EUROPEAN
SPALLATION
SOURCE

Operation & Maintenance manual

ESTIA

PRESENTED BY FELIPE LOPES DA SILVA

2026-06-17

Agenda

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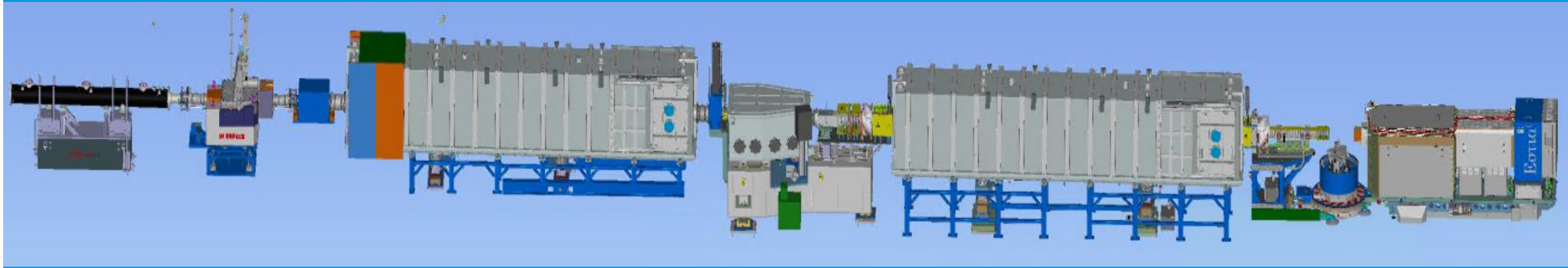
ESTIA O&M



ESTIA O&M

ESS-0318498 - Scope

- Integrated system description for the safe operation and maintenance of ESTIA
- A living document with relevant procedures updated as they are developed during cold- and hot-commissioning
- Intended for ESS staff and NOT external users
- All maintenance tasks must be carried out by qualified personnel following instructions within the relevant sub-system maintenance manuals and a specific Task Risk Assessment (TRA)

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Document Type	Manual
Document Number	ESS-0318498
Date	May 27, 2026
Revision	2 (1/1)
State	Review
Confidentiality Level	Internal
Page	1 (60)

ESTIA - SYSTEMS OPERATIONS & MAINTENANCE MANUAL

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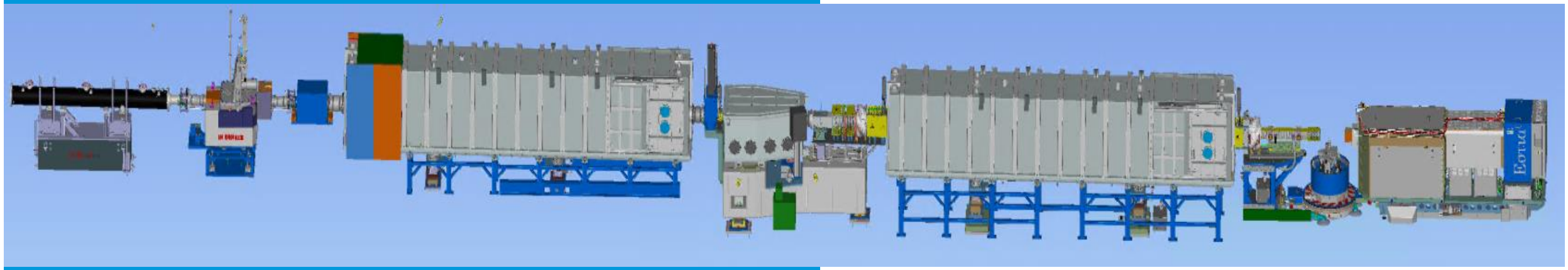
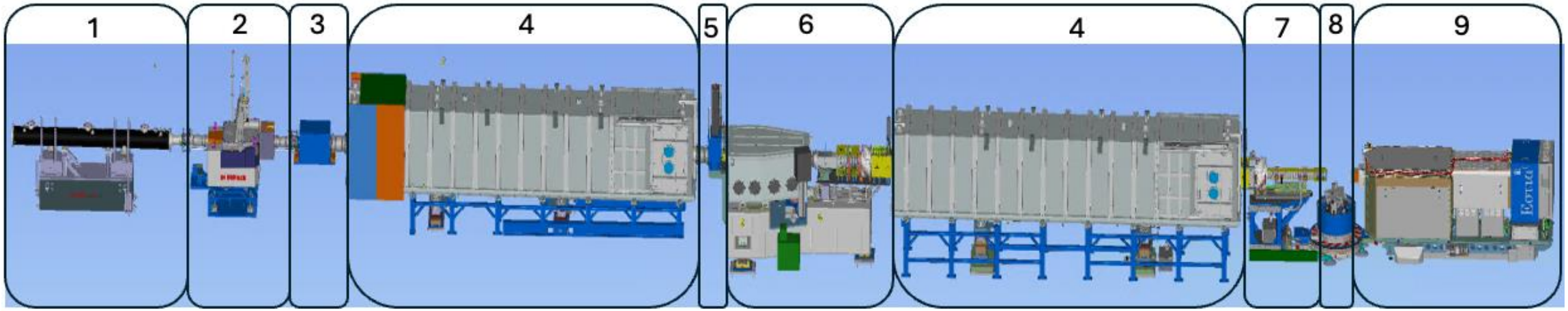
ESTIA SUB-SYSTEMS



ESTIA SUB-SYSTEMS

Each containing their own O&M

1) Neutron Feeder In-Bunker System (NFBS)
2) Chopper pit-Virtual source Collimation system (CVCS)
3) Bunker wall Collimator (BWC)
4) Selene guide (1 & 2)
5) Instrument Shutter
6) Middle focus
7) In-cave Optics Module
8) Sample stage
9) Detector arm system (inc. Detector)



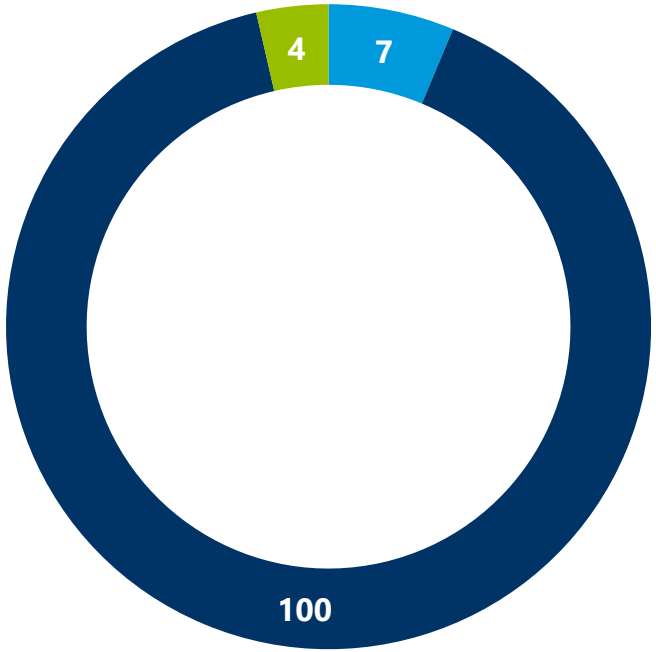
ESTIA SUB-SYSTEMS

Documentation listed below

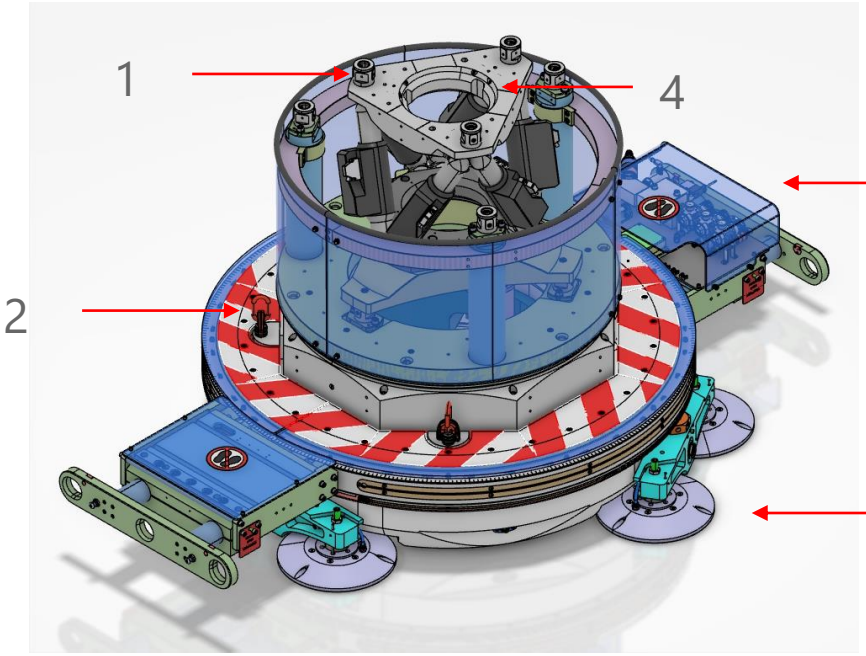
Sub-System	O&M	STATUS
1) Neutron Feeder In-Bunker System (NFBS)	ESS-5276765	Released
2) Chopper pit-Virtual source Collimation system (CVCS)	ESS-5290166	Released
3) Bunker wall Collimator (BWC)	ESS-5307577	Released
4) Selene guide (1 & 2)	ESS-5312366	Released
5) Instrument Shutter	ESS-4773461	Released
7) In-cave Optics Module	ESS-5539937	Released
8) Sample stage	ESS-5546313	Released
9) Detector arm system (inc. Detector)	ESS-5546314	Released

Logarithmic explosion of Manuals

Sample stage example



- Sub-system O&M
- components inside Sub-systems
- Facilities sub-systems



1) Hexapod
2) Goniometer
3) Air pads (air bearings)
4) Kipp mounts
5) Pressure sensor
6) Pressure switch
7) Pneumatic coupling
8) Pneumatic valve
9) Encoder
10) Limit Switch
11) Lifiting eyes
12) Lifiting beam
13) Flexor plate

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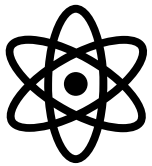
ESTIA O&M

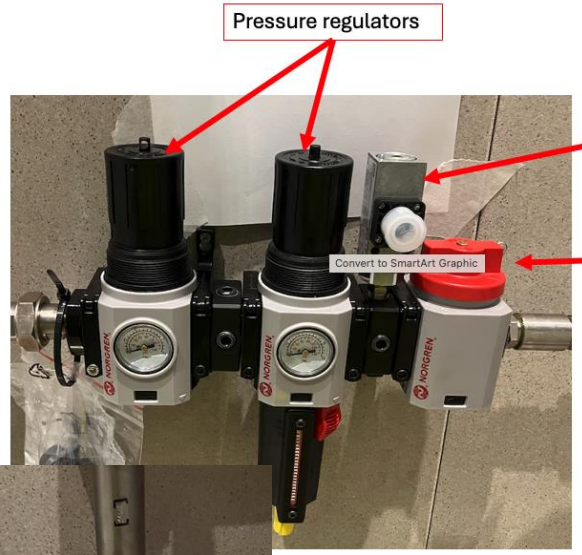
SYSTEM OPERATIONS & MAINTENANCE

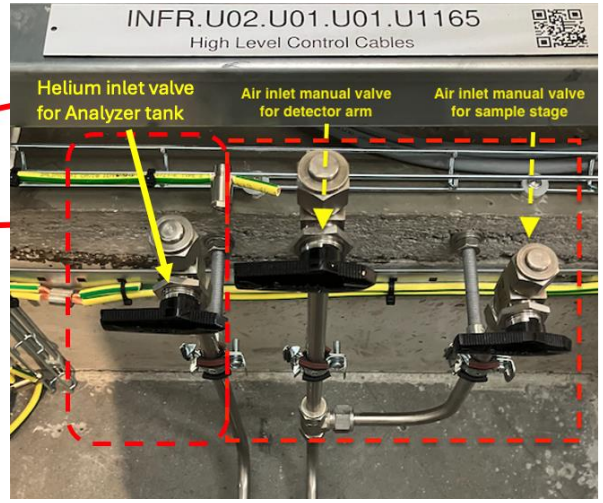
INSTRUMENT FROM A SYSTEM PERSPECTIVE

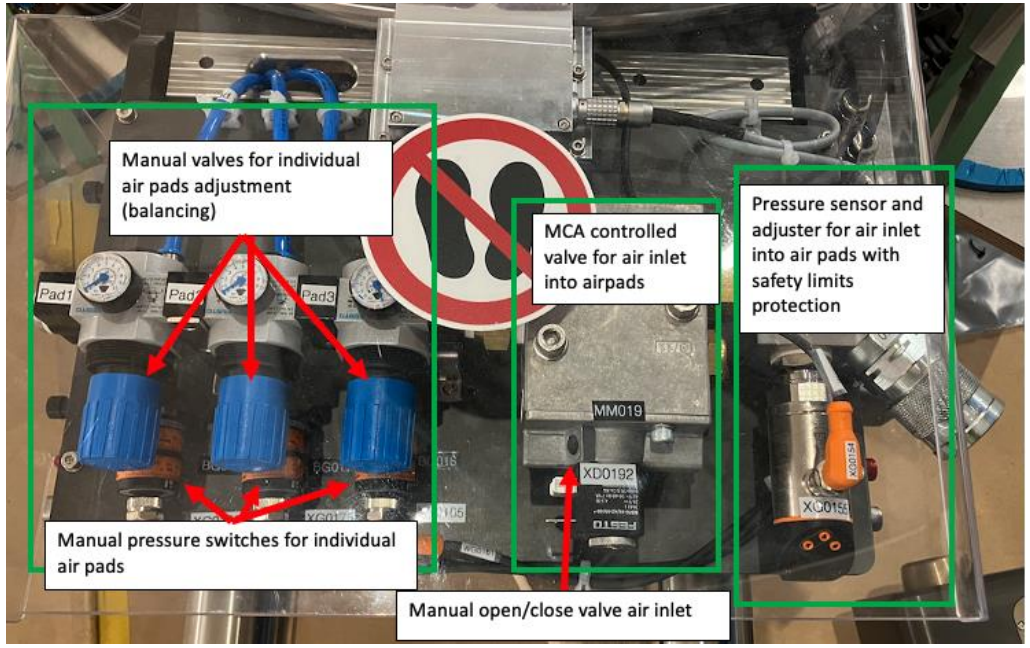


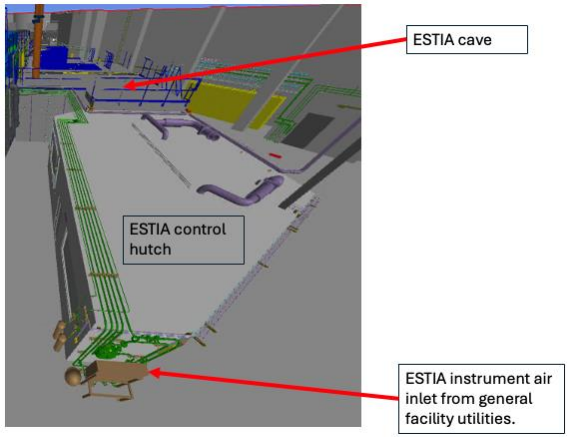
Pneumatic System

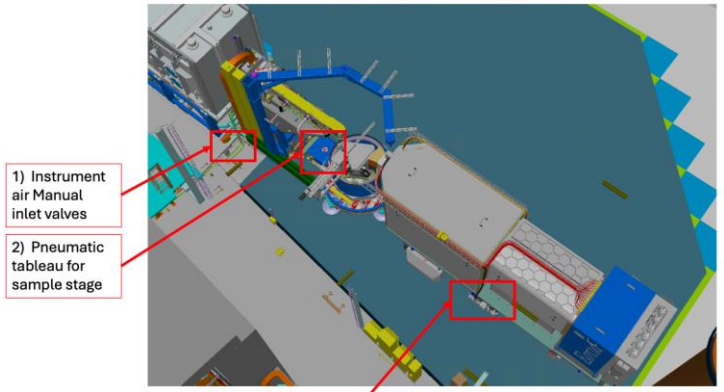
Many different sub-systems needed to operate together











Instrument shutdown

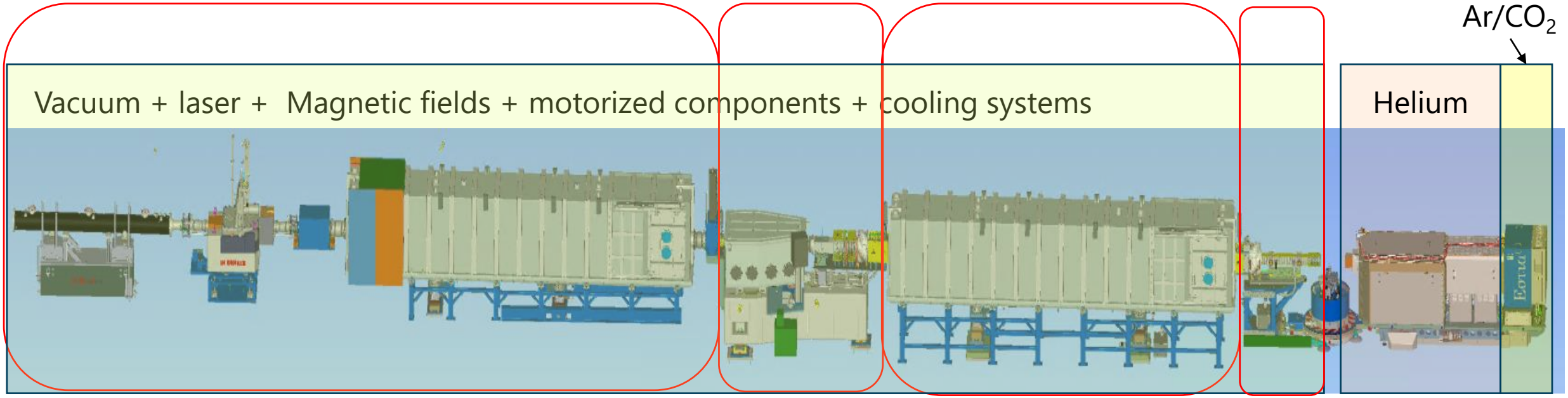
Very specific to each instrument

General Instrument Shutdown Sequence Procedure: ESS-6030895

EACH INSTRUMENT IS A UNIQUE BEAST

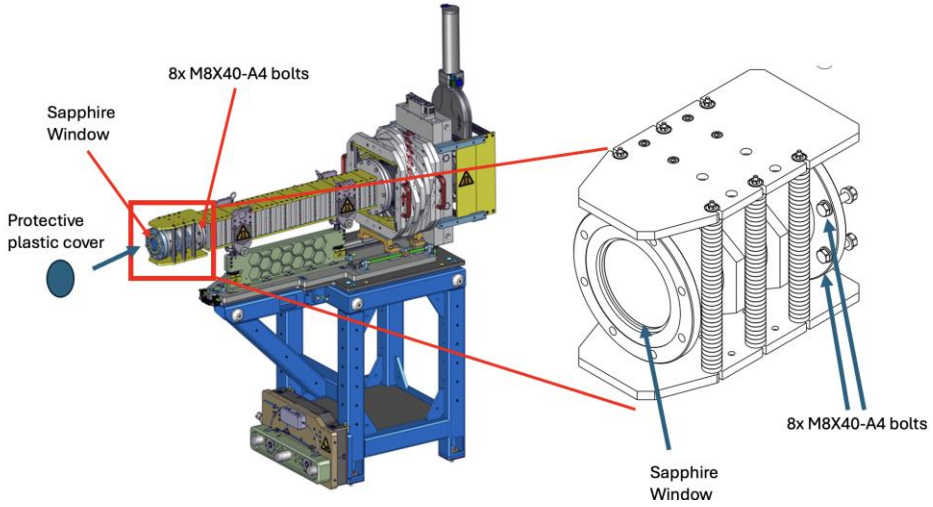
Intervention dependent:

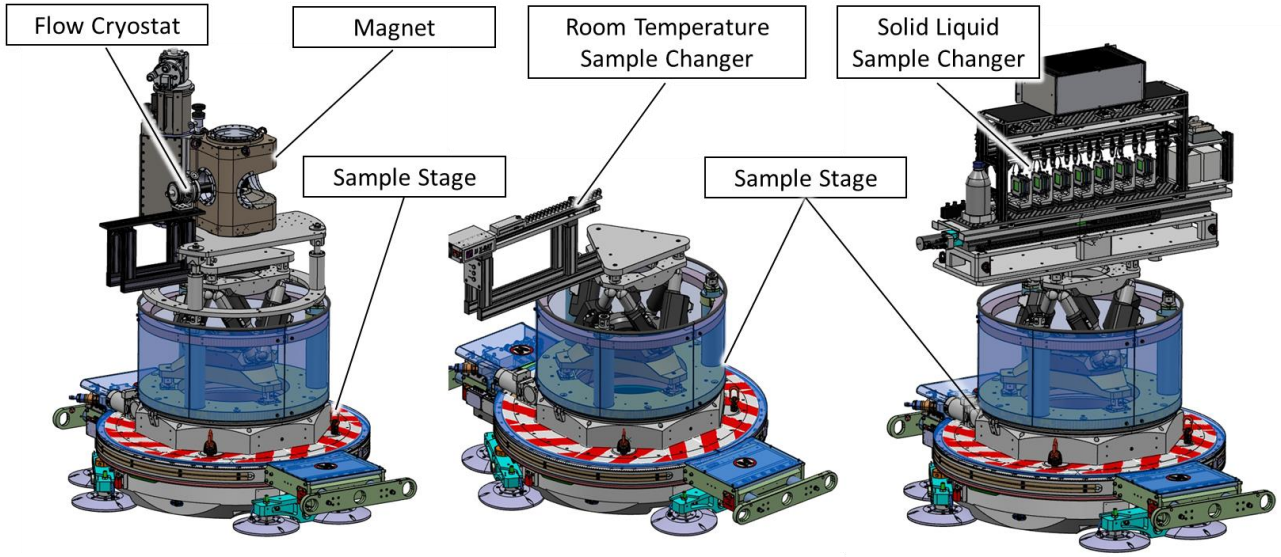
- Many sections that can be individually isolated
- Different Zones with different atmospheres
- A complete shutdown is the very last resource for special cases.



Installation of sample Environment

- Information on how the installation of ESTIA different SE
- References to individual Tasks risk Assessment (TRA) and lifintg plan
- Standard Operation Procedures shall be implemented in further detail for each SE.





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MAINTENANCE

IF IT CAN'T BE FIXED WITH DUCT TAPE

THEN YOU'RE NOT USING ENOUGH DUCT TAPE

Operations and Maintenance

Each sub-system

- Installation notes
- Maintenance notes
- Reference documents

Reference Documents

Table 10 - Selene guides Maintenance Schedule

Part/Component	Maintenance Action	Frequency	Example TRA
Entire system	Perform function test (See chapter 7.2 in ESS-5312366)	Regular ESS-shutdown	TBD
Metrology Cart	Maintenance on Metrology Cart (See chapter 7.6, 7.7, 7.8 and 7.9 in ESS-5312366)	Regular ESS-shutdown	TBD
Robot Adjuster	Maintenance on Robot adjuster (See chapter 7.10 and 7.11 in ESS-5312366)	Regular ESS-shutdown	TBD
Julabo	Maintenance on Julabo (See chapter 7.12 in ESS-5312366)	Regular ESS-shutdown	TBD
Interferometer	Check interferometer performance	1 Year	TBD
Carrier support	Maintain carrier support (See chapter 7.4 and 7.5 in ESS-5312366)	10 years	TBD
Mirror carrier	Inspect mirror carrier	10 Years	TBD
Entire system	Perform large maintenance	10 Years	TBD

Table 11 - Selene guides Reference Documents

Document Type	ESS (Chess) Number
Design Description	ESS-5312365
Drawings	ESS-0321366 (Selene Guide 1) ESS-0338567 (Selene Guide 2)
3D Model	ESS-0321366 (Selene guide 1) ESS-0338567 (Selene Guide 2)
All Relevant Maintenance & Operation Manuals	ESS-5312366 ESS-5850953 – (user manual for the etalon absolut multiline interferometer) ESS-5467504 (Julabo's water bath manual) ESS-2605331 (Lifiting tool manual) ESS-4177962 (Selene Guide Lifting Tool – AVS) ESS-5467505 (Service Manual Refrigerated Bath Units FP50) ESS-6023424 (Fitting and Maintenance Manual Guiding System Serie RUE) ESS-6034884 (Monorail BM Mounting instructions)

Maintenance Schedule

Maintenance logs

9.1 Appendix A - Scheduled Maintenance every 6 months

Sub- system	Component/Part	Maintenance Action	Frequency
Instrument Automation Control System	Motion Control Cabinet 1	Regular maintenance according to ESS-5483415	Every 6 months
	Motion Control Cabinet 2	Regular maintenance according to ESS-5483415	Every 6 months
	Motion Control Cabinet 3	Regular maintenance according to ESS-5483415	Every 6 months
		Regular maintenance according to ESS-5483415	Every 6 m
		Regular maintenance according to ESS-5483415	Every 6 m
		Regular maintenance according to ESS-5850967	Every 6 m

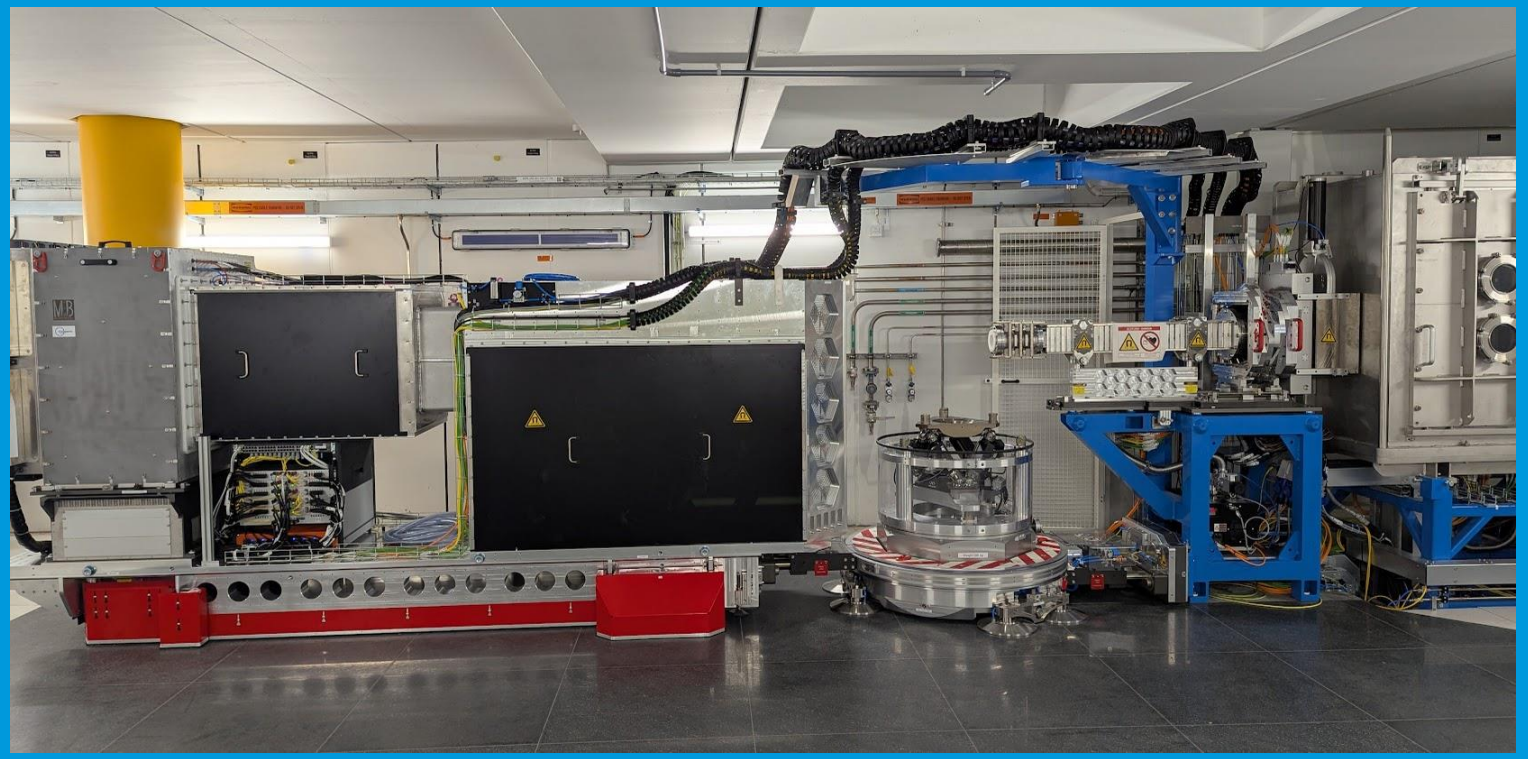
9.3 Appendix C – Scheduled Maintenance every 10 years

Sub- system	Component/Part	Maintenance Action	Frequency
In-cave optics module	Slit system	ESS-5539937	Whenever slit system is accessible
CVCS	Chopper Pit mechanics	Check the mechanics of the CPM	10 years
Detector arm	Analyzer Z-lift	Maintain guiding system of the Z-Lift.	10 years
Detector arm	Analyzer Z-lift	Maintain Jack Screw system	10 years
Instrument shutter	Shutter insert	ESS-4773461	10 years
NFBS	Adjustemnet system	Check y/z wedge stages	10 years
Sample stage	One Circle goniometer	Check and maintain/replace One Circle Goniometer.	10 years
Sample stage	Hexapod	Check and maintain/replace hexapod	10 years
Selene guides	Carrier support	ESS-5312366	10 years

9.2 Appendix B – Scheduled maintenance on Regular ESS shutdown

Sub- system	Component/Part	Maintenance Action	Frequency
CVCS	Virtual source	Perform function test of VS (see chapter 7.2)	Regular ESS shutdown
Detector arm	Entire system	ESS-5546314	Regular ESS-shutdown
Detector arm	Air pads	Check Air cushions connections	Regular ESS-shutdown
Detector arm	Coupling system	Check pneumatic couplings connections	Regular ESS-shutdown
Detector arm	Detector	Check detector gas lines connections	Regular ESS-shutdown
In-cave optics module	Entire system	ESS-5539937	Regular ESS-shutdown

Thank you



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