



Update on D2 correctors

Yingzhe Wang



Progress of series production



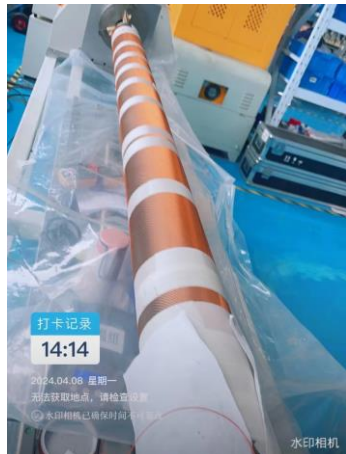
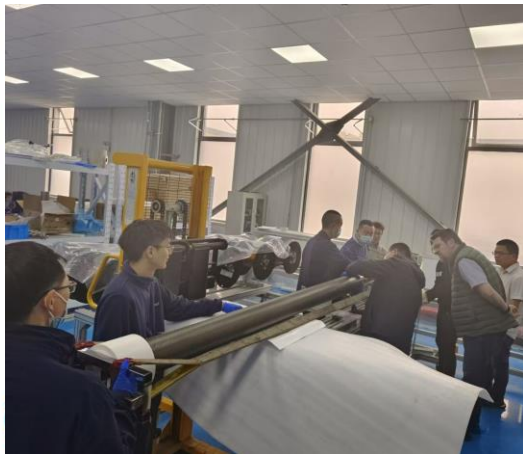
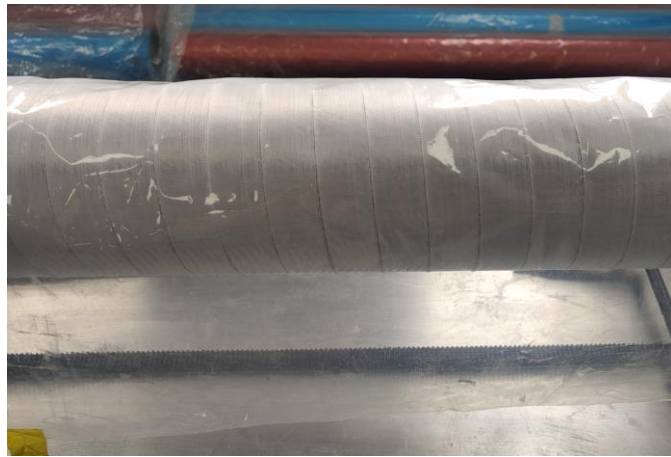
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		Coil name		Winding method	Location	Coil stand-alone performance (4.2 K)		Magnet performance at 4.2 K
MCBRD01	AP1	MCBRD_CB01		Wet wind	CERN	530 A		Both apertures reached ultimate current 422 A, and passed 4-hour stability test
	AP2	MCBRD_CB03		Direct wind		410 A		
		MCBRD_CB02		Direct wind	CERN	Failed to reach the design current		
MCBRD02	AP2	MCBRD_CB04		Wet wind	CERN	422 A		Both apertures reached ultimate current 422 A, and passed 4*1 hour stability test
	AP1	MCBRD_CB06		Wet wind		530 A		
		MCBRD_CB05, 07, 08		Wet wind	IHEP			
MCBRD03	AP2	MCBRD_CB09		Direct wind with new channel size	CERN	530 A		Both apertures reached ultimate current 422 A, and passed stability test
	AP1	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	AP2	MCBRD_CB13		Direct wind with new channel size	CERN	530 A (20+33 quenches)		Both apertures reached ultimate current 422 A, and passed stability test
	AP1	MCBRD_CB17		Direct wind with new channel size		524 A (47 quenches)		
		MCBRD_CB10, 11, 15, 16		Shipped to CERN for fabrication				
MCBRD05	AP1	MCBRD_CB18		Direct wind with new channel size	IMP	532 A (42 quenches)		Assembled in April, <i>test in June</i>
	AP2	MCBRD_CB19		Direct wind with new channel size		530A (68 quenches)		
MCBRD06	MCBRD_CB20		Direct wind with new channel size	IHEP	530A (68 quenches)	2nd test after thermal cycle is ongoing		Assemble in July, test in August
	MCBRD_CB21		Direct wind with new channel size	IHEP	500 A (81quenches)			
MCBRD07	MCBRD_CB22		Direct wind with new channel size	IHEP	Waiting for stand-alone test		<i>Assemble in October, test in November</i>	
	MCBRD_CB23		Direct wind with new channel size	IHEP	Waiting for stand-alone test			
MCBRD08	MCBRD_CB24		Direct wind with new channel size	BAMA	Waiting for VPI		<i>Assemble in January 2025, test in February 2025</i>	
	MCBRD_CB25		Direct wind with new channel size	-	<i>Fabrication in June</i>			
MCBRD09	MCBRD_CB26		Direct wind with new channel size	-	<i>Fabrication in August</i>		<i>Assemble in April 2025, test in May 2025</i>	
	MCBRD_CB27		Direct wind with new channel size	-	<i>Fabrication in October</i>			
MCBRD10	MCBRD_CB28		Direct wind with new channel size	-	<i>Fabrication in December</i>		<i>Assemble in July 2025, test in August 2025</i>	
	MCBRD_CB29		Direct wind with new channel size	-	<i>Fabrication in February, 2025</i>			

Manufacture of CB24



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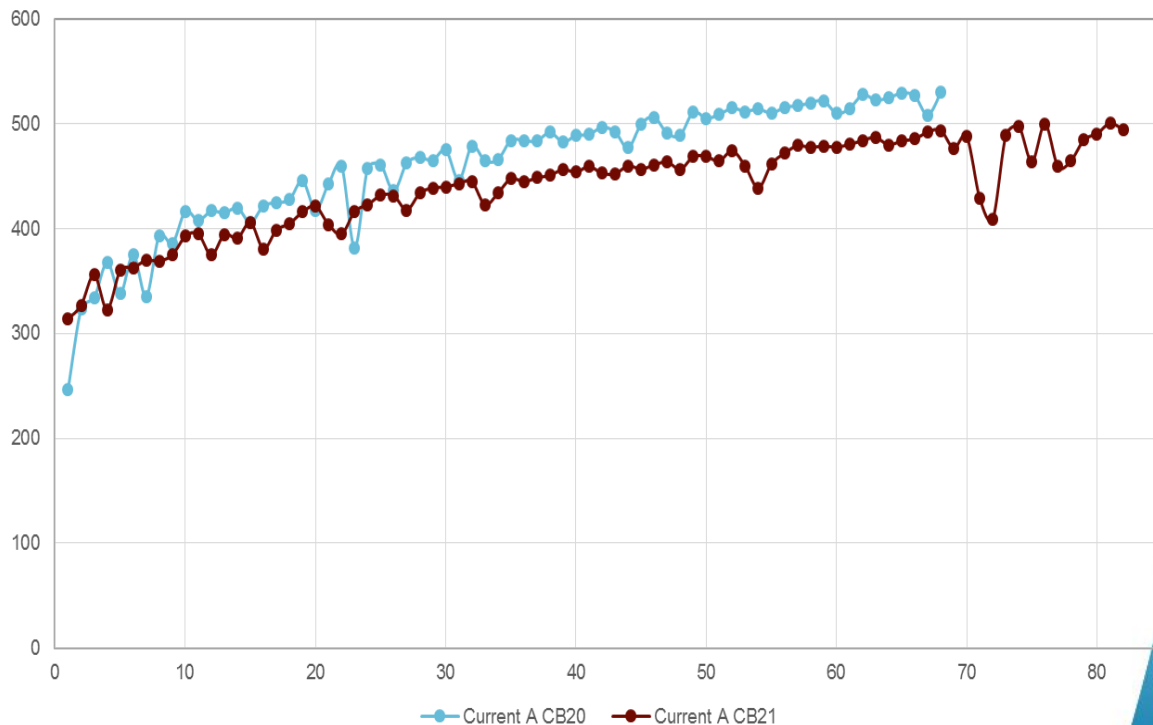
Stand-alone test of CB20, CB21



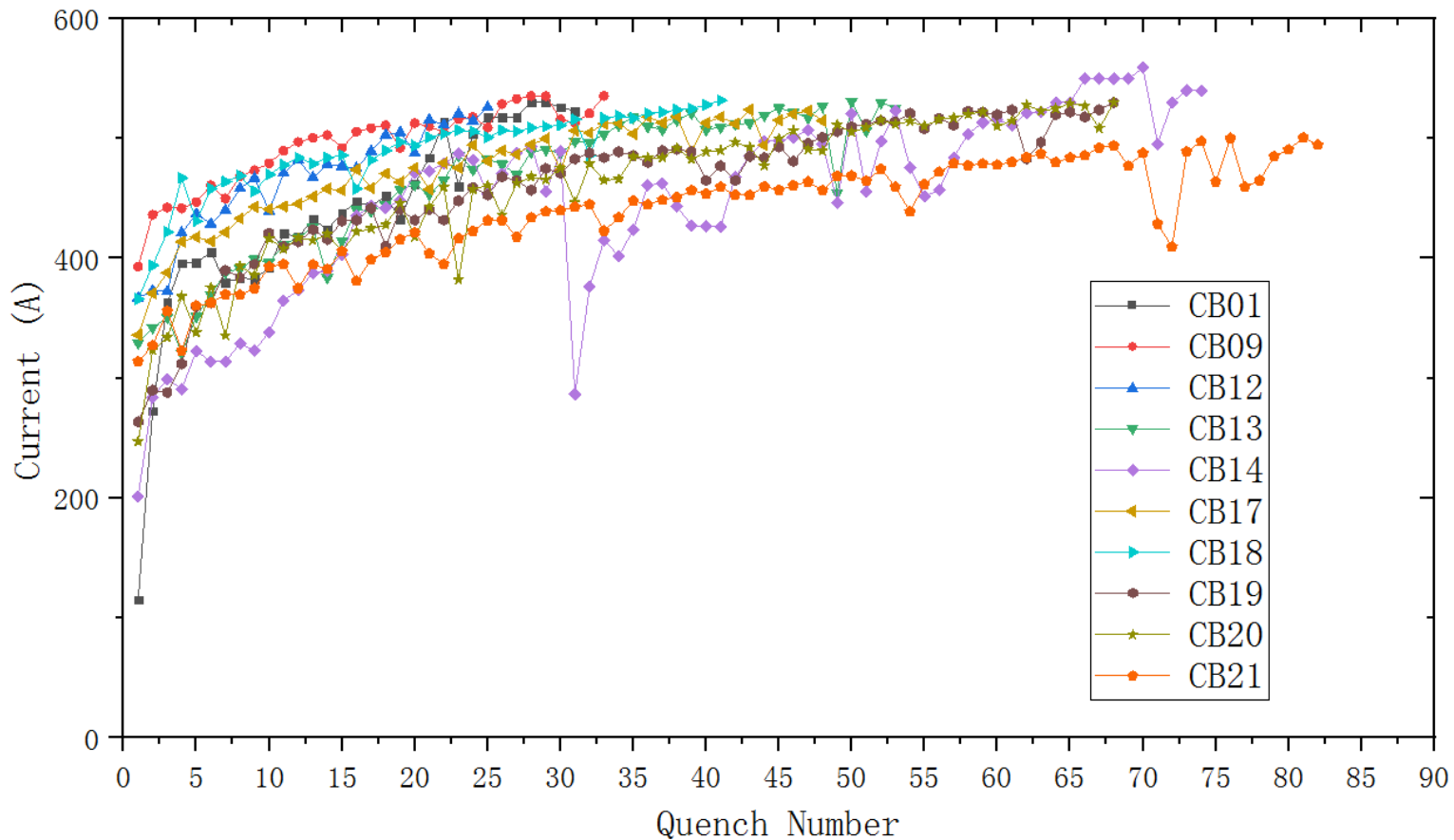
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Training history of CB20 and CB21 (1st test)



Stand-alone test of All Apertures



Stand-alone test of All Apertures

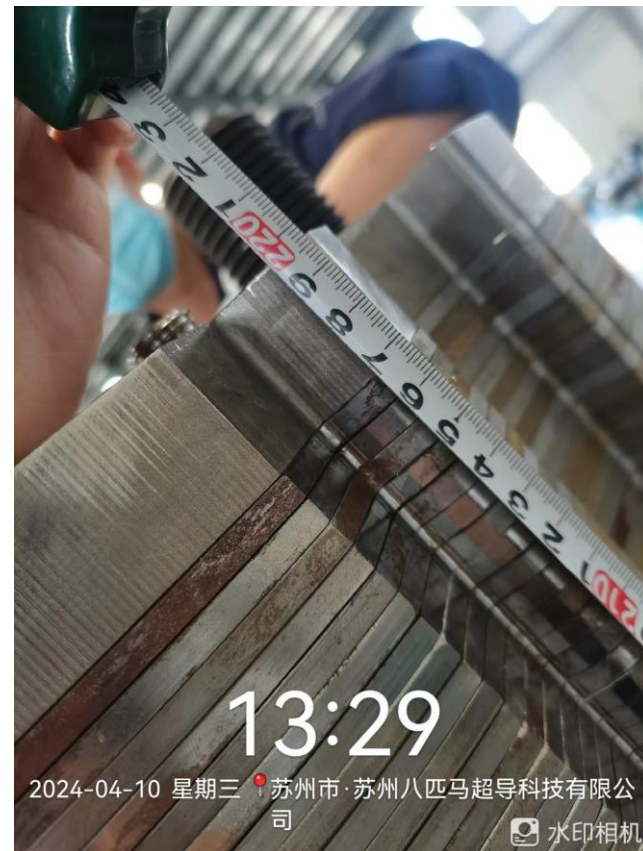
	groove depth	layers of GF tape on the bottom	inner former		outer former		injection time	Quench number	
			GF size	overlap	GF size	overlap			
CB09	5.2	2*0.14	0.18*50	√	0.18*50	√	3h	33	
CB12	4.9±0.1	2*0.14	0.18*50	√	0.18*50	√	5-6h	25(526A)	
CB13	4.9±0.1	2*0.14	0.18*50	√	0.18*50	√	5-6h	52	
CB14	4.9±0.1	2*0.14	0.18*50	√	0.18*50	√	5-6h	64(de-training)	
CB17	4.9±0.1	2*0.14	0.18*50	√	0.18*50	√	5-6h	48	
CB18	4.9±0.1	2*0.14	0.18*50	√	0.18*50	√	5-6h	41	
CB19	4.9±0.1	2*0.14	0.18*50	√	0.11*20	√	5-6h	68	
CB20	4.9±0.1	2*0.14	0.11*20	√	0.11*20	√	3h	68	2nd test after thermal cycle is ongoing
CB21	4.9±0.1	2*0.14	0.18*50	√	0.18*50	√	6-7h	81(500A)	
CB22	4.9±0.1	2*0.14	0.11*20	√	0.11*20	√	6-7h	-	
CB23	4.9±0.1	2*0.14	0.11*20	√	0.11*20	√	5-6h	-	
CB24	4.9±0.1	2*0.14	0.11*20	×	0.11*20	×	-	-	



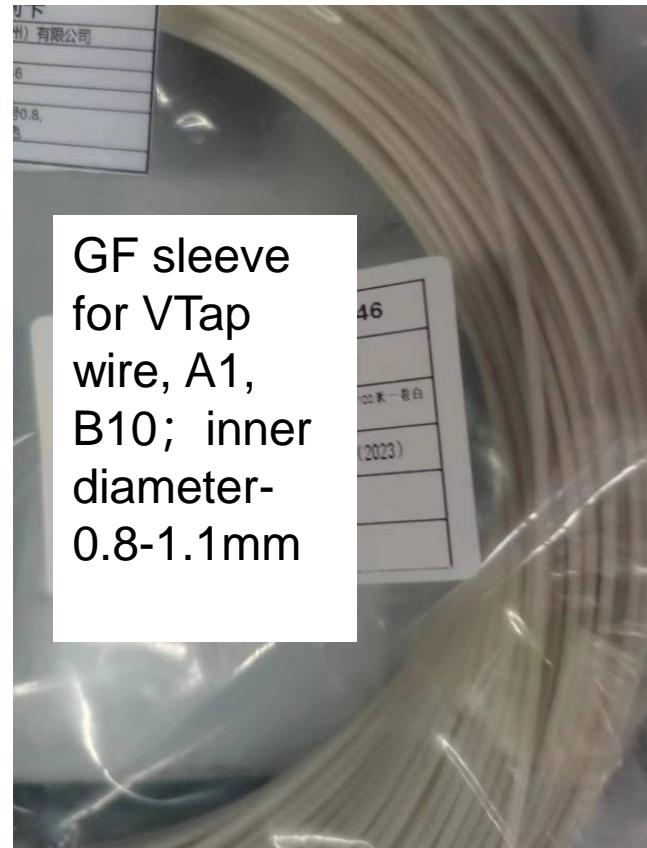
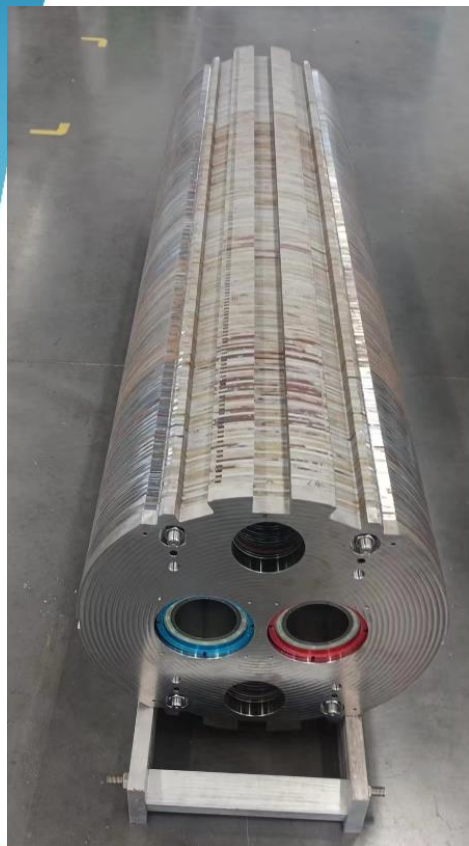
Assemble of MCBRD05



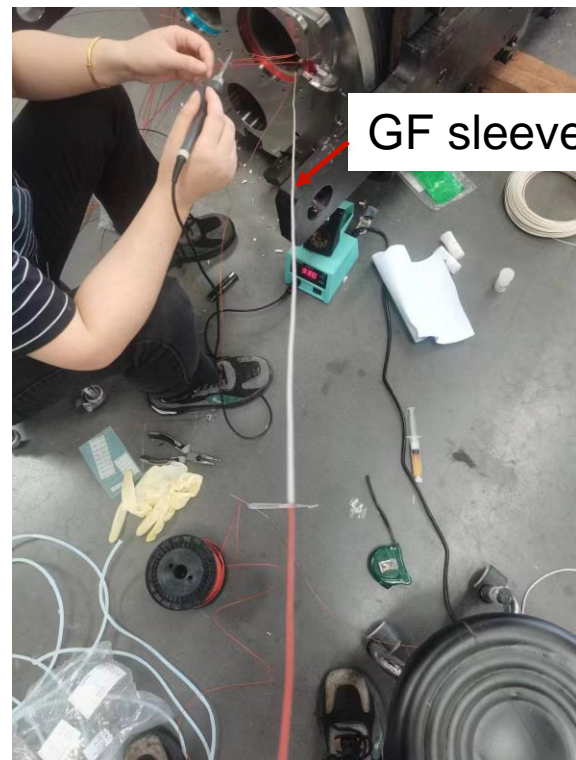
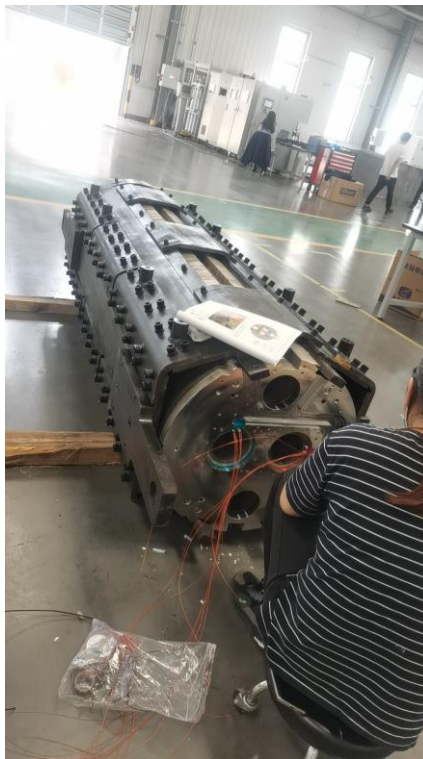
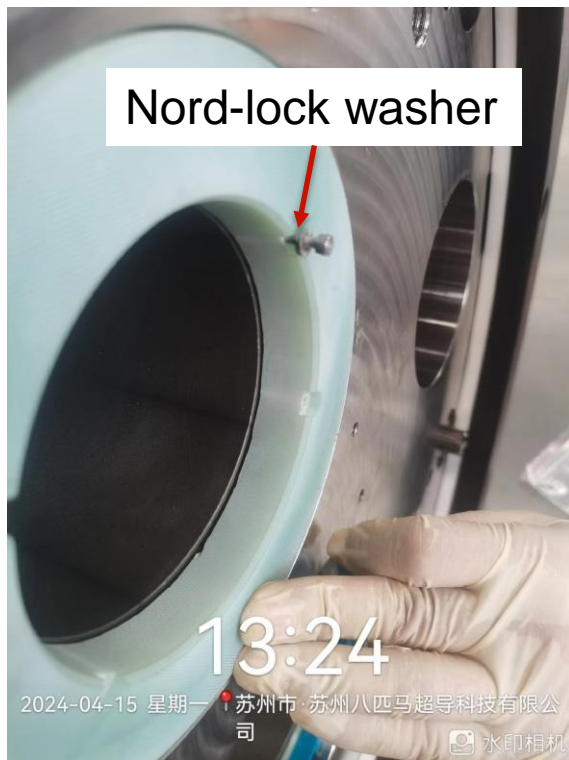
End plate to end plate: 2197mm;
Next step: magnetic measurement;
assemble the Ultem pieces.



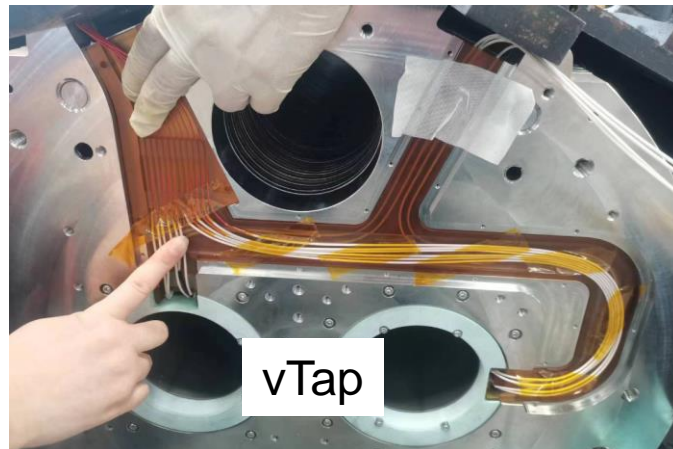
Assemble of MCBRD05



Assemble of MCBRD05



Assemble of MCBRD05



Assemble of MCBRD05



Packaging of MCBRD05

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.
- MCBRD05 has finished assemble and test of MCBRD05 will be started in June, 2024.
- Apertures of MCBRD06 (CB20, CB21) have finished fabrication and stand-alone test is ongoing.
- Apertures for MCBRD07 (CB22, CB23) have finished fabrication.
- 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.