



WP6: Optics; AoBs

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09 / 02 / 2026

Politics

- Changes in SY-STI group: clear commitment to ion beam manipulation and pulsed ion beam delivery (regrouping of LP section into „**Laser Systems and Pulsed Particle Sources**“)
- **RC6 beamline operation mandate draft** currently under discussion -> hopefully an agreement is reached by Summer



DRAFT FOR DISCUSSION

MEMORANDUM / MANDATE

To :
Cc :
From :
Subject : **Operation of the RC6 Beamline at ISOLDE**

Introduction

The RC6 beamline consists of a transfer section and an isobar mass separator (Multi-Reflection Time-of-Flight Mass Separator, MR-ToF MS, and Radiofrequency Quadrupole Cooler-Buncher, RFQ-cb), which serves mass separated beams to the experimental areas RC7 and RC8 at the low-energy beamlines at ISOLDE. The RC6 beamline can deliver continuous beam without using the isobar separators (transmission mode), or mass-separated, bunched beam (mass-separation mode).

Operation

Due to the complexity of the beamline, operations of the machine is separate by functionality, i.e. transmission mode and mass-separation mode.

BE-OP-ISO:

- Tunes stable beam from a frontend to and through RC6 in transmission mode, providing a beam tune setting that delivers stable continuous beam to the experimental handover point of RC7 or RC8, i.e. YRC7.BFC.0800 and YRC6.BFC.1600.
- On-call support is only provided for standard ISOLDE related services (**reference existing agreement if existing**) and does not go beyond that scope
- Tuning and operation of the isobar mass separator, which is part of the RC6 line (mass separation mode), is not included

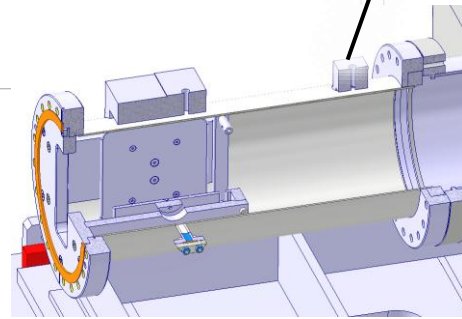
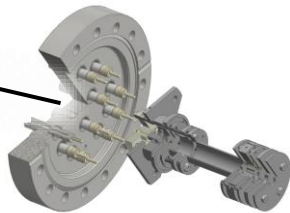
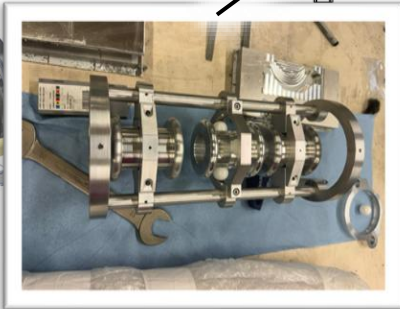
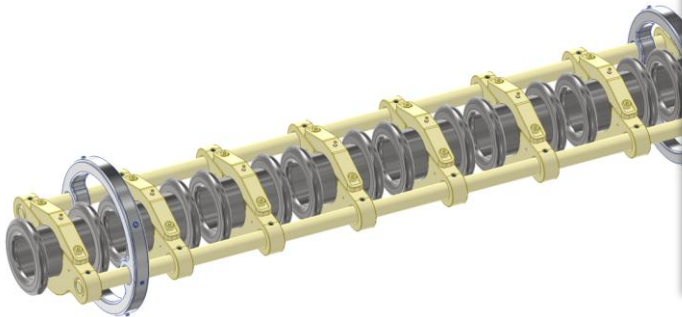
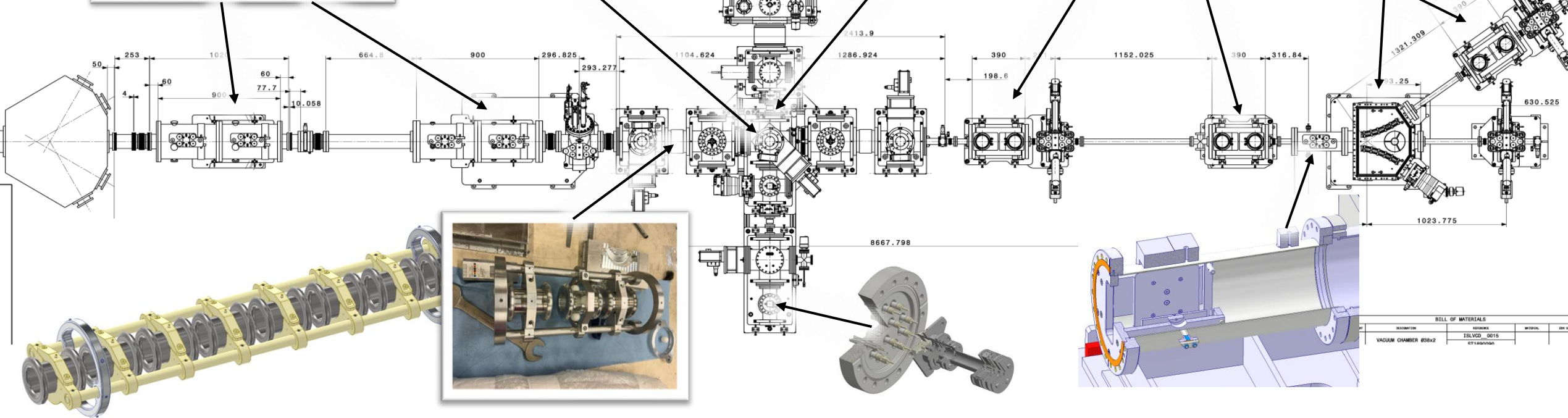
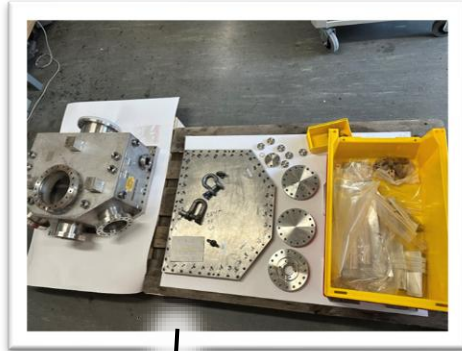
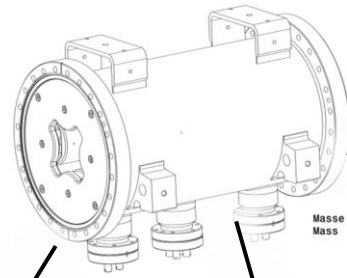
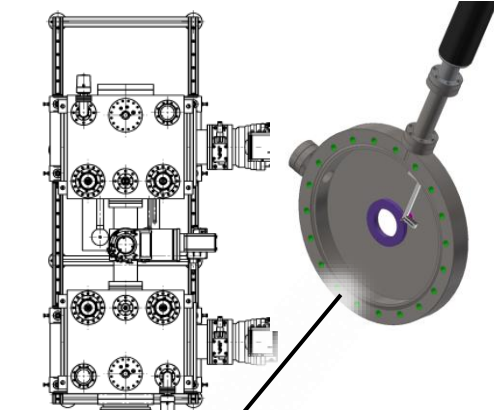
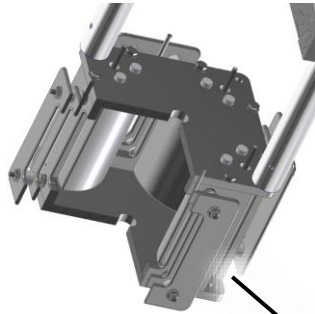
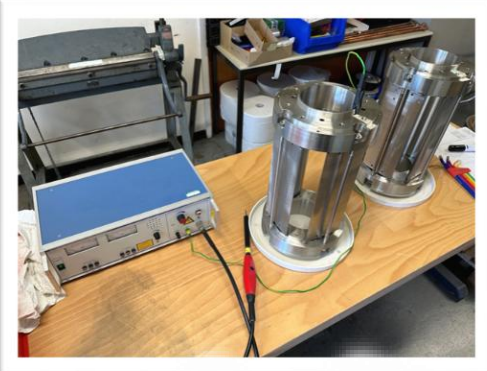
EP-SME-IS and the ISOLDE collaboration:

- The requesting experiment taking place at RC7 or RC8 is expected, together with the ISOLDE collaboration, to be able to set up and tune the isobar mass separator, and is, able to deliver bunched and mass separated beam to their respective experiment based on the stable setup provided by BE-OP.

SY-STI:

- Maintains knowledge of the functionality and operation of the isobar mass separator and provides training as needed
- Supports the operation of the machine through EP-SME-IS on a best-effort basis (does not include on-call or piquet services)

Final Layout – ISLLMAISL0001



BILL OF MATERIALS			
DESCRIPTION	REFERENCE	MATERIAL	QTY UNIT
VACUUM CHAMBER 838x2	ISLVCD_0015		
	RTY1880000		

Final Layout – ISLLMAISL0001

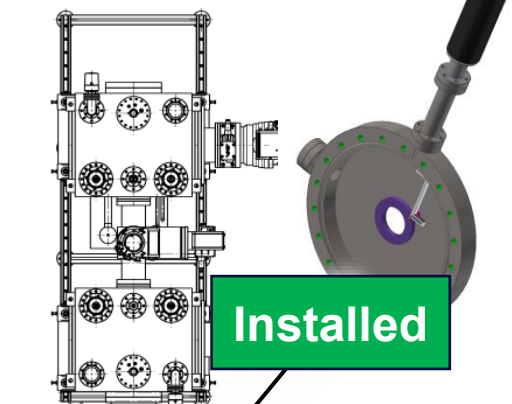


Installed

Installed



Installed

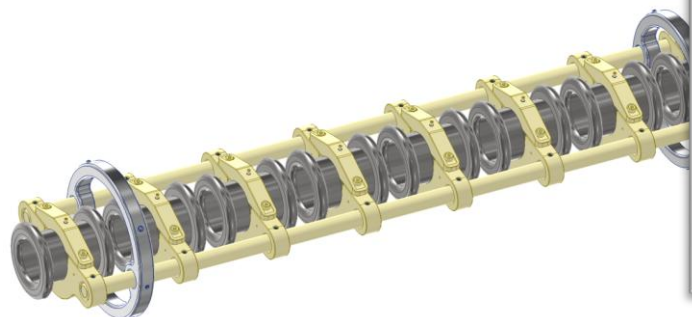
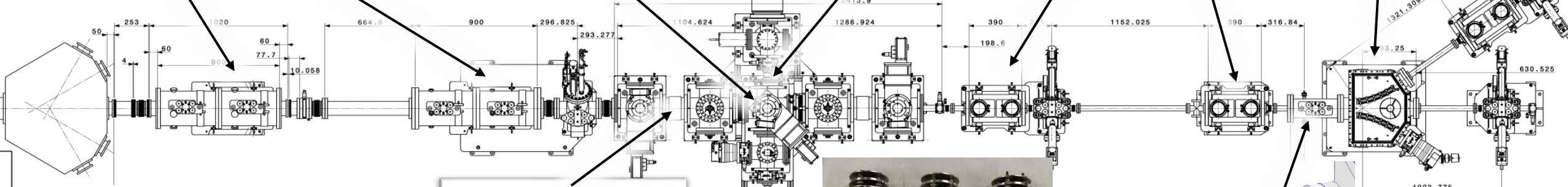


Installed

Ready for installation



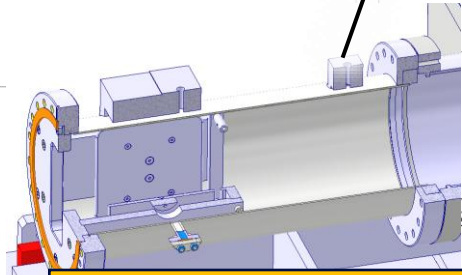
Installed



In production



Assembled



To be assembled

BILL OF MATERIALS			
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VACUUM CHAMBER #38x2	ISLVCD_0015		
	RTY1800000		

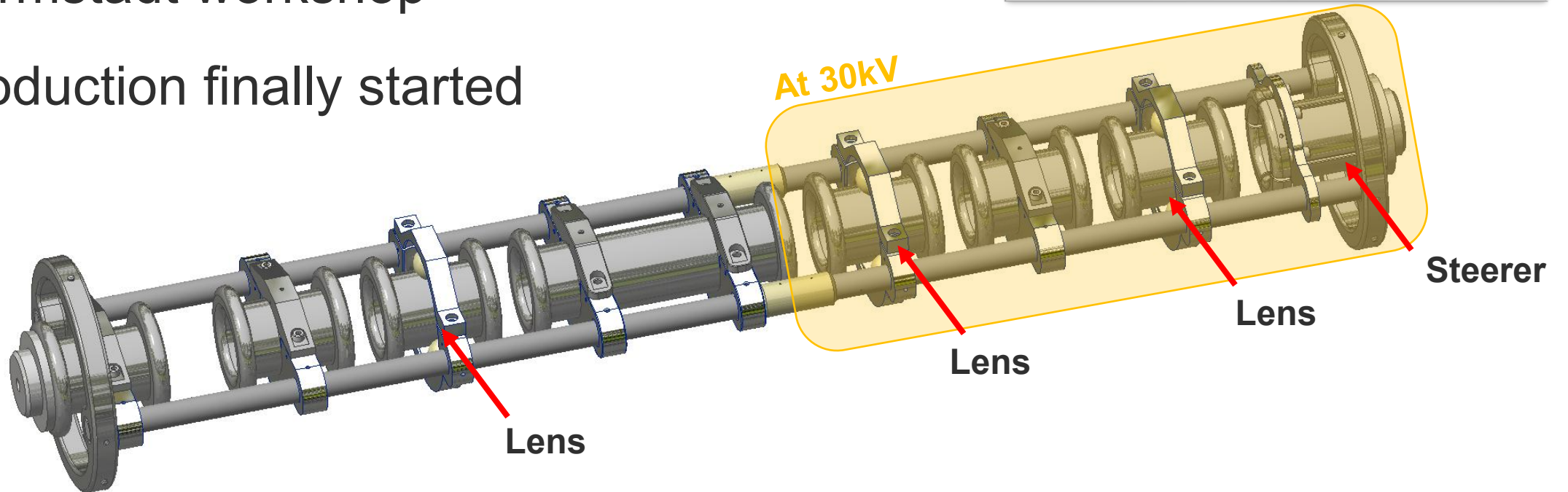
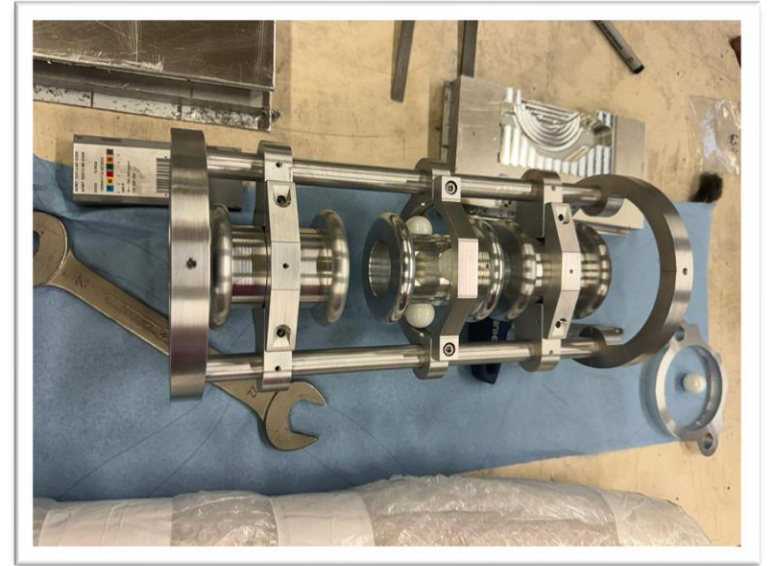
Status of irises: DN160CF and DN100CF

- For reducing vacuum conductance and He propagation through the beamline
- Three DN160CF-mounted irises already assembled and partially installed
- One DN100CF-mounted iris in manufacturing; should be ready in Q2



Beam telescope

- Prototype passed HV and vacuum tests
- Significant delay in production by TU Darmstadt workshop
- Production finally started



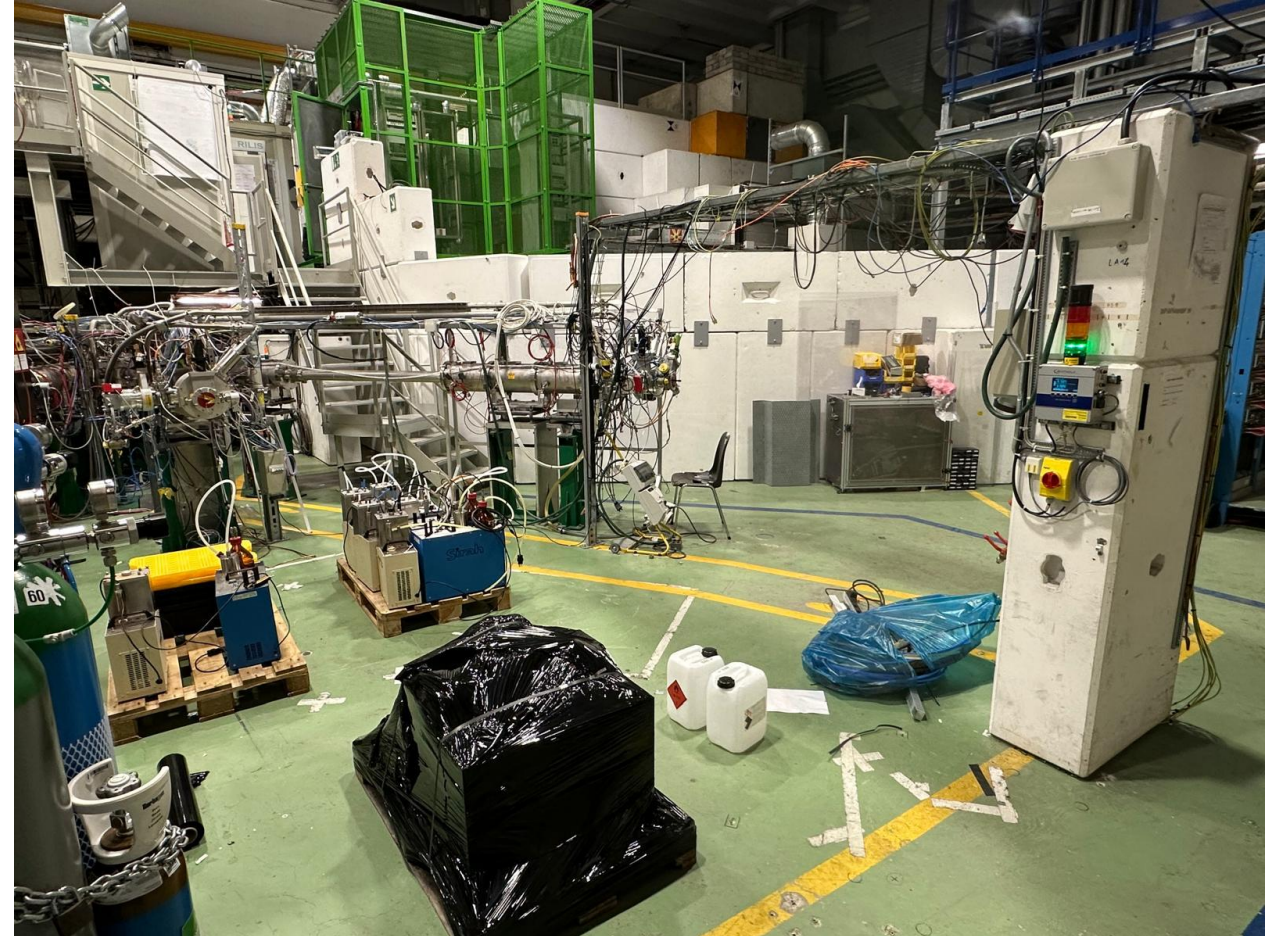
MIRACLS (2021-2025)

- Decommissioned since Dec. 2025
- Thanks to STI-LP and EP for help!



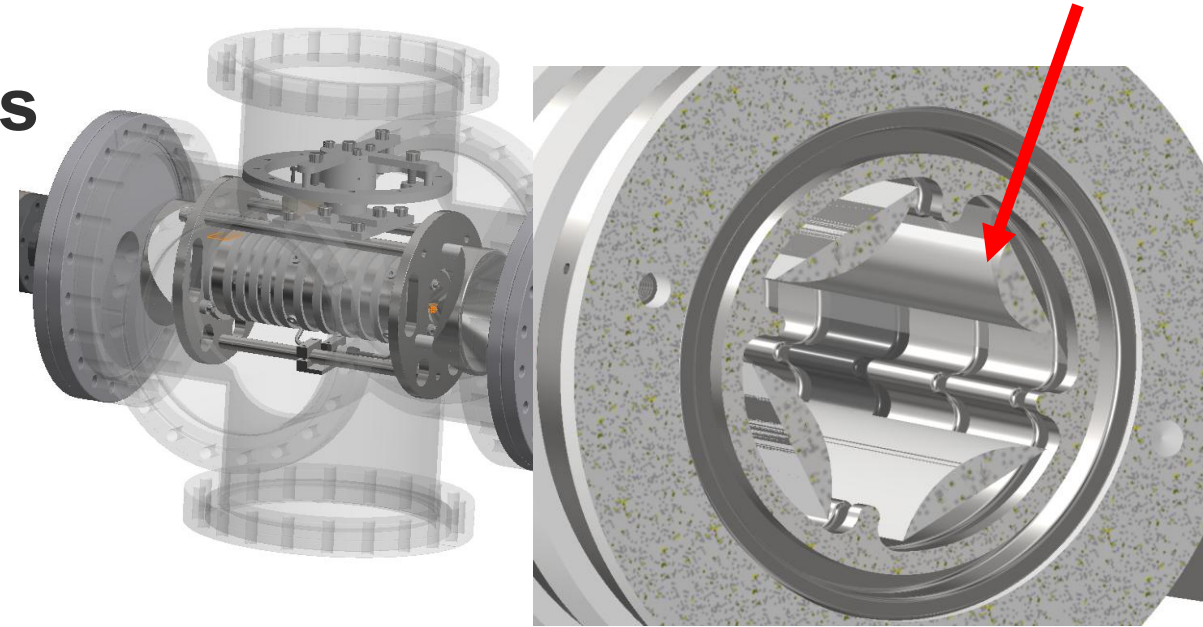
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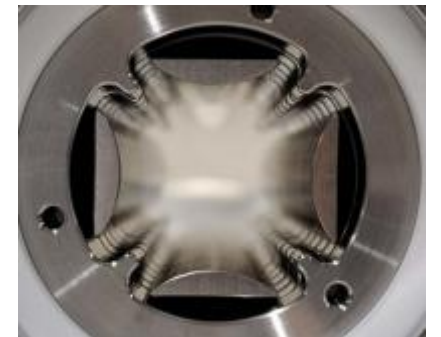
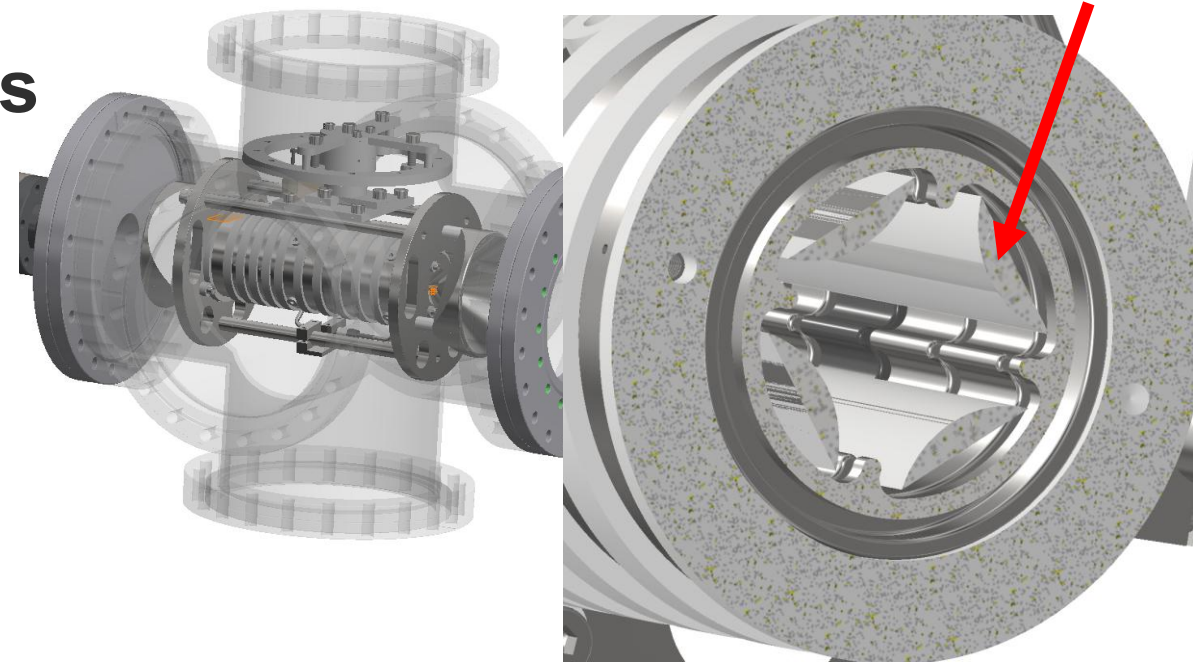
Ex-MIRACLS hardware changes and repairs

- **Replacement of incorrect RF rods planned for Q1 (thanks to M. Schlaich and TU Darmstadt)**
- Repair of MRTToFMS mirrors until the end of Q2 (electropolishing and exchange of insulators)
- Exchange of drift tube together with TU Darmstadt to be scheduled
- Replacement of gas system until Q3 (before Francisco's retirement 😊)



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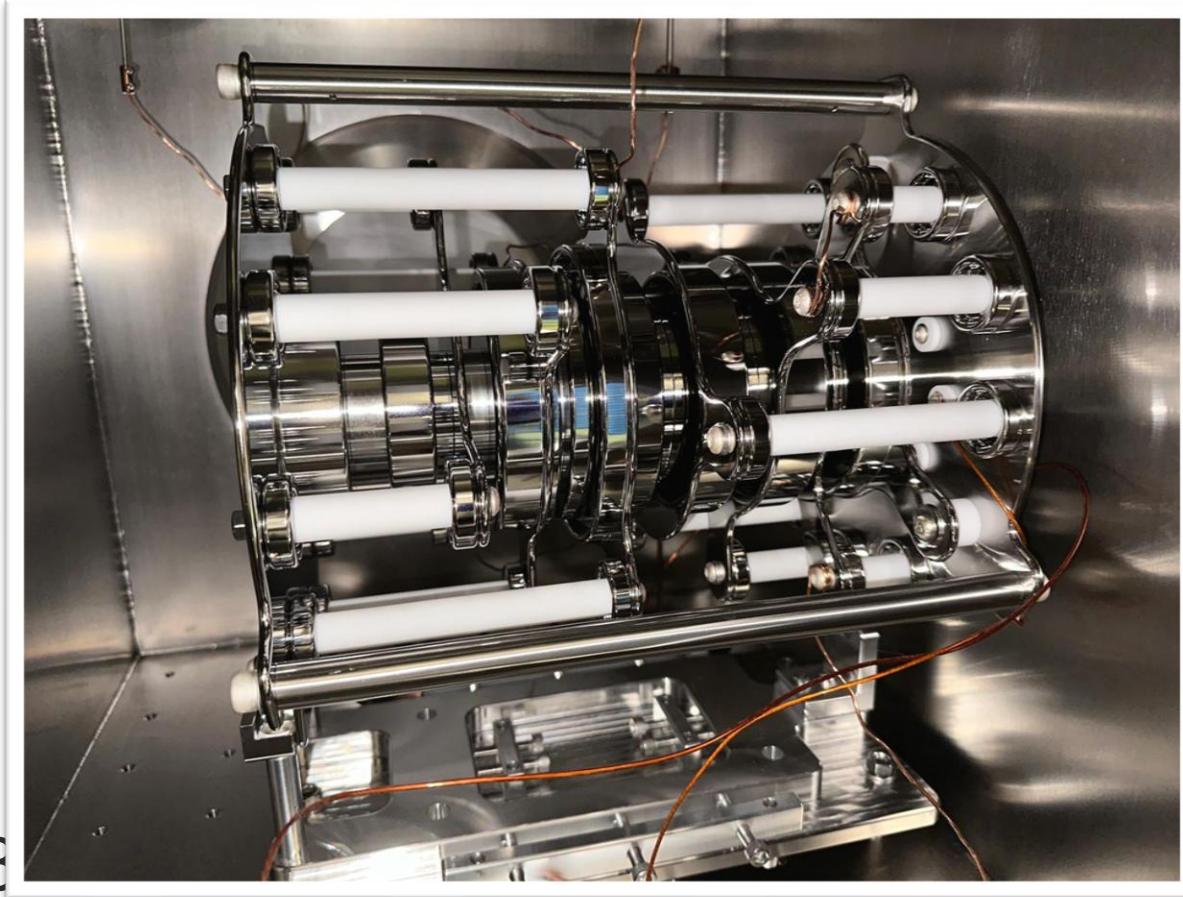
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Photos by M. Schlaich

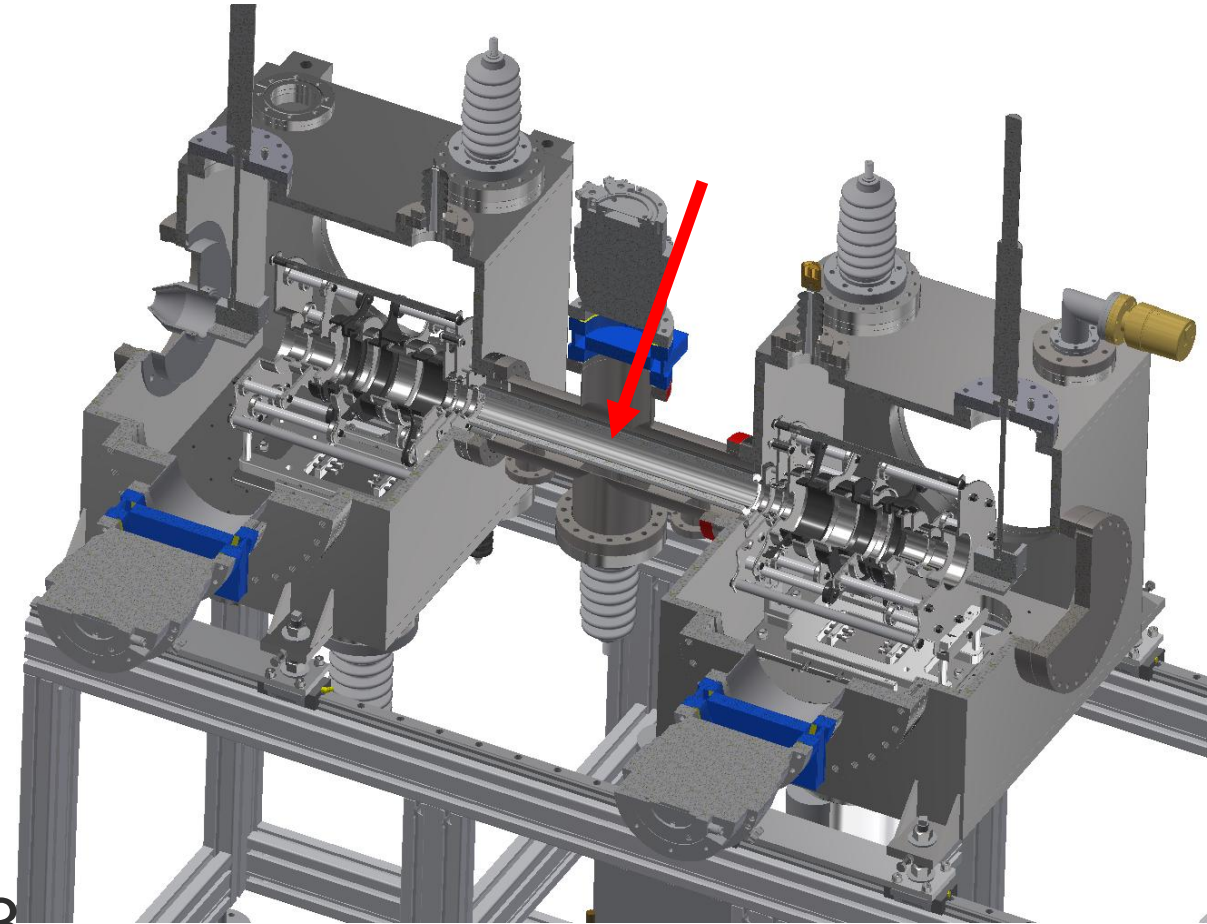
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- **Replacement of gas system until Q3 (before Francisco's retirement 😊) -> same as current YOL2 / future ISCOOL gas systems**



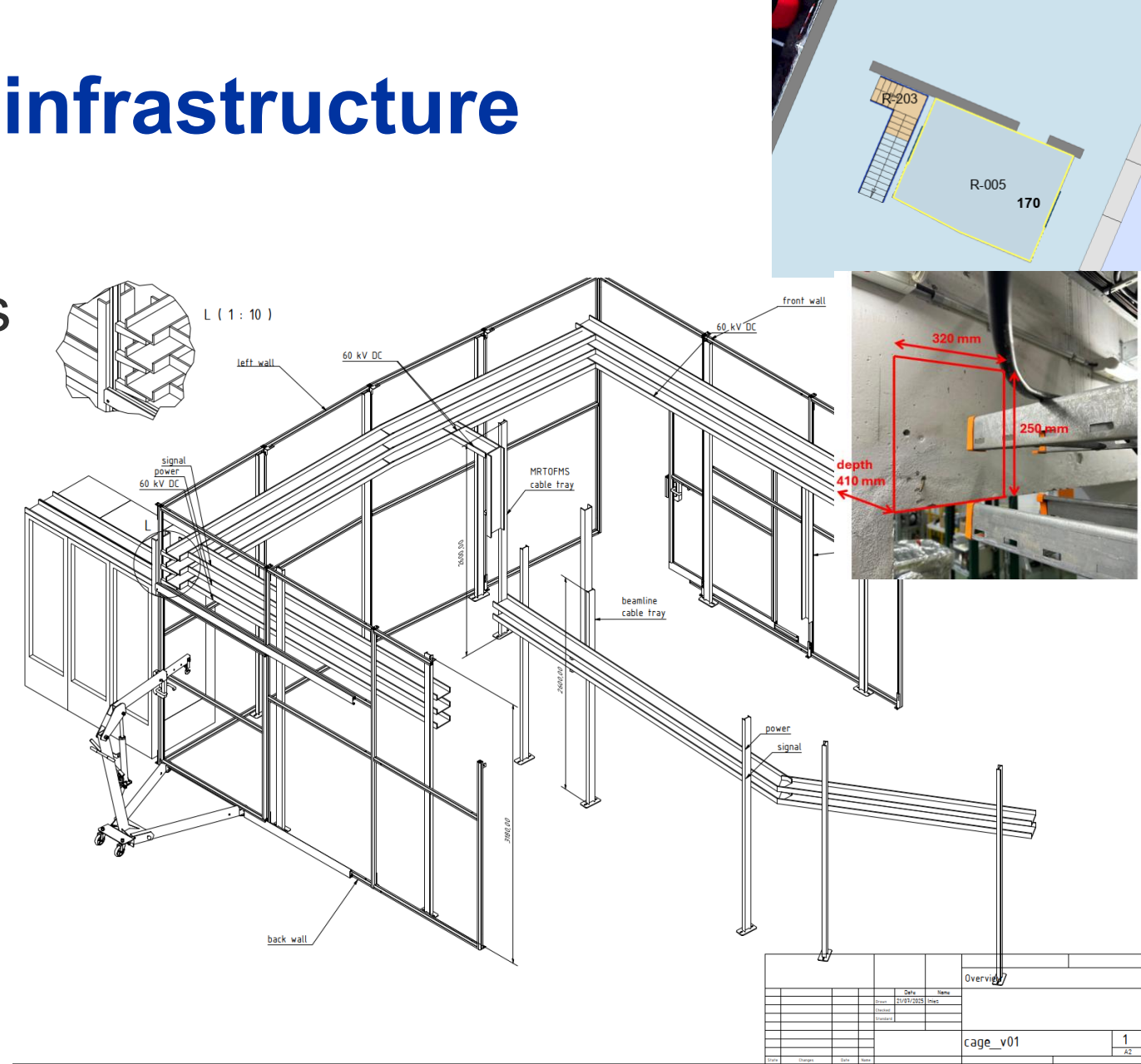
Fiducialization and alignment

- Started in February thanks to A. Beynel!



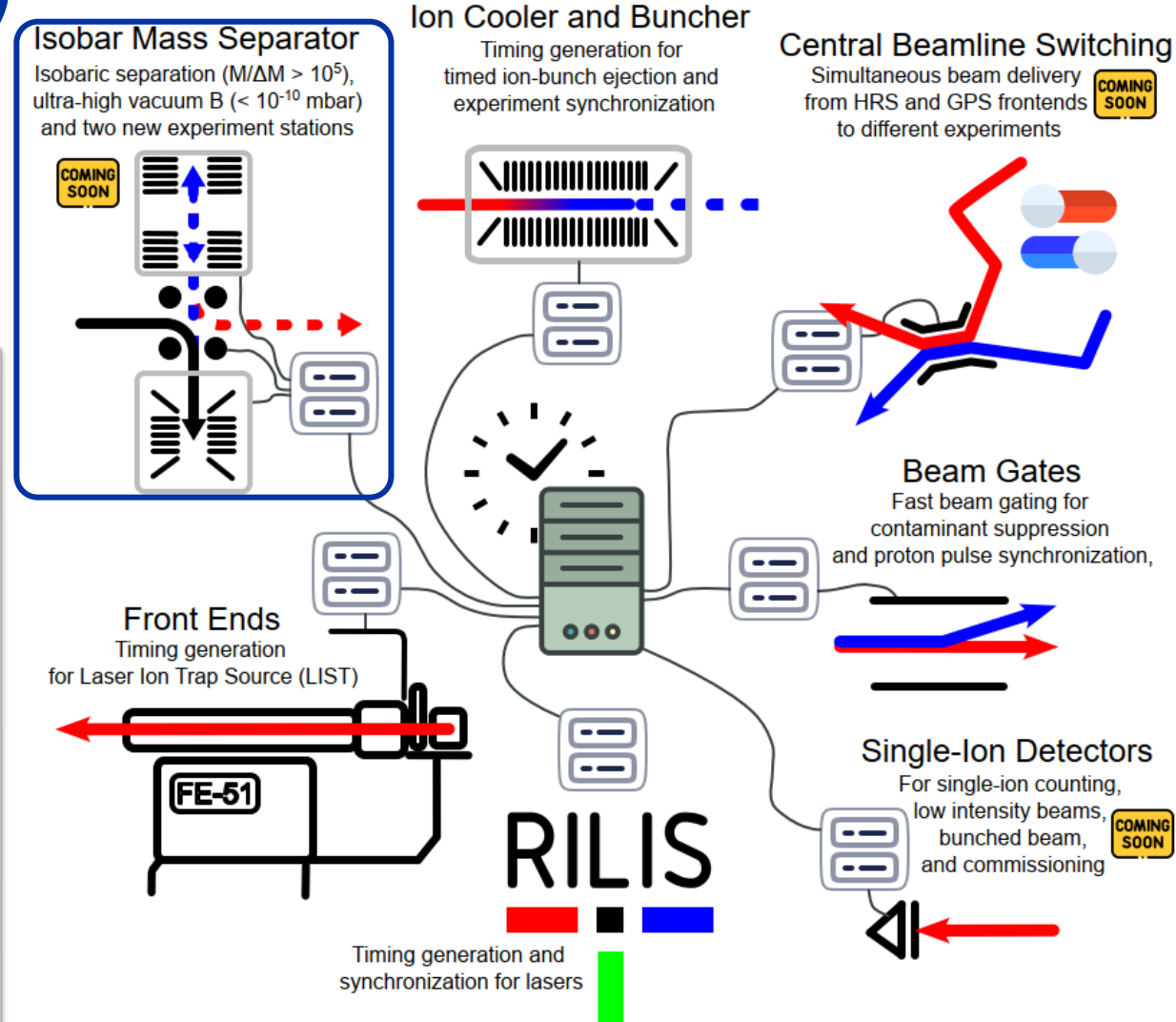
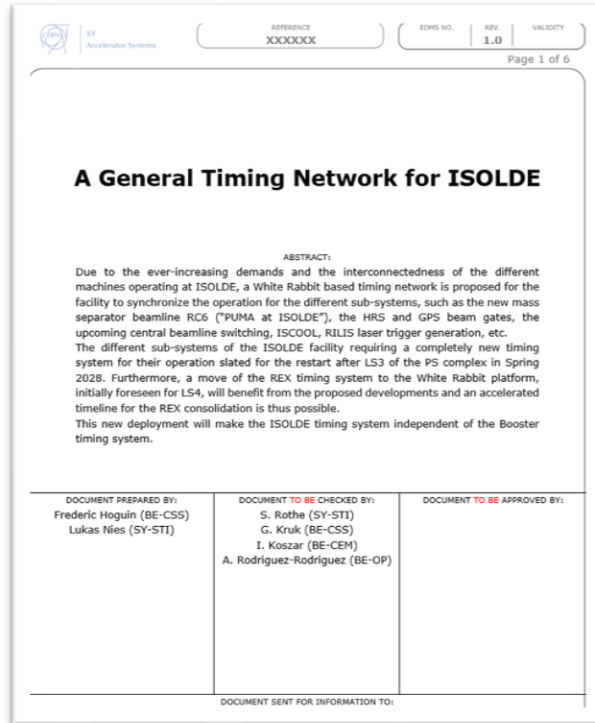
Installation of electrical infrastructure

- Phase 1 (HV cage, cable trays in 170/R-005) of installation executed
- Phase 2 (cable trays on HIE-ISOLDE side) to be done in Q1
- Cabling for EPC, VSC, and BI planned until start of LS3 (!)
- EN-EL-EPM works in mid-March to be confirmed (!!)



Control system (i.e. timing)

- Work behind the scenes (with CEM, CSS, and OP)
- Project request from CSS for general ISOLDE timing system



Tentative installation schedule

Plan October 2025

Tasks	Teams	2025					2026											
		Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MIRACLS Experiment II: Cadmium	✓ EP	█																
ISOLDE Quadrupole 2 assembly	✓ STI		█															
ISOLDE Quadrupole 2 acceptance test	✓ VSC			█														
HV Cage installation	✓ STI			█														
Quadrupole bender assembly and installation	✓ EN-EL			█														
EN-EL Infrastructure Phase 1	✓ EN-EL				█													
Beam telescope installation	✗ STI				█													
Transfer of MIRACLS hardware	✓ EP, STI				█													
Kicker assembly and acceptance test	✗ STI, VSC				█													
ISOLDE Quadrupole 2 installation	✓ STI					█												
Ion source assembly and installation	✓ STI					█												
Kicker installation	VSC						█	█	█	█	█	█	█					
ELENA ZQNA installation	ABT						█	█	█	█	█	█	█					
Drift tubes installation	VSC						█	█	█	█	█	█	█					
Diagnostic boxes installation	BI						█	█	█	█	█	█	█					
Installation of bakeout equipment and pumps	VSC						█	█	█	█	█	█	█					

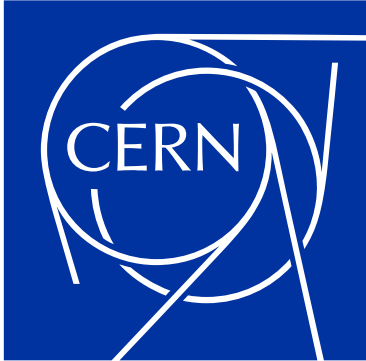
Tentative installation schedule

Plan February 2026

We are here

Start of LS3 (injectors)

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		Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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ISOLDE Quadrupole 2 assembly	✓ STI		█															
ISOLDE Quadrupole 2 acceptance test	✓ VSC			█														
HV Cage installation	✓ STI			█														
Quadrupole bender assembly and installation	✓ EN-EL			█														
EN-EL Infrastructure Phase 1	✓ EN-EL				█													
Beam telescope installation	STI				█													
Transfer of MIRACLs hardware	✓ EP, STI				█													
Kicker assembly and acceptance test	STI, VSC				█													
ISOLDE Quadrupole 2 installation	✓ STI					█												
Ion source assembly and installation	✓ STI					█												
EN-EL Infrastructure Phase 2	EN-EL																	
Cable pulling campaign	EN-EL																	
Kicker installation	VSC																	
ELENA ZQNA installation	ABT																	
VSC and drift tubes installation	VSC																	
Diagnostic boxes installation	BI																	
Installation of bakeout equipment and pumps	VSC																	



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