



苏州八匹马超导科技有限公司

Status of MCBRD magnets

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Progress of series production

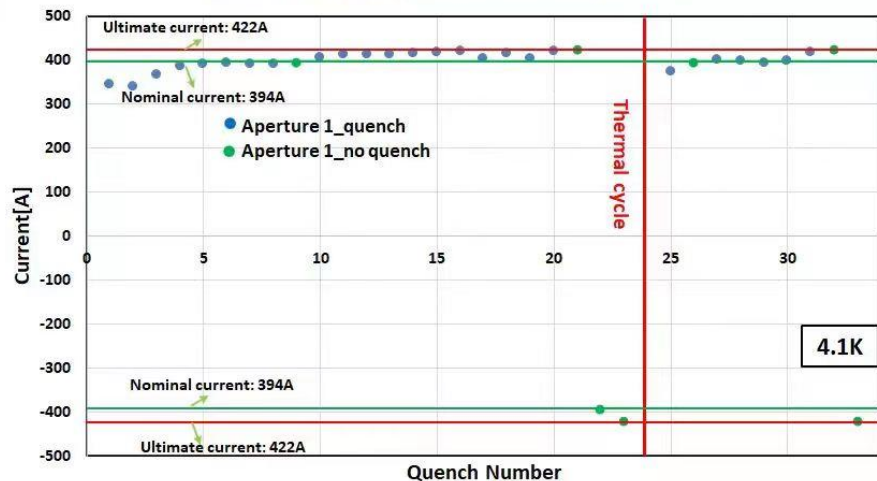


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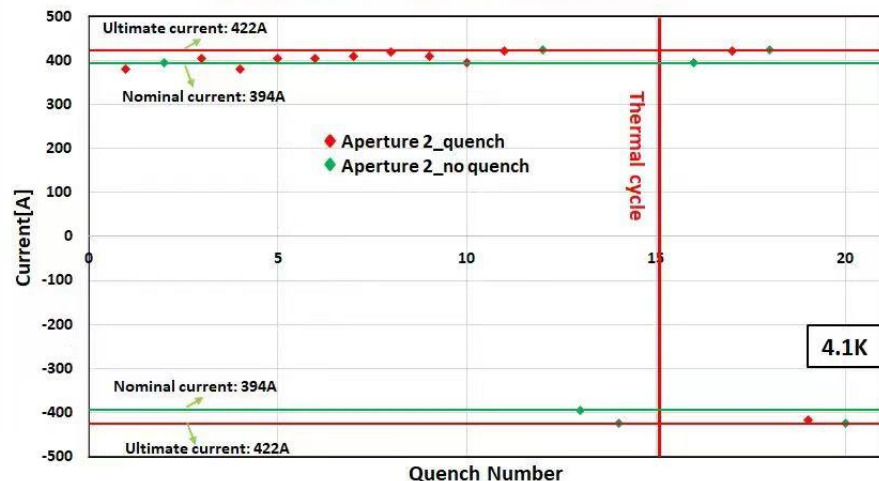
	Coil name	Winding method	Location	Coil stand-alone performance (4.2 K)	Magnet performance at 4.2 K
MCBRD01	MCBRD_CB01	Wet wind	CERN	530 A	Both apertures reached ultimate current 422 A, and passed 4-hour stability test
	MCBRD_CB03	Direct wind		410 A	
MCBRD_CB02		Direct wind	CERN	Failed to reach the design current	
MCBRD02	MCBRD_CB04	Wet wind	CERN	422 A	Both apertures reached ultimate current 422 A, and passed 4*1 hour stability test
	MCBRD_CB06	Wet wind		530 A	
MCBRD_CB05, 07, 08		Wet wind	IHEP		
MCBRD03	MCBRD_CB09	Direct wind with new channel size	CERN	530 A	Both apertures reached ultimate current 422 A, and passed stability test
	MCBRD_CB12	Direct wind with new channel size		526 A (25 quenches)	
MCBRD_CB14		Direct wind with new channel size	BAMA	530 A (30+34 quenches), put in quarantine	
MCBRD04	MCBRD_CB13	Direct wind with new channel size	On the way to CERN	530 A (20+33 quenches)	Both apertures reached ultimate current 422 A, and passed stability test
	MCBRD_CB17	Direct wind with new channel size		524 A (47 quenches)	
MCBRD_CB10, 11, 15, 16		Shipped to CERN for fabrication			
<u>MCBRD05</u>	MCBRD_CB18	Direct wind with new channel size	BAMA	532 A (42 quenches)	<u>Assemble of MCBRD05 will be started in March</u>
	MCBRD_CB19	Direct wind with new channel size	BAMA	530A (68 quenches)	
	MCBRD_CB20	Direct wind with new channel size	IHEP	<i>Waiting for stand-alone test</i>	-
	MCBRD_CB21	Direct wind with new channel size	BAMA	<i>Waiting for stand-alone test</i>	
	MCBRD_CB22	Direct wind with new channel size	BAMA	<i>Waiting for stand-alone test</i>	
	MCBRD_CB23	Direct wind with new channel size	BAMA	<u>VPI</u>	

Training history of MCBRD04

The training history of MCBRD04@Aperture 1



The training history of MCBRD04@Aperture 2



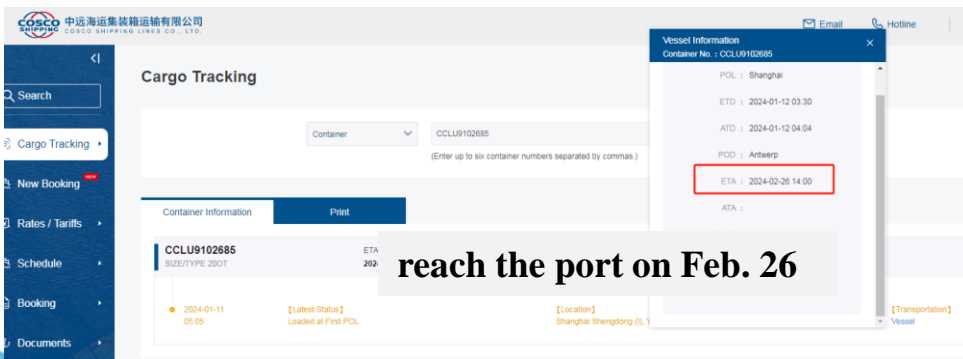
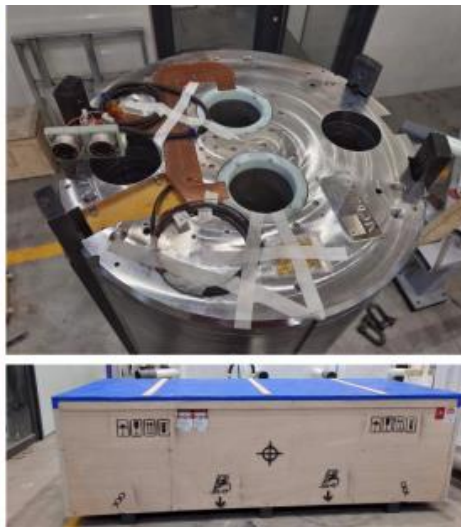
1st test:

- AP1(CB17, 47 quenches 524A) reached $\pm 422A$ after 15 quenches.
- AP2(CB13, 53 quenches 530A) reached $\pm 422A$ with 10 quenches.

After thermal cycle (2023.11):

- AP1 reached 394A after 1 quench.
- AP2 reached 394A without quench.

Transportation of MCBRD04



reach the port on Feb. 26

Container Information	
CCLU9102685	ETA 2024-02-26 14:00
SIZE/TYPE 200T	
2024-01-11 05:05	[Latest Status] Loaded at First PCL
	[Location] Shanghai Shangdong (L, Y)
	[Transportation] Vessel

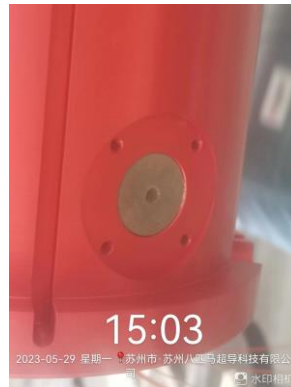
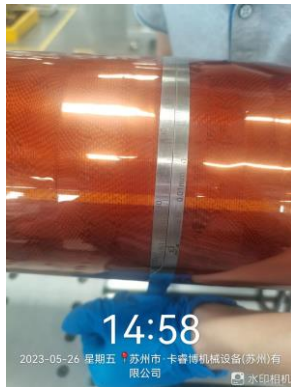
Vessel Information	
Container No. : CCLU9102685	
POL : Shanghai	
ETD : 2024-01-12 03:30	
ATD : 2024-01-12 04:04	
POD : Antwerp	
ETA : 2024-02-26 14:00	
ATA :	

- MCBRD04 is on the way to CERN.

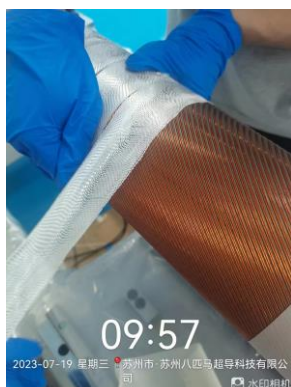
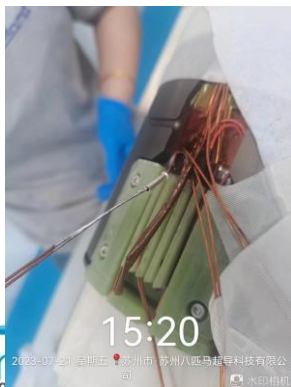
Manufacture of CB18



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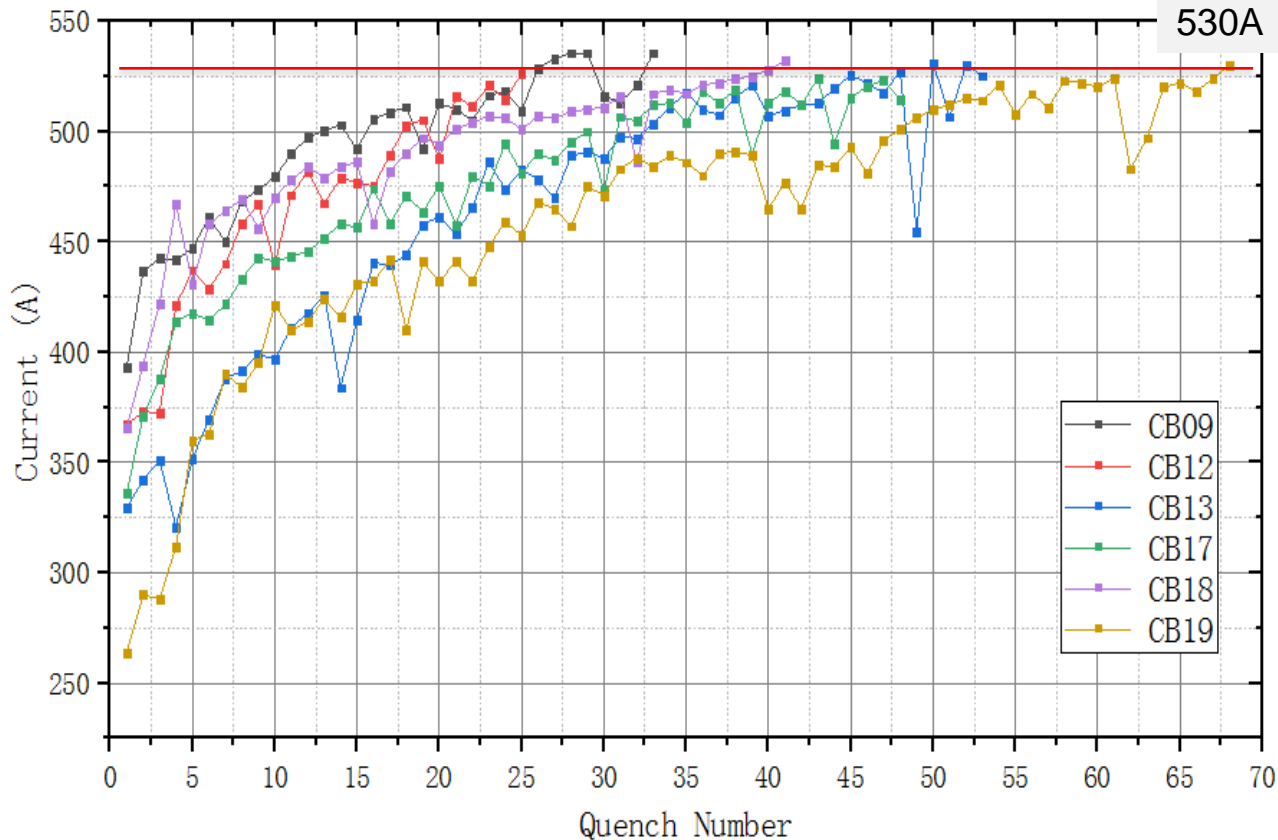
Manufacture of CB19



Stand-alone test results of CB09~CB19



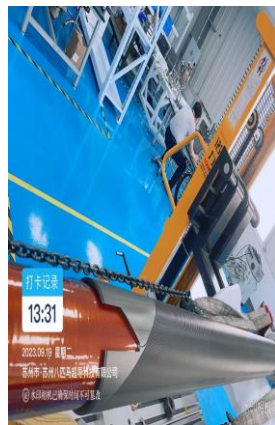
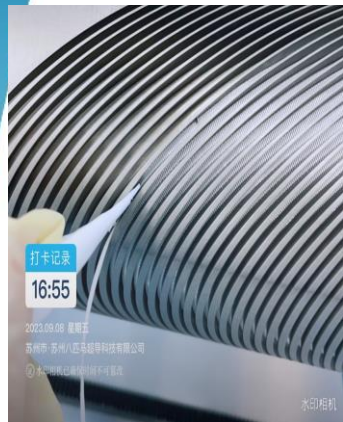
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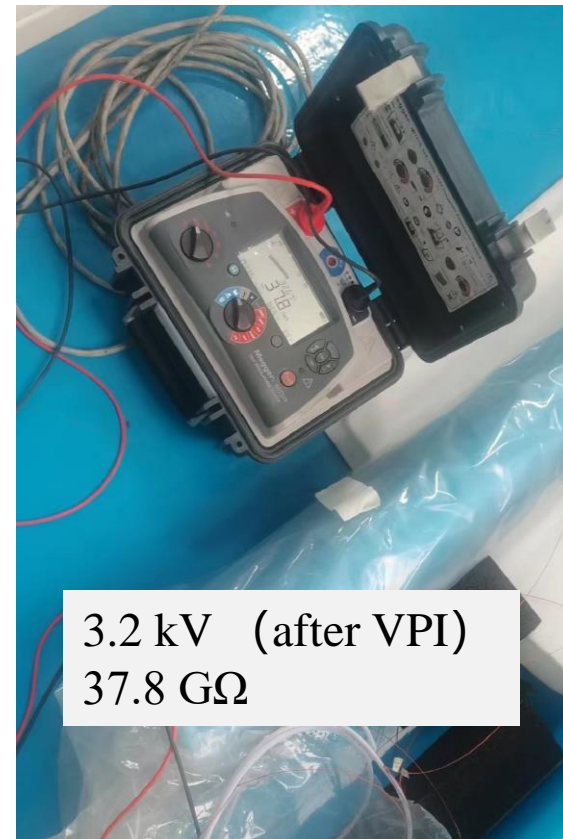
Test of CB18&19 (2023.10)



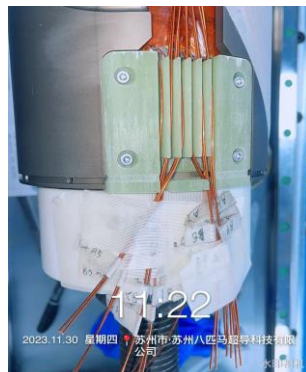
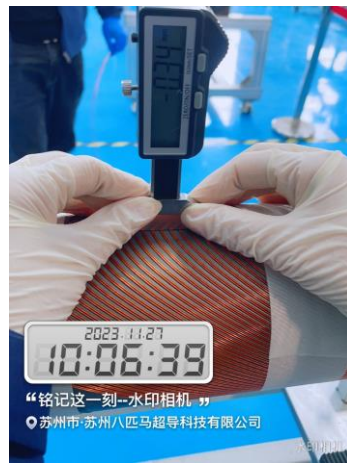
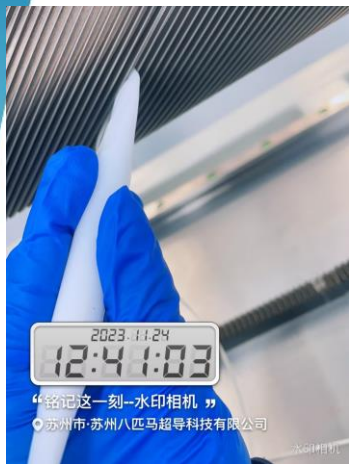
Manufacture of CB20 (2023.09)



Manufacture of CB21 (2023.10)



Manufacture of CB22 (2023.12)



Manufacture of CB23 (2024.01)



- Now coil winding of CB23 has finished, joints welding and VPI will be implemented this month.

Summary



- 4 series CCT magnets have been fabricated and shipped to CERN. All of them reached the ultimate current and passed the field quality test.
- The 2 apertures (CB18, 19) of MCBRD05 have finished fabrication and stand-alone test, assemble of MCBRD05 will be started in March.
- 3 extra apertures for the following magnets have finished fabrication, and waiting for stand-alone test.
- Production rate for the rest of series magnets: every 3 month per magnet
- Components for 2 CCT magnets have been shipped to CERN from IHEP, to verify the performance with components from China and CERN fabrication process.