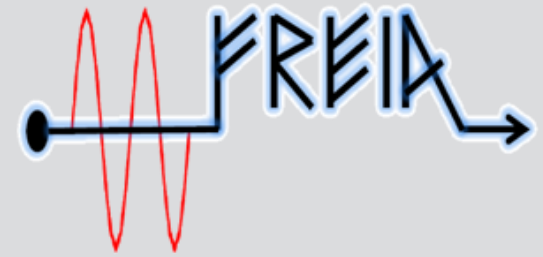




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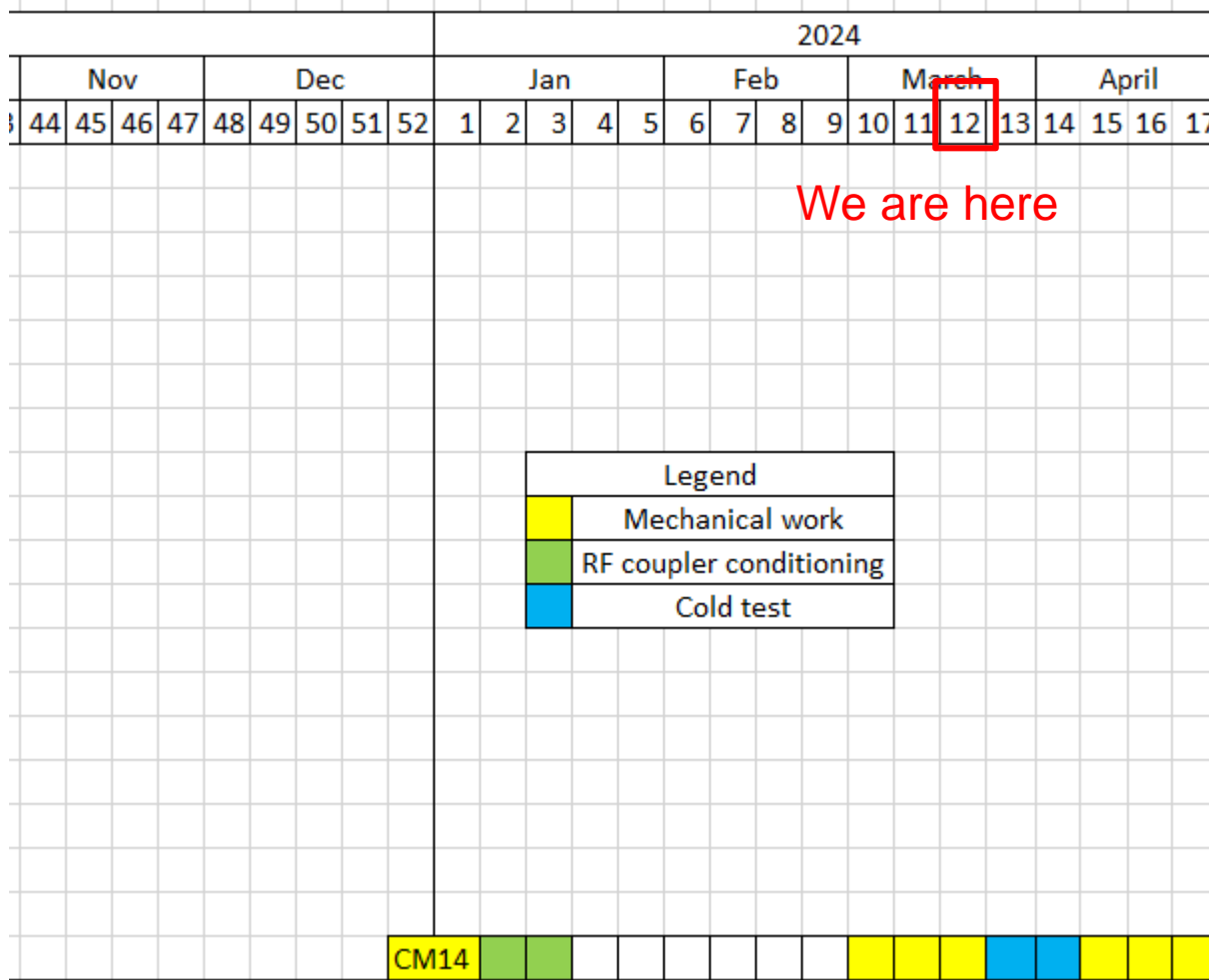


# ESS weekly meeting (2024 W12)

FREIA team



# Global planning



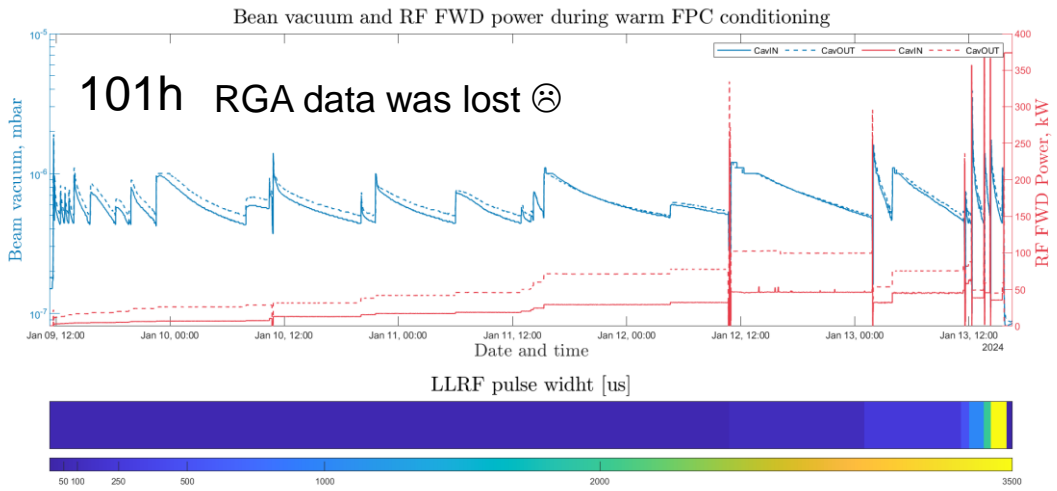
# CM14 short recap



↑ CM14 arrived to FREIA  
29 Dec 2023

Cables verification CM14 at JCLab						v1	Cables verification CM14 at UU						v1
Socket assembly					Verified by:		Socket assembly					Verified by: MZ	
Socket name	Sensor / Actuator type	PID name	Serial number	Electrical value (Ω) (before shipping)	C / NC	Socket name	Sensor / Actuator type	PID name	Serial number	Electrical value (Ω) (before shipping)	C / NC		
LC01	Cernox	TT04	X132862	88.84	C	LC01	Cernox	TT04	X132862	88.8	C		
	Cernox	TT05	X134478	87.43	C		Cernox	TT05	X134478	89.35	C		
	Cernox	TT06	X133110	85.42	C		Cernox	TT06	X133110	86.05	C		
	Cernox	TT07	X134429	90.71	C		Cernox	TT07	X134429	91.15	C		
	Cernox	TT08	X133098	87.76	C		Cernox	TT08	X133098	88	C		
	Cernox	TT09	X133078	83.22	C		Cernox	TT09	X133078	83.35	C		
	PT100	TT10	PT24	107.39	C		PT100	TT10	PT24	106.9	C		
	PT100	TT11	PT37	108.01	C		PT100	TT11	PT37	106.95	C		
	Cernox	TT12	X134479	91.85	C		Cernox	TT12	X134479	92.1	C		
	PT100	TT20	PT47	107.41	C		PT100	TT20	PT47	106.9	C		
	PT100	TT21	PT36	108.07	C		PT100	TT21	PT36	106.9	C		
	Cernox	TT22	X138420	60.71	C		Cernox	TT22	X138420	60.95	C		
PT Coupler	PT100	TT120	PTC17	108.4	C	PT Coupler	PT100	TT120	PTC17	107	C		
	PT100	TT220	PTC19	108.39	C		PT100	TT220	PTC19	107	C		
	EH01	EH26	84.24	C	EH01		EH26	84.4	C				
LC02	Heaters	EH02	EH29	84.36	C	LC02	Heaters	EH02	EH29	84.6	C		
	EH10	82.19	C	EH10	82.4		C						
	EH20	82.32	C	EH20	82.4		C						
LC03	Motor sensor	SM10	7.43 / 2.46	C	Motor sensor	SM10	2.6 / 2.6	C					
	a limit sensor	LS10	1.62	To be completed	a limit sensor	LS10	7.1	To be completed					
	Motor sensor	SM20	2.51 / 2.57	C	Motor sensor	SM20	2.6 / 2.6	C					
LC07	a limit sensor	LS20	2.86	C	a limit sensor	LS20	3	C					
	Liquid Helium Level Sensor	LT01	7335	366.26	C	Liquid Helium Level Sensor	LT01	7335	365.9	C			
		LT02	7336	369	C			LT02	7336	368.65	C		
LC04	Actuators	PZ10		12.69	C	LC04	Actuators	PZ10		13.8	C		
		PZ11		12.81	C			PZ11		13.8	C		
		PZ20		12.53	C			PZ20		13.7	C		
		PZ21		12.46	C			PZ21		13.8	C		

← In CM datasheet we found a doubt to LS10 limit switch.  
Homing procedure at warm was OK



← Coupler warm conditioning was take a 100h with 2 pumping stations



# Changing CTS motors in CM14

ESS team done all work.



ESS team came to Freia by track with all necessary equipment.



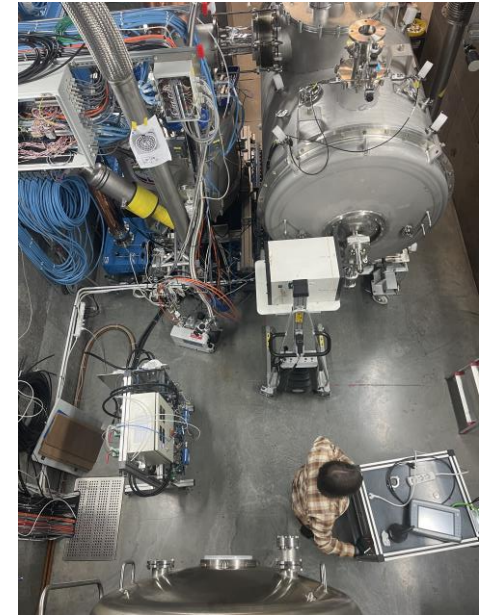
- Both stepper motors were replaced.
- Limit switch on Cav2 side was replaced. ???
- Tuner functionality was verified.
- Leak check of insulation vacuum → OK.

Henry took 2 pieces of cryobellow protection with him to ESS



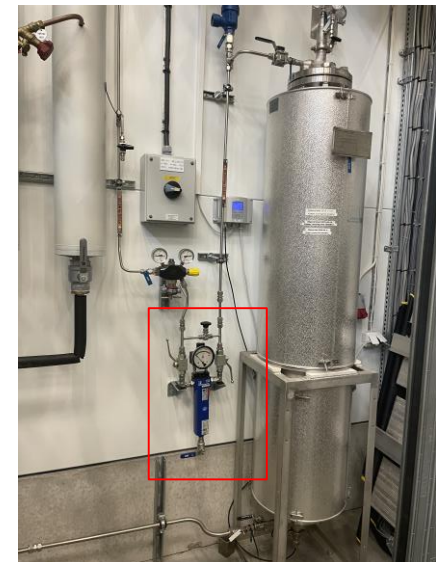
## CM status

- Cryomodule installed back to the bunker.
- Cryo, RF, vacuum, instrumentation connection → Done.
- Beam and insulation vacuum under the pumping.
- Bunker wall is under assembly.



## FREIA cryo-plant status

- He dryer filled by new absorber material and regenerated.
- Installed additional high pressure filter between cold box and He dryer.
- Starting liquefier → right now.





# Local planning



date		MON		TUE		WED		THU		FRI		SAT	SUN
		11-Mar		12-Mar		13-Mar		14-Mar		15-Mar		16-Mar	17-Mar
		m	a	m	a	m	a	m	a	m	a		
Last CM	CM14	ESS team visit for motors exchange								Preparing CMs to move to bunker			
week		W12											
date		MON		TUE		WED		THU		FRI		SAT	SUN
		18-Mar		19-Mar		20-Mar		21-Mar		22-Mar		23-Mar	24-Mar
		m	a	m	a	m	a	m	a	m	a		
Last CM	CM14	Connections inside of bunker		Vacuum connection, leak check		Vacuum pumping (beam vacuum, insulation vacuum)				Start LN2 cooling		Thermalization	
week		W13											
date		MON		TUE		WED		THU		FRI		SAT	SUN
		25-Mar		26-Mar		27-Mar		28-Mar		29-Mar		30-Mar	31-Mar
		m	a	m	a	m	a	m	a	m	a		
Last CM	CM14	LHe cooling		4K filling		Cold coupler conditioning		Pumping to 2K		CTS test, RF calibration		Easter	
week		W14											
date		MON		TUE		WED		THU		FRI		SAT	SUN
		1-Apr		2-Apr		3-Apr		4-Apr		5-Apr		6-Apr	7-Apr
		m	a	m	a	m	a	m	a	m	a		
Last CM	CM14	Easter		MP conditioning		Heat load meas				Go from 2 K to 4K Start warm up			
week		W15											
date		MON		TUE		WED		THU		FRI		SAT	SUN
		8-Apr		9-Apr		10-Apr		11-Apr		12-Apr		13-Apr	14-Apr
		m	a	m	a	m	a	m	a	m	a		
Last CM	CM14	Warm up completed, open the bunker		Disconnect lines		Dismount doornobs		Outgoing test		Filling with GN2		Pack the box	
week		W16											
date		MON		TUE		WED		THU		FRI		SAT	SUN
		15-Apr		16-Apr		17-Apr		18-Apr		19-Apr		20-Apr	21-Apr
		m	a	m	a	m	a	m	a	m	a		
Last CM	CM14	Departure to ESS, Report publishing											

We are here

Cold tests



# Backup



# CTS homing test at warm



## CTS1 OK

Using Beckhoff driver. Go back by 10 turns at a time until Low limit indicator goes on (limit switch open) on MTR1. Then it is not possible to continue negative.  
Use the offset variable ESSPMAC:MTR1.OFF to start at 0

Move negative

Turns	Limit switch (1 = closed, 0 = open)
0	1
-10	1
-20	1
-30	1 Stops at -27.5 turns, -5500 steps limit switch indication on.

Positive direction

-27.5	0/1 Goes off after a while, -5500 steps
-20	1
-10	1
0	1

Test the Homing procedure: OK (limit blinks)  
Put the offset to -25.6

## CTS2 OK

Using Beckhoff driver. Go back by 10 turns at a time until Low limit goes on on MTR2. Then it is not possible to continue negative.  
Use the offset variable ESSPMAC:MTR2.OFF to start at 0

Move negative

Turns	Limit switch (1 = closed, 0 = open)
0	1
-10	1
-20	1
-30	0 at -29.1 turns <=> -5820 steps

Positive direction

-29.1	0
-20	1 on immediately at 29.1 turns <=> -5820 steps
-10	1
0	1

Test the Homing procedure OK  
Put the offset to -25.6