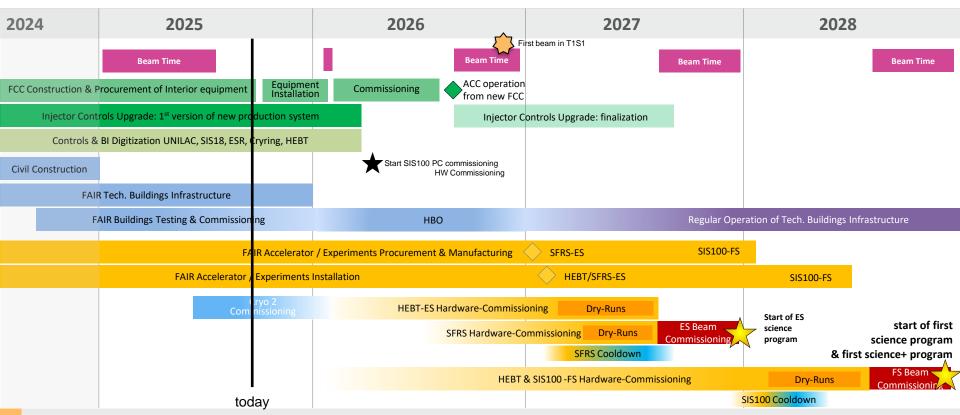




#### **GSI & FAIR – Integrated Campus Schedule**

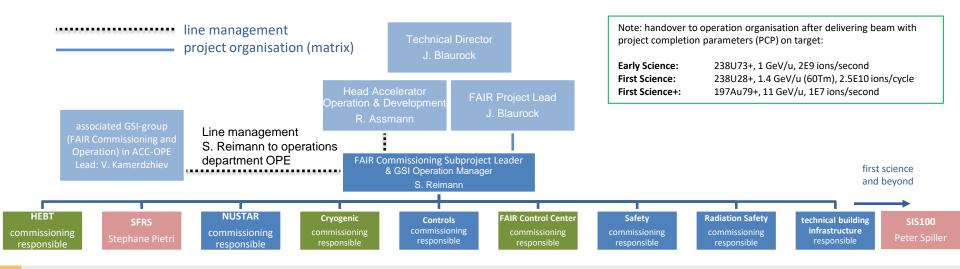




# **Organisation of Commissioning**

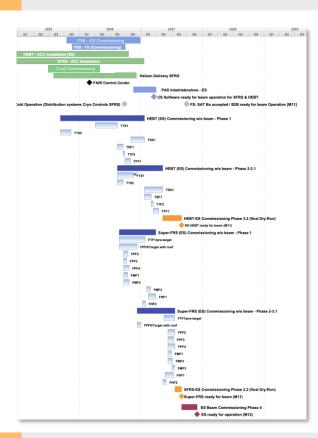


- Commissioning is organized as a subproject within FAIR project
- fully integrated in FAIR management lead team with other sub project leaders and in GSI accelerator organisation (ACC)
- fully integrated into FAIR reporting structures (planning, risk management, controlling) and committees
- Subproject Commissioning is divided in 12 work packages with dedicated work package leaders (commissioning responsible)
- Full integration of experiment groups and facility management (technical building infrastructure) in the commissioning process
- Sub structure is developed as project progresses



# **First 3 major Commissioning Milestones**



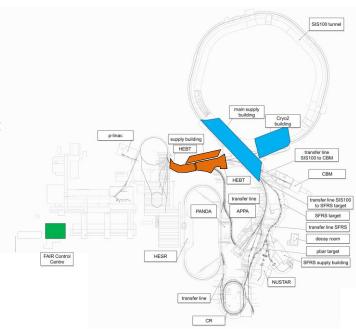


← Early Science commissioning schedule on section level

Q2/2025 → Q4/2025: cryogenic plant "Cryo2" (building K0720A & parts of main supply building H0719A)

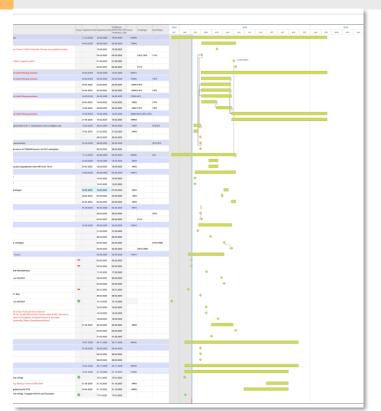
Q4/2025: start of first commissioning activities in Transfer Lines T1S1/2 (T1S1 ready for beam in Q4/2026)

Q1/2026 start commissioning of FAIR Control Centre and new Main Control Room

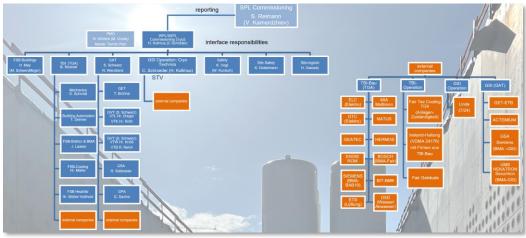


#### **Substructure Example: Cryogenic Systems**





Detailed commissioning schedule of cryo system

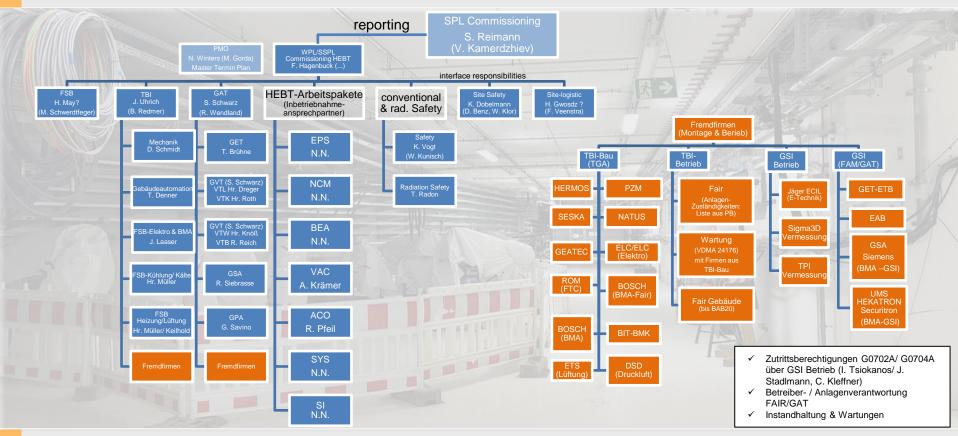


Cryo2 Commissioning - work package organization with external companies

- Cryo2 work package organization has been developed (as pilot for all further commissioning activities e.g. HEBT & SFRS commissioning)
- Strong support by Commissioning Subproject Lead
- Organisation, processes and responsibilities including safety are clarified and documented

#### **HEBT Commissioning Organisation**





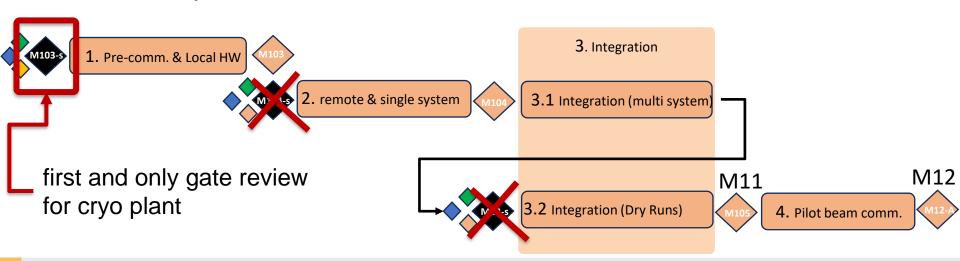
### **Commissioning Gate Reviews**



**Determination of:** mechanical completion, safety readiness for commissioning activities and commissioning readiness

Goals: handover to commissioning & release of commissioning permit

Test-case: Cryo2

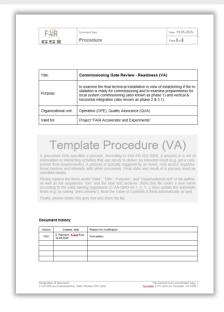


#### **Preparation of Gate Reviews for phase transitions**

concept under development



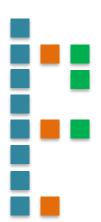
- goal is to ensure a safe and orderly transition from installation to commissioning while minimizing the additional effort for the WPLs
- key Points:
  - declaration of Mechanical Completion (incl. NCRs)
  - confirmation of proper commissioning of TBI / media
  - commissioning procedures
  - all GBU(s) for commissioning
  - checklist of test steps (well chosen level of detail)
  - appointment of all necessary responsible persons
  - •



procedure & checklist first tests:
Cryo and HEBT (T1S1)

#### Main requests for Commissioning Gate Review



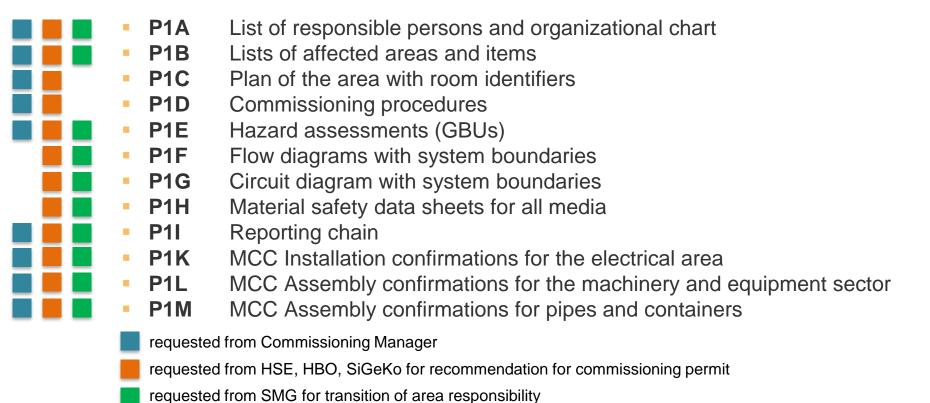


- CGR1 Order letter (STVs, system owners, ...)
- CGR2 Availability of safety instructions for all areas
- CGR3 Confirmation of an adequate access control
- CGR4 Declaration of operational readiness of media supply
- CGR5 Documentation of installations and systems (in PLM or PDB)
- CGR6 Handover document for safety responsibility per area
- CGR7 Release by fire department (if needed)
- CGR8 Protocol of the site inspection

- requested from Commissioning Manager
  - requested from HSE, HBO, SiGeKo for recommendation for commissioning permit
- requested from SMG for transition of area responsibility

# Main requests from SMG & HSE (HBO, SiGeKo)





# **Commissioning Gate Review Approval & Checklist**



			Conservat Upon  Done 18.05.2025  Procedure  Procedure
7. Legal Requirements and Applicable Standards  If there are such guidelines for the area of the described process, mention here.	Comments:  CGR4 TBI Readiness declaration Description of remaining work by  FSB	P1F Elebecterate out Sestemberouse Com WPF., GAT.	
Other Applicable (Internet) Documents     F-VA-QUA-de-0003 "Control of Documents and Records" (the only applicable document for	FSB a. NSHV 230V / 400V b. Cooling Water	P10 Stockholous Sudangentes	
PHISOCONCENSOR TO THE VEX. THE STATE OF CONTRIBUTE AN INCIDENT OF THE STATE OF	Comments:  CORE  CORE  COMMentation der inderiebzuset- zenden Arlagen und Systeme legt vor  Comments:  CORE	Comments:  P1H Screening Comments	General cosposition  Based upon the discussion and outcome during this COR the judgement is that the protect is:
Project/Systems: Areas affected: GateSoutew-ID:  Crysg2 K0720A (Crys-Hall, Com- 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ang und Raumhohet von BMG an inbetrie he her werde schriftlich be- statigt Comments:	P11 Vendentle Screenwinders to Com- bineration.  Comments.	to start commissioning with the following reserva-
Gate Review Charperson  CERF ancipants:  CERF ancipants:  Oute:  More which testing scope  The COR Covers  Gates I Seed system testing (ghase 1)  (ghase 1)	CORF Freques durin Feurwerk wurde er bl. SRP bett (Auflageliede leg gif von) Commentix: CORF SV von die Beschrägung ohne Auflatig- Nellen SPL Commentix: COMMENTIX COMMENTIX FIL Liste der verantecritione Personen A Opparegrame	PHK Mechanical Competitor (MCCL) Mon- tagglocatific ganges für den Bereich Briette Briette Comments:  Den Monthstand Competitor (MCCL) Mon- gegendütig gegendütig gegendütig gegendütig gegen Matschnien und Gertifee mit Bereich Ind. I NCRs.	Stor(s):
1.1 Checklist    Description   Comparison   Not NiA   Open   Owner   Description   Open   Ope	Comments:  P18 Lise der befroffennen Bereiche und D D Com Sächen WPL  Comments:  P10 Pills des Gefahrenbereiches mit D D Com Raumbezeichnungen WPL  Comments:	Comments:  P1M Mechanical Completion (MCC) Montage between fit don't Bereich Rome und Benater  Rome und Benater  Convents:	CGR chairperson CGR chairperson's role/position S. Reimunn
CORT Boolescondens for excursionations III III III III III III III III III I	P10 Institute commissioning plan for the Commission of Com	Under this section other subjects or comments can be noted.  1D	
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#### Handover of K0720A to the Commissioning Team







FAIR Übergabeprotokoll für die Verantwortung der Sicherheit in Gebäuden und an Anlagen und Systemen Rev. 1

Gebäude-, Anlagen- oder Systembezeichnung:

K0720A Cryo Gebäude mit darin befindlichen Anlagen und Systemen\_

Übergebende Einheit von FAIR/GSI:

Übernehmende Einheit von FAIR/GSI:

FAIR

SMG\_\_\_\_\_

FCM und GAT\_

Anhänge des Übergabeprotokolls (ankreuzen was relevant):

+

ACC TGA/Elekt Verantw./Datum

The handover from the installation team/SMG to the commissioning teams - for Accelerator- and Building Infrastructure - has been formally completed.

As of now, the safety organization (STV, AVs, SiFa) for K0720A is in effect for the commissioning phase.

# Work Permits for Areas under Commissioning Responsibility



Formular austüllen und send	len an :			
Formular austüllen und send Holger Kollmus Claus Schroeder	h.kollmus@gsi.de c.schroeder@gsi.de	STV KU720A Vertreter STV KU72	Ω	
Erstellt am: 29.08.2025				
Erstellt von: Holger Kollmus				
Firma	FTC-Engie			
Zuständiger / Teamleiter	Frank Weber			
Telefon Mobil	0151-41409123			
Beschreibung der durchzuführenden Arbeiten	IBN-Arbeiten im Schacht 123 zum Gebäude K0923A. Pumpe anschließen und die Rohrleitung spülen (System KU, KL und TN110)			
Benötigte Geräte / Technische Ausrüstung	Pumpe und Schläuche			
Zeitraum	Anfang: 10.09.2025 Ende: 11.09.202		Ende: 11.09.2025	
Gebäude / Raum /Achsen	Krvo-Halle Achse 4-5/H			
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Stellungnahme STV  Belehrung hat	0	, 04.09.202S	Holge Kollon	
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Belehrung hat stattgefunden Schlüssel wurde übergeben	Datum/Unterschrift /	Datum/Unterschrift	erledigt /	
Belehrung hat stattgefunden Schlüssel wurde übergeben Aktionen zusätzlich Anmeldung Arbeiten im ICM FSB	Datum/Unterschrift /	Datum/Unterschrift	erledigt /	

- Work requests are to be submitted to the STV
- Only persons who have received safety instruction are permitted to carry out work
- Access control is the responsibility of the STV
- Keys can be temporarily handed out to instructed personnel upon signature

#### **Summary**



- Requirements for SIS100 commissioning
  - Commissioning organization for SIS100
    - joint work of SIS100 & FCMS, a few iterations probably needed
  - Commissioning plan (with similar level of detail as the current HEBT plan)
  - Gate Review 1 month prior to commissioning start
- Lessons learned
  - During first commissioning phase the area may still be a construction site
    - Requirements from DEKRA, HSE, HBO Bauleiter are to be fulfilled
  - Time consuming processes
    - Appoint persons responsible for systems (Anlagenzuständige)
    - Appoint STV, a lot of details
    - Risk assessment documents (GBU), not only for single systems but also for commissioning of many systems together (Commissioning GBU)
    - Access concept (Schlißkonzept) for areas under commissioning
- Need a kickoff meeting for SIS100 commissioning soon

#### **EDMS**



