

Status & Planning of HIE-ISOLDE Phase 2

Y. KADI & W. Venturini Delsolaro for the HIE-ISOLDE Project Team

79th ISOLDE Collaboration Committee Meeting CERN, 27 June 2017

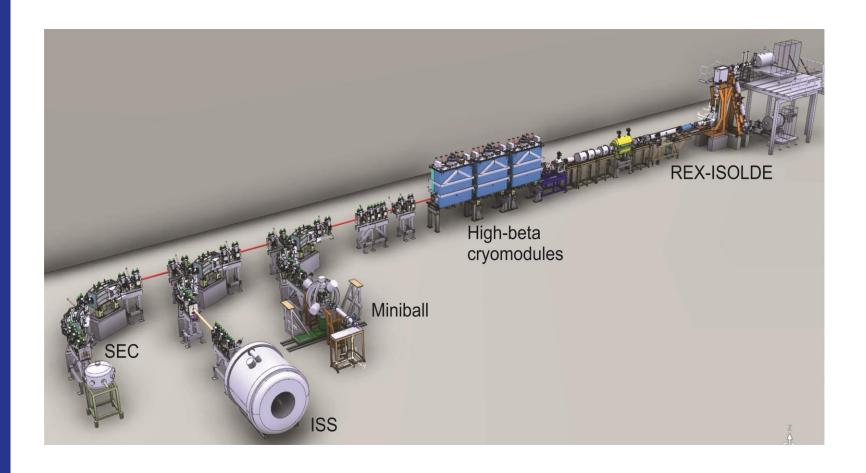


OUTLINE

- Phase2a Installation
- Cavities for Phase 2
- CM4 Assembly
- CM4 Bunker Test
- Schedule 2018
 - ✓ Physics @ 10 MeV/u with 4 CMs
- Summary



Phase 2a & 2017 Operation





Final tunnel installation work

















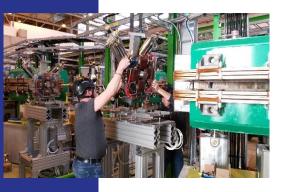
- XLN5 intertank sector in place and vacuum closed. BCAM cameras in place.
- All elements connected and aligned beginning of March.
- Cryo tubing on the top-plate and outside on the tunnel roof finished. CM cabling all done. Tunnel closed on the 17th March ready for CM3 hardware commissioning.

Installation XT00/03

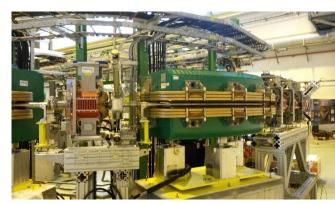










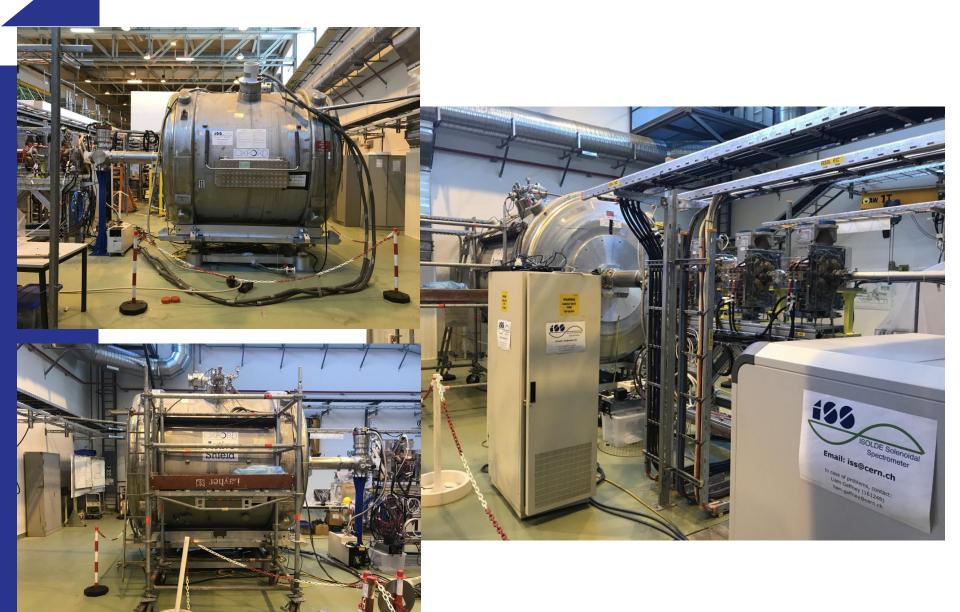


February – May:

- XT03 supports and tables in place and re-aligned immediately after the installation of ISS.
- Installation of the dipoles followed by the Dbox units
- Quadrupole vac chambers arrived with a delay: Welding in the hall to avoid more delay.
- All elements aligned.
- Vacuum connections, gauges and valves in place. Sectors leak tight.
- All DC, water, interlocks and instrumentation connected.

Ready for Hardware Commissioning as of 8th May

ISS connected to XT02



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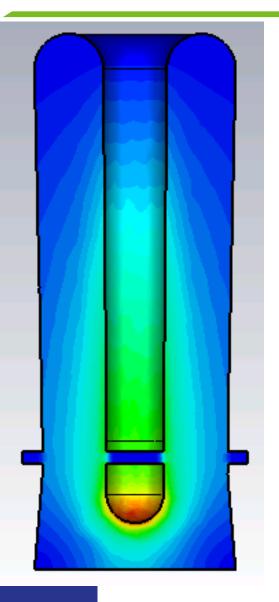


SRF Cavities for Phase 2

6 cavities in 6 months! (including QSS1 still to be tested) 50 30 QS20.1 **QS19.1 QS17.2** QS22.1 ◆ QS23.1 nominal 🖈 Eacc [MV/m]



Status of seamless cavities



- Design reviewed end April 2016
- Full scale "prototype in July 2016: tolerances met → manufacturing method demonstrated
- RF design optimized and beam dynamics simulated
- Final design documented in EDMS
- Order placed in industry for 2 cavities + 1 in option
- First cavity (QSS1) delivered February, coated last week
- QSS1 cold test next week
- QSS2 delivered in April, blank assembly this week







CM4 Assembly

- Same assembly team as for CM1 to CM3
- Same duration as for CM3 :
 - 27 weeks in clean room
 - + 2 weeks qualification tests outside of clean room

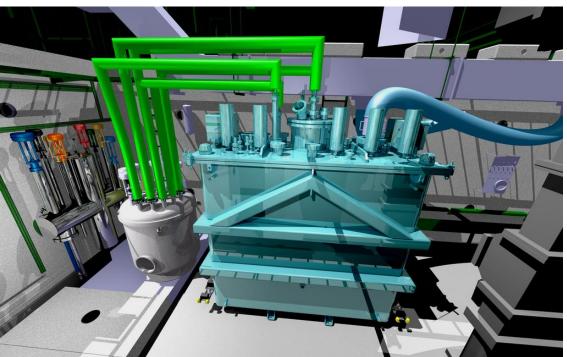
- Planning is shifted by 7 weeks to ensure the best set of active elements:
 - + 7 weeks to get solenoid #5 (preferred wrt solenoid #4)
 - Window for cavity production for CM4 prolonged by 5 weeks
 - CM4 assembly will pause in week 22
 - Solenoid #5"
 - Arrival at CERN: delayed from w18 to w27
 - · Ready for installation: w29
 - 5 cavities ready for the installation in w33
 - CM4 finished and tested at warm: w42

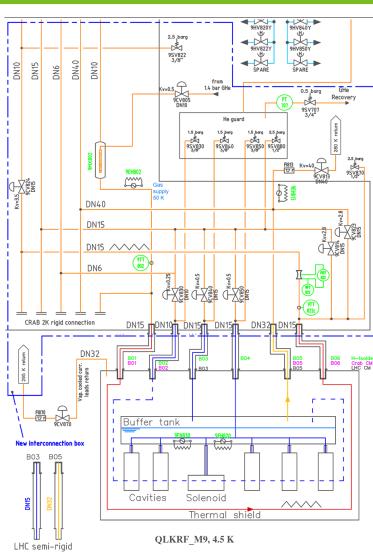
	Roadmap (clean room assembly activity, excluding component preparation, blank assemblies,etc.)																															
	Achieved																														\perp	
		J	anua	ry	Fe	ebrua	bruary		Mars			April					lay		June				July	_		August			September			tober
#	Assembly steps (including QA)	01	2	3 4	5	6	7 8	9 :	10 1	11 12	13	14	15 1	6 17	18	19 2	20 21	1 22	23	24 2	5 26	27	28 2	9 30	31 3	32 33	34 3	5 36	37 38	39 4	10 41	1 42 43
1	Vacuum vessel assembly																															
2	Thermal shield and vacuum vessel assembly																															
3	Chimney assembly																															
4	Top plate assembly																										SM:					
5	Upper thermal shield and helium tank																										shu [.]	t-d	owr	1		
6	Insertion of chimney																															
7	Install. of the support frame																		9	Sol	en	oic	d ir	ารt	alla	atic	n					
8	Install. of the solenoid																						1									
9	Intermediate vacuum testing																								(av	ity	ins	tall	atic	on	
10	Install. of the cavities																															
11	Install. of the cavities's aux.(tuner, coupler, RF cables)																															
11	Adjusters test campaign																															
12	Cryo-module vessel closure																															
13	Final assembly qualification testing																															
	Contingency																															



CM4 Bunker Test

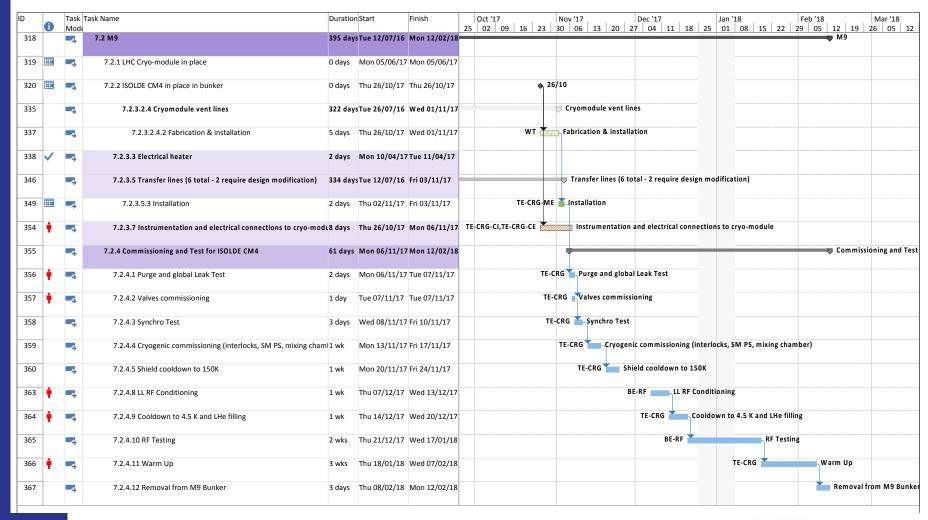
- Integration study still valid
- Transport tools available
- Cryogenics (valve box) installed
- RF racks installed and cabled
- Solenoid rack to be recovered from DANFISYK
- Procedures will be adapted from those used for the linac (some tests can be skipped)
- Space management: LHC cryomodule sitting in M9



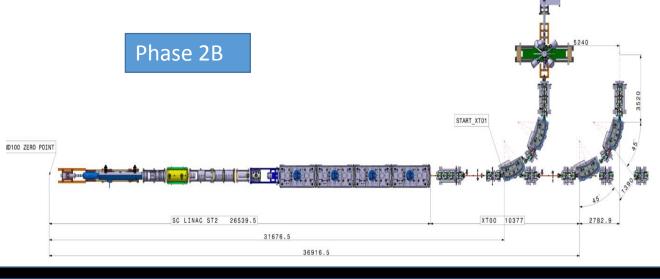


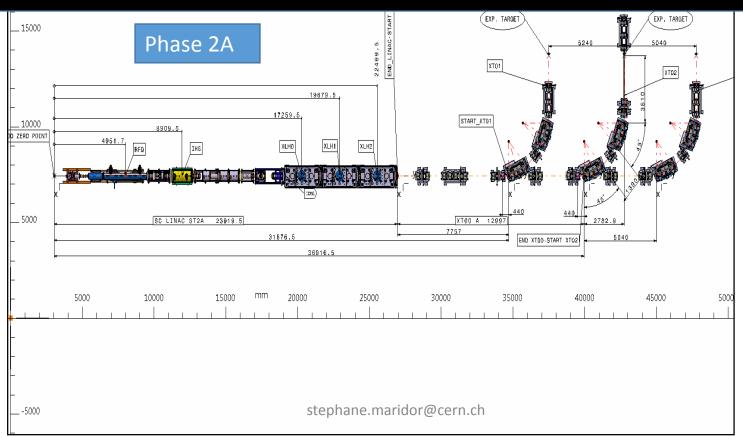


CM4 Bunker Test Schedule









2018 Schedule

	Jan.18					Fek	oruar	у	March				April				May					Jur	ne			Ju	ly			Au	gust			Sept	embe	er	October				November				December			ber
	w1	w2	w3	w4	w6	w7	w8	w9	w10	w11	w12	w13	w14	w15	w16 w	17 w	v19 w	v20 v	v21 v	v22 v	v23 v	w24 \	w25 \	w26 \	w27	w28	w29	w30	w32	w33	w34	w35	w36	w37	w38	w39	w40	w41	w42	w43	w44	w45	w46	w47	w48	w49	w5(0 w51
ModificationsEXT00																																																
CM4InstallationI																																																
Cryogenics Facilities																																																
HW&ommissioning BCMs																																																
Beam I Commissioning																																																
Physics@t@10@MeV/u																																																



Overall Summary

CERN strategy on cavities for phase 2 being implemented

- ✓ Last RI cavity *performance improved* after change of weld parameters
- ✓ CERN produced cavities (QS22 and QS23) finished
- ✓ Production Seamless cavities also progressing well: to be tested week 27

CM4 Assembly

- Will use the best available cavities and solenoid
- Schedule adjusted, matching end of cryo-shutdown in SM18
- Bunker test is scheduled for the end of the year => Management decision solicited to go ahead or not, considering all facts

Spares

- Baseline: complete set of cavities (5xQS+ 1xQSS) and solenoids (1+coil)
- Possible future option: "hot spare"
- Infrastructures and know-how anyway to be preserved by CERN





