



Highlights on status of activities in BAMA

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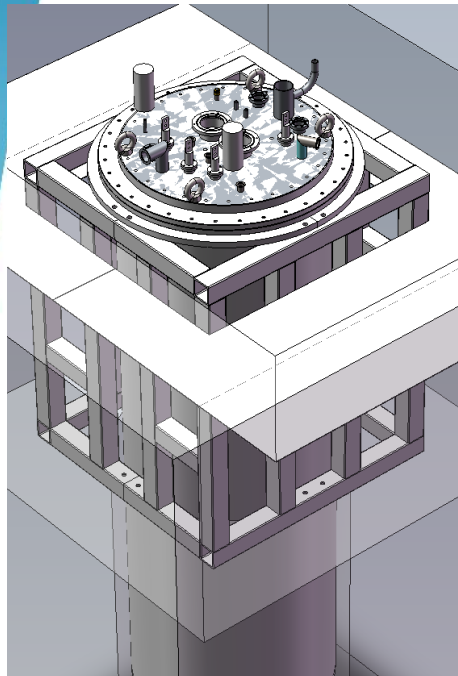
Progress of series production

			2021				2022												Location
			Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	
MCBRD01	Magnet delivery			■	■	■													CERN
	CB08	Coil Fabrication			■														IHEP
		Stand-alone test																	
MCBRD02	Magnet assembly					■												on the way to CERN	
	Magnet test						■	■	■	■	■								
	Magnet delivery										■	■	■						
Upgrade of BAMA VPI station & modify the groove depth									■	■									
MCBRD03	CB09	Coil Fabrication					■	■										IMP	
		Stand-alone test							■										
	CB012	Coil Fabrication									■								
		Stand-alone test										■	■						
	Magnet assembly											■	■						
	Magnet test													■					
Magnet delivery														■	■				
<u>MCBRD04</u>	CB013	Coil Fabrication											■					IHEP	
		Stand-alone test												■	■				
	CB014	Coil Fabrication													■			BAMA	
		Stand-alone test														■	■		



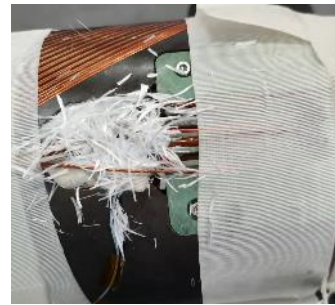
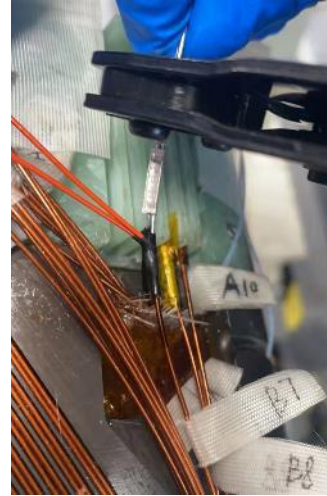
- Components of CB10 and CB11 have been shipped to CERN.

New test station at IHEP(Aug. ~Dec. 2021)



- IHEP test station was put into use from Dec. 2021.
- CB04&CB06, CB05&CB09, CB012, CB013 were tested at this station.
- Stand-alone test of each aperture will be performed at IHEP.

Fabrication of CB08 (Nov. 2021)

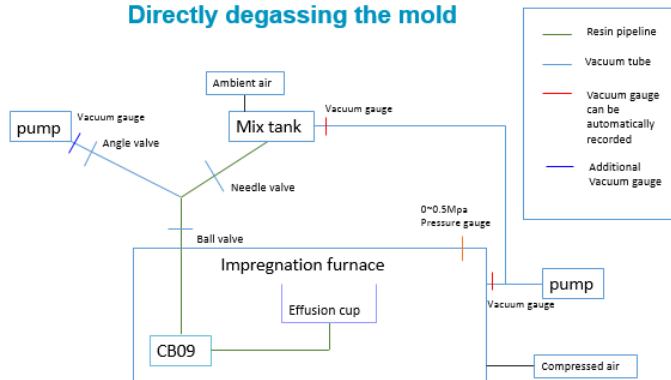


- The last wet-winded Aperture.

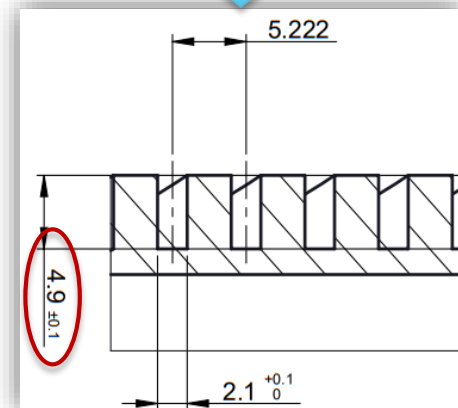
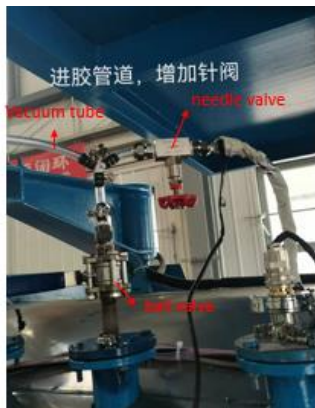
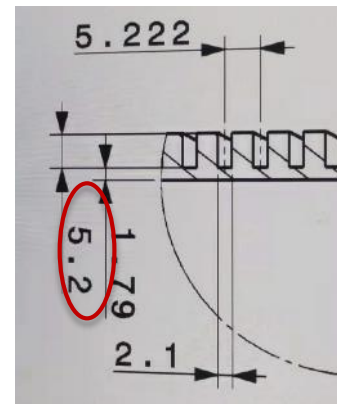
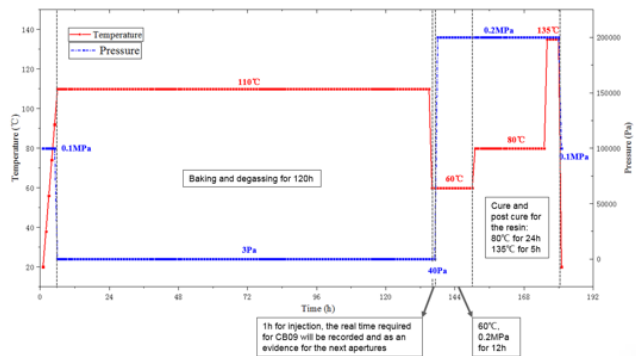
Upgrade of BAMA VPI station & modify the groove depth

(Feb. ~ Mar. 2022)

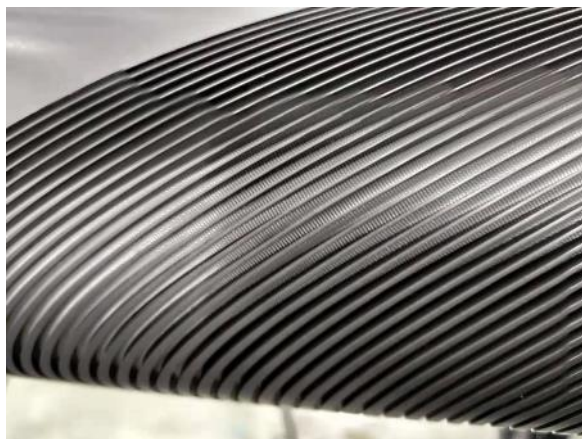
Directly degassing the mold



P-T setting of the VPI procedure



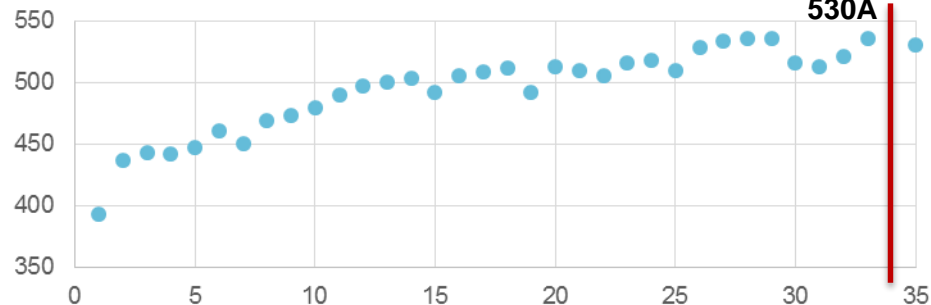
Fabrication of CB09 (Feb. ~ Mar. 2022)



Training history of CB09

Thermal cycle

530A

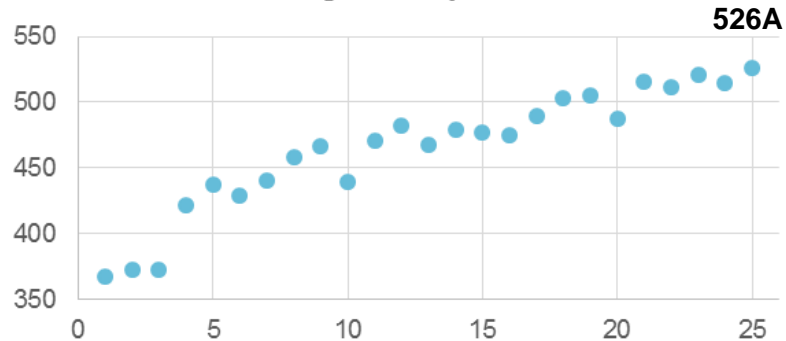


Fabrication of CB012 (May. ~ Jun. 2022)

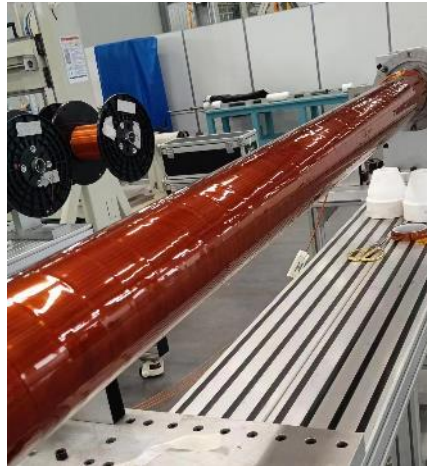


Correct the diameter of holes on polyimide sheets to increase the insulation strength between coils to ground.

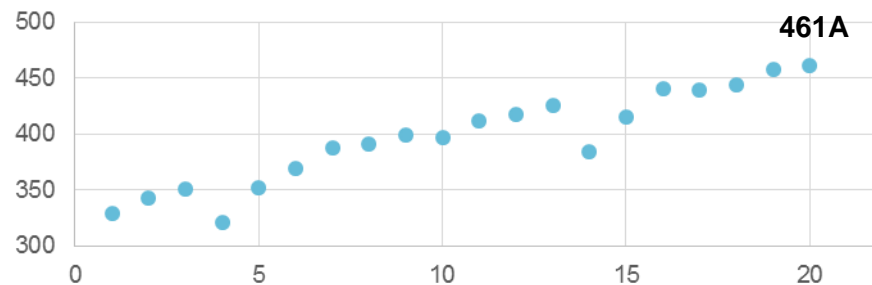
Training history of CB12



Fabrication of CB013 (Aug. ~ Sept. 2022)



Training history of CB13

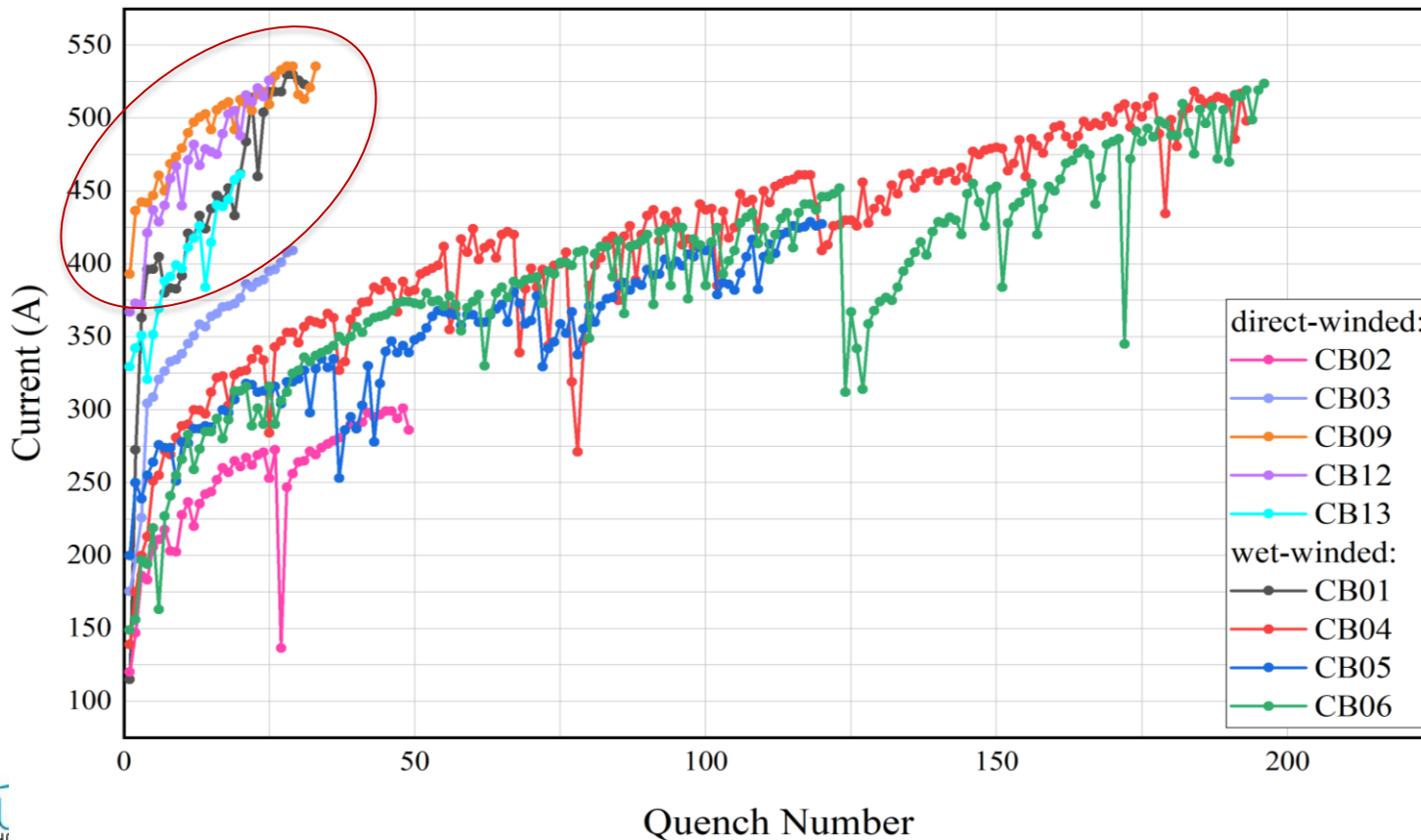


Insulation test result

Equipment	Object	Aperture	Function	Voltage	Current	Test Time	Resistance
Megger MIT 525	Coil to ext. tube	CB09	IR	3265V	16.1nA	30s	203GΩ
		CB12	IR	3369V	78.2nA		43.1GΩ
		CB13	IR	3066V	22.7nA		135.0GΩ



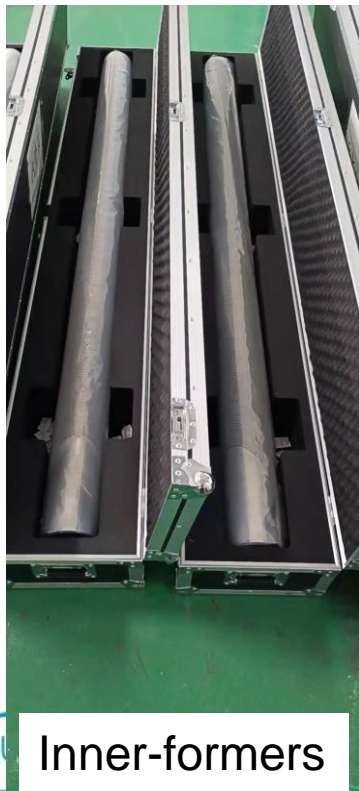
Training history of the HL-LHC CCT coils



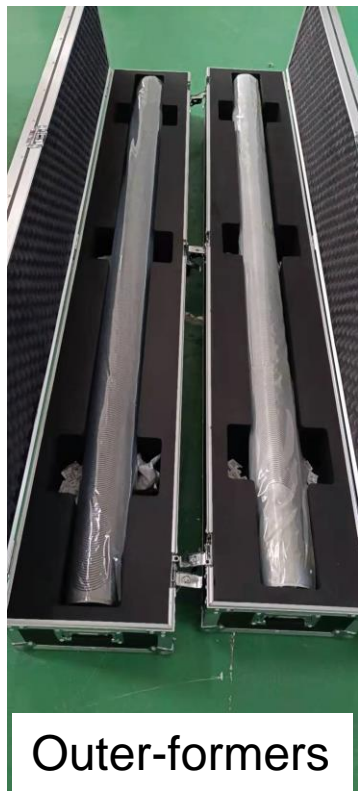
Components of CB10 and CB11 have been



shipped to CERN



Inner-formers



Outer-formers



Ext.-tubes



G10 components

Components of CB10 and CB11 have been



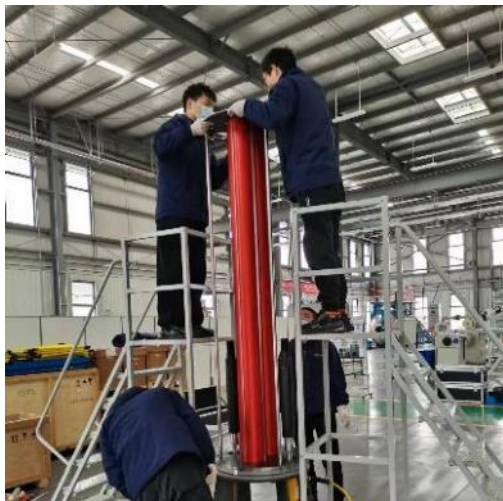
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shipped to CERN



No.	Packing size (mm)	Name		Quantity
1	420*600*700	铌钛超导线	NbTi Superconducting wires	21Km
		聚酰亚胺膜	Polyimide sheet	20m
2	1000*800*700	玻璃丝布	Glass fiber tape	8 rolls
		玻璃丝布胶带	Glass fiber tape(with glue)	4 rolls
		特氟龙套管	φ6mm Teflon insulating sleeve	17 m
		3.3mm聚酰亚胺套管	φ3.3mm Polyimide sleeve	3*4m
		1mm聚酰亚胺套管	φ1mm Polyimide sleeve	3*3m
		6mm编织型套管	φ6mm Braided Sleeve	4m
		2mm编织型套管	φ2mm Braided Sleeve	4m
		2mm热缩管	φ2mm Heat shrink tube	4m
		中接管	crimping tube for splicing	160
		9k针脚	9k Pin Connector	80
		23k针脚	23k Pin Connector	12
		48针脚电接头	48-Pin Connector	4
		电插头固定支座	holder for electrical connector	2 set

Assembly of MCBRD02 (Jan. 2022)

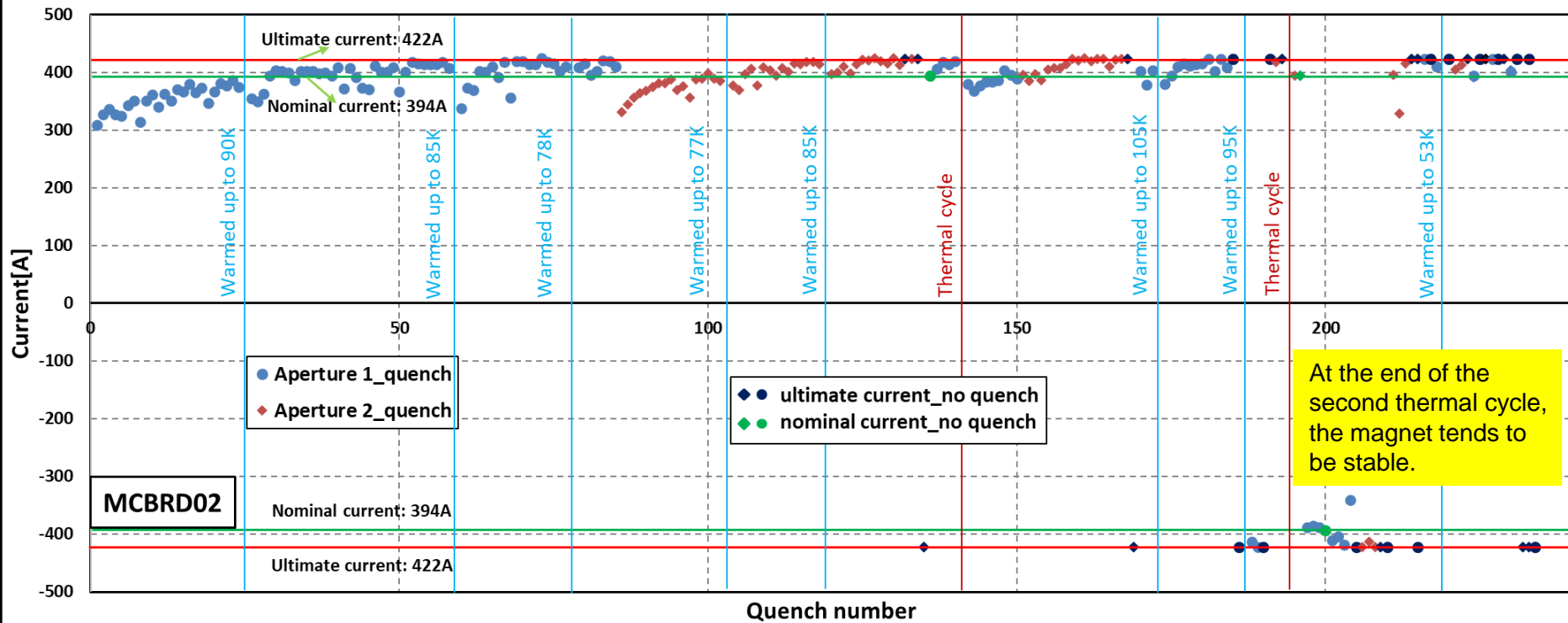


Test of MCBRD02 (Feb. ~May 2022)



Test of MCBRD02 (Feb. ~May 2022)

The training history of MCBRD02



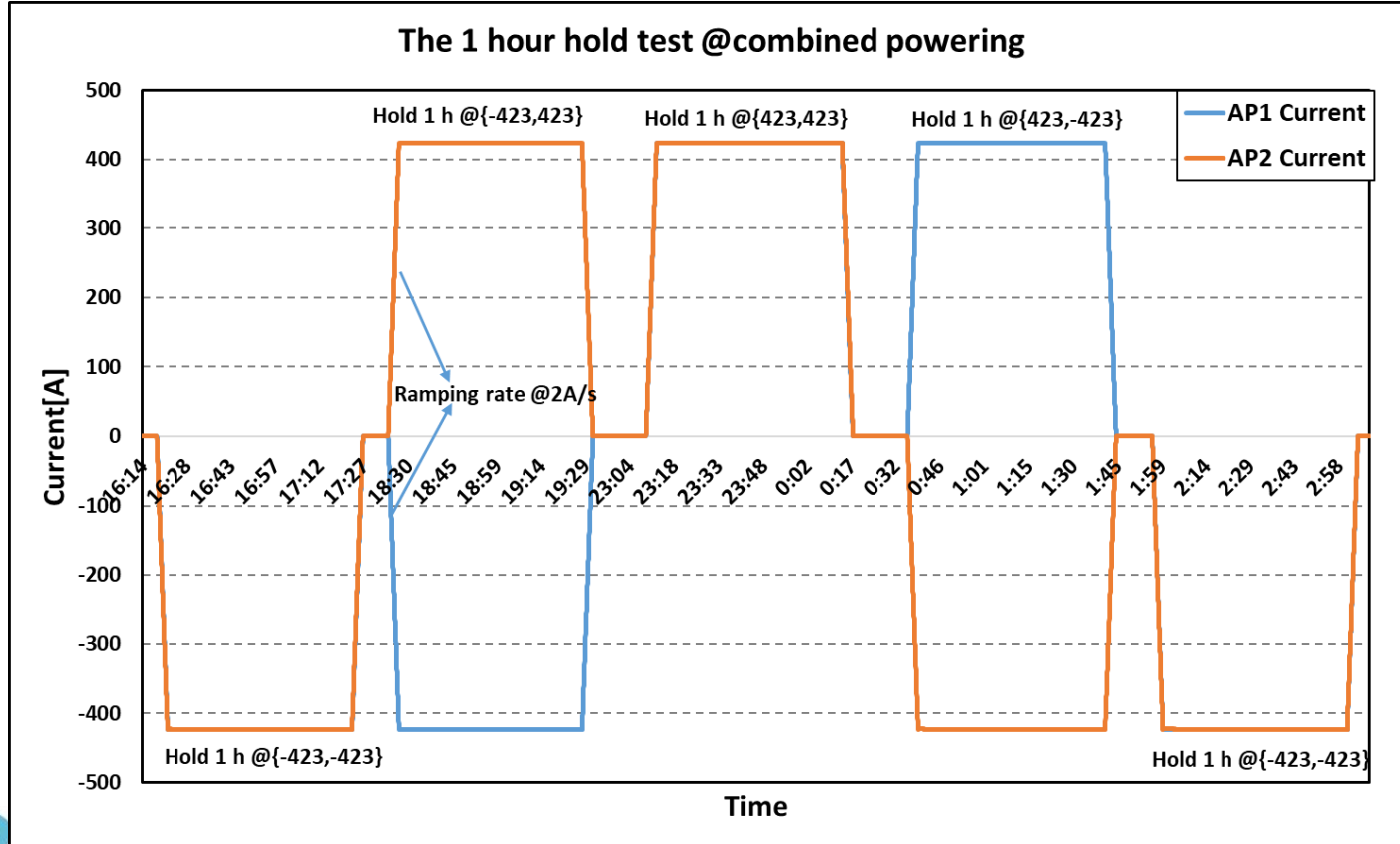
AP1: a total of 123 quenches
AP2: a total of 72 quenches

At the end of the second thermal cycle, the magnet tends to be stable.

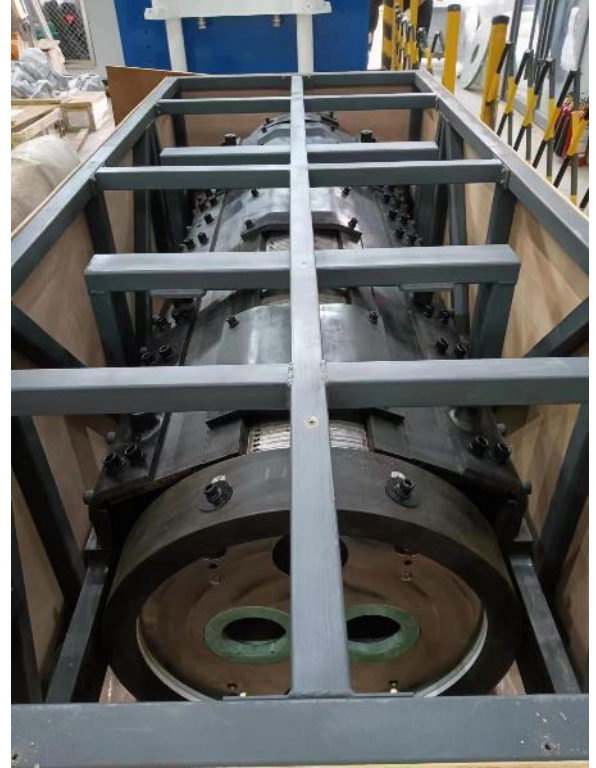
Test of MCBRD02 (Feb. ~May 2022)



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Assembly of MCBRD03 (Jul. 2022)



Test of MCBRD03 (Jul. 2022)



Test steps (Coil-Ground)

EDMS 2363906

Magnet reception at room temperature

3240 V

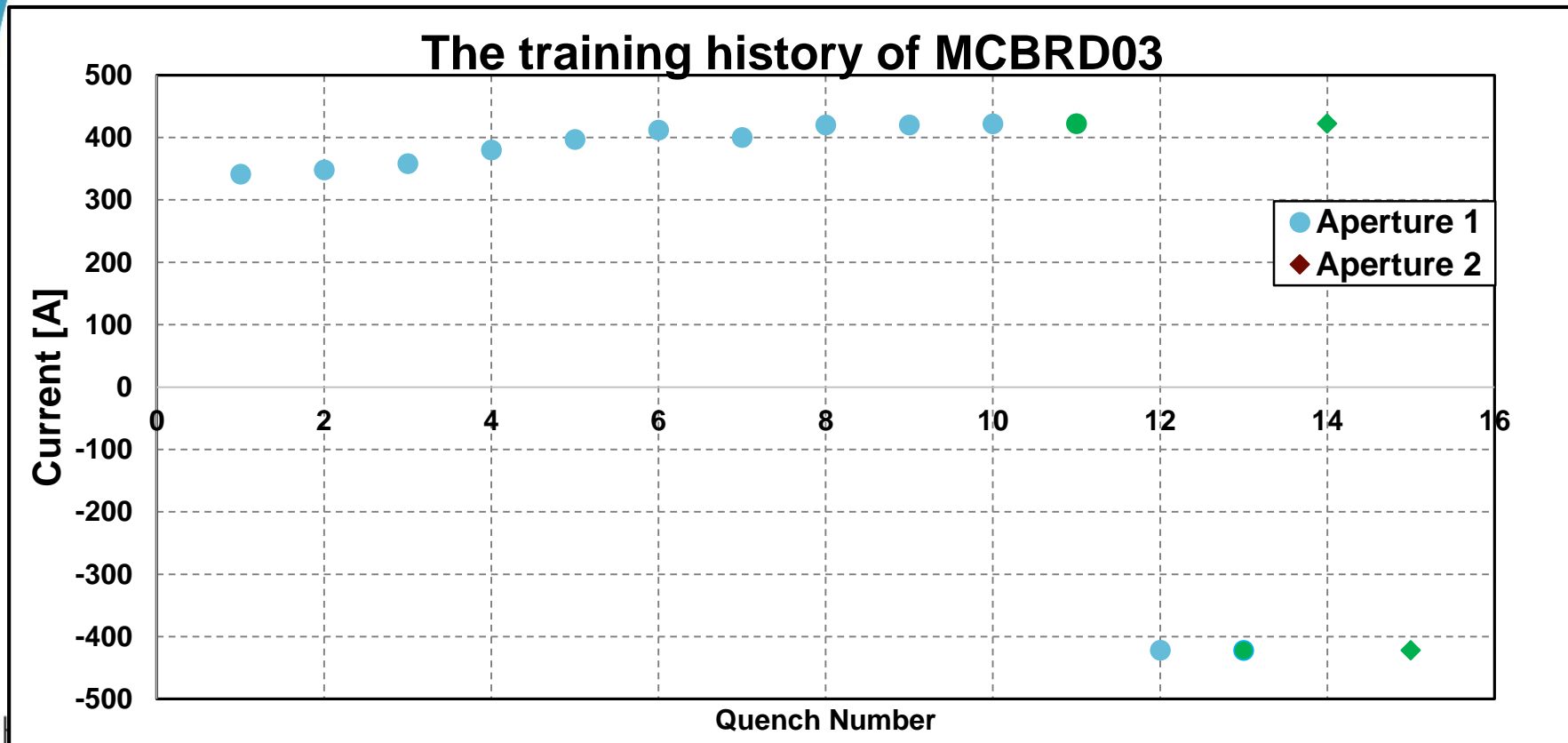
Magnet in cryostat in Liquid helium (1.9 or 4.5 K)

1620 V

Magnet after powering test at RT

330 V

Test of MCBRD03 (Jul. 2022)



Summary

- MCBRD02 has passed all the test procedures and has been shipped to CERN.
- From CB09 important modifications to the design and fabrication procedures have been adopted, to improve the training performance of the CCT coils
- CB09, CB12 and CB13 tested at IHEP show significant improvement of the training performance.
- MCBRD03, consists of CB09 and CB12, is being tested at IMP and up to now the test results are very good.



Thanks for your attention

