to not repair the blocks.

Limited physical mitigations and monitoring will be used to ensure no contamination issues arise. If it is determined that the blocks need to be repaired, this can be pursued in the future.

MAJOR ISSUES Update – Mirrotron



The ODIN cave contract was terminated, limiting the remaining scope to be delivered. Other contracts were established to finish the scope.

HEIMDAL cave contract was allowed to continue with in-person visits and additional monitoring. Schedule remains critical, but team is optimistic.

Common shielding contract is continuing.

What	Who	Notes
Common Shielding	ESS	Contract ongoing
Bunker shielding	ESS	
NMX guides	MTA (HU)	Installation complete
Heimdal cave	ESS for partner (IFE)	Contract ongoing
ODIN cave	ESS for partner (TUM)	Contract terminated
MAGIC guides	LLB (FR)	

Major Issues – ongoing problem



Building cranes

- Ongoing issue with both bunker cranes – intermittent faults causing pauses in work
- Significant issue with D01 overhead crane – down for about 2 months
 - Rigging team brought in a mobile crane to ensure continued work on SKADI
- Issues with D03 overhead crane – impacted installations
- ESS was previously in discussion with SKANSKA about these warranty issues
 - Crane manufacturer Munck went into bankruptcy last year, exacerbating warranty issues
- Discussions accelerated to find other solutions for crane repairs after most recent problems

Other Issues & Updates



- DREAM
 - detector delivery delay from CDT
 - Firmware – details in the Detector talk
- LoKI
 - Detector Qgate has been taking a long time
 - Delays in energization readiness

Other Issues & Updates



- ODIN –
 - Guide/chopper gap mismatch causing an additional delay
 - more information in the ODIN presentation tomorrow
- BIFROST
 - Detector sparking - LLB is sending technicians to correct some soldering issues
 - Minor issues found once the Network rack was energized and testing began, now corrected
 - Problems with the cryogenic Be filter have been resolved

NSS Quality System

Qgate equipment approval

Now an established process focused on real world benefits.

Faster than before, with more resources arriving

Detector - approval now over teething problems and will gain speed

- Sample environments -discussion starting
- Shutter testing - on track

Issues

- Poor quality of delivery documentation approval days > weeks remains the major cause of longer process times.
- Without CE marking approval effort $x > 10$, delay goes from days to months as we are obliged to conduct the marking process (lite) ourselves
- Competition from within project for key internal resources a sporadic but damaging issue.

Actions

- Working with internally with reviewers to streamline processes

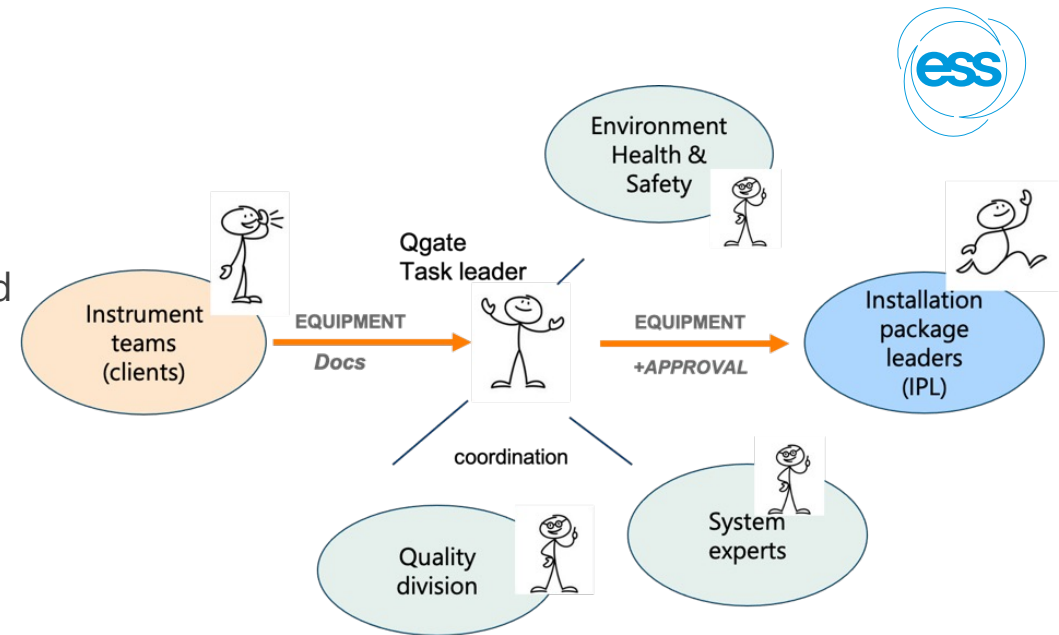
Status report



NSS Quality System

Resource & Process

- Current team dimensioned to provide rapid support to all Tranche 1 instruments, with limited support to Tranche 2, **except for in-bunker components which are prioritized.**
- Team now transitioned from many part-time resources to fewer dedicated personnel (consultants)
- Team leader, 3 task leaders & 1 Support (25%)
- Additional task leader in 2 weeks (new consultant: Philip Olin confirmed)
- Streamlined process for CE marked equipment
- Fast track – “type approvals” in use with more in development.
- Approved longer process for minimal-compliant / un marked devices. (resource limited)



Inga
Admin
Support

Jimmy
Task leader
- Shutters
- General

Mundi
Task leader
- Detectors
- General



Philip
Olin
Task
Leader

NSS Quality System

Safety Shutter Test Program



Why

- Internal verification of critical functions of safety critical systems
- Builds on partner FATs and feed into Site acceptance Tests

What

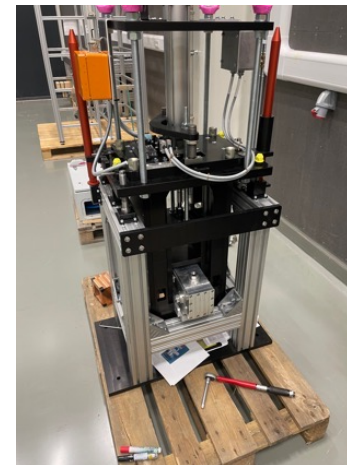
- Combination of physical inspections & targeted tests of critical safety related aspects

Progress

- Second test series completed. On track for 10 systems completed and installed by end Q4.

Benefits so far

- Rapid maturation towards good practices.
- Numerous technical and documentation faults identified during tests and corrected during tests.
- lessons learned are being fed back to teams and improving process and practice.



Instrument	Delivered	Tested	Compliant	Installed
LOKI	Yes	Yes	No	Yes
ODIN	Yes	Yes	Yes	Yes
DREAM	Yes	Yes	Yes	Yes
BIFROST	Yes	No	No	Yes
NMX	Yes	Yes	Yes	Yes
TBL	Yes	Yes	No	No
SKADI	Yes	Yes	No	Yes
BEER	Yes	Yes	No	No
MAGIC	Yes	No	No	No
CSPEC	No	No	No	No
MIRACLES	No	No	No	No
ESTIA	Yes	Yes	Yes	No
T-REX	Yes	Yes	No	No
VESPA	No	No	No	No
FREIA	No	No	No	No
HEIMDAL	No	No	No	No

NSS Quality System

Detectors

Status

- Several systems & beam monitors approved
- Experience is enabling acceleration of approvals particularly of non-compliant systems
- Working with DetG to approve technologies permitting fast tracking devices of the same type e.g. beam monitors
- **Many systems require the lengthy minimal-compliance approval route.**

Instrument		Submitted	Approved	Installed	Local testing
BEER	Detector	No	No	No	No
	Beam monitor	No	No	No	No
BIFROST	Detector	Yes	Yes	Yes	Yes
	Beam monitor	Yes	yes	in-progress	No
CSPEC	Detector	No	No	No	No
	Beam monitor	No	No	No	No
DREAM	Detector	yes	in-progress	in-progress	No
	Beam monitor	yes	in-progress	No	No
ESTIA	Detector	No	No	No	No
	Beam monitor	No	No	No	No
FREIA	Detector	No	No	No	No
	Beam monitor	No	No	No	No
HEIMDAL	Detector	No	No	No	No
	Beam monitor	No	No	No	No
LOKI	Detector	Yes	in-progress	Yes	No
	Beam monitor	Yes	in-progress	No	No
MAGIC	Detector	No	No	No	No
	Beam monitor	No	No	No	No
MIRACLES	Detector	No	No	No	No
	Beam monitor	No	No	No	No
NMX	Detector	No	No	No	No
	Beam monitor	No	No	No	No
ODIN	Detector	No	No	No	No
	Beam monitor	Yes	Yes	No	No
SKADI	Detector	No	No	No	No
	Beam monitor	No	No	No	No
T-REX	Detector	No	No	No	No
	Beam monitor	No	No	No	No
TBL	Detector	yes	in-progress	No	No
	Beam monitor	Yes	in-progress	No	No
VESPA	Detector	No	No	No	No
	Beam monitor	No	No	No	No



Questions?