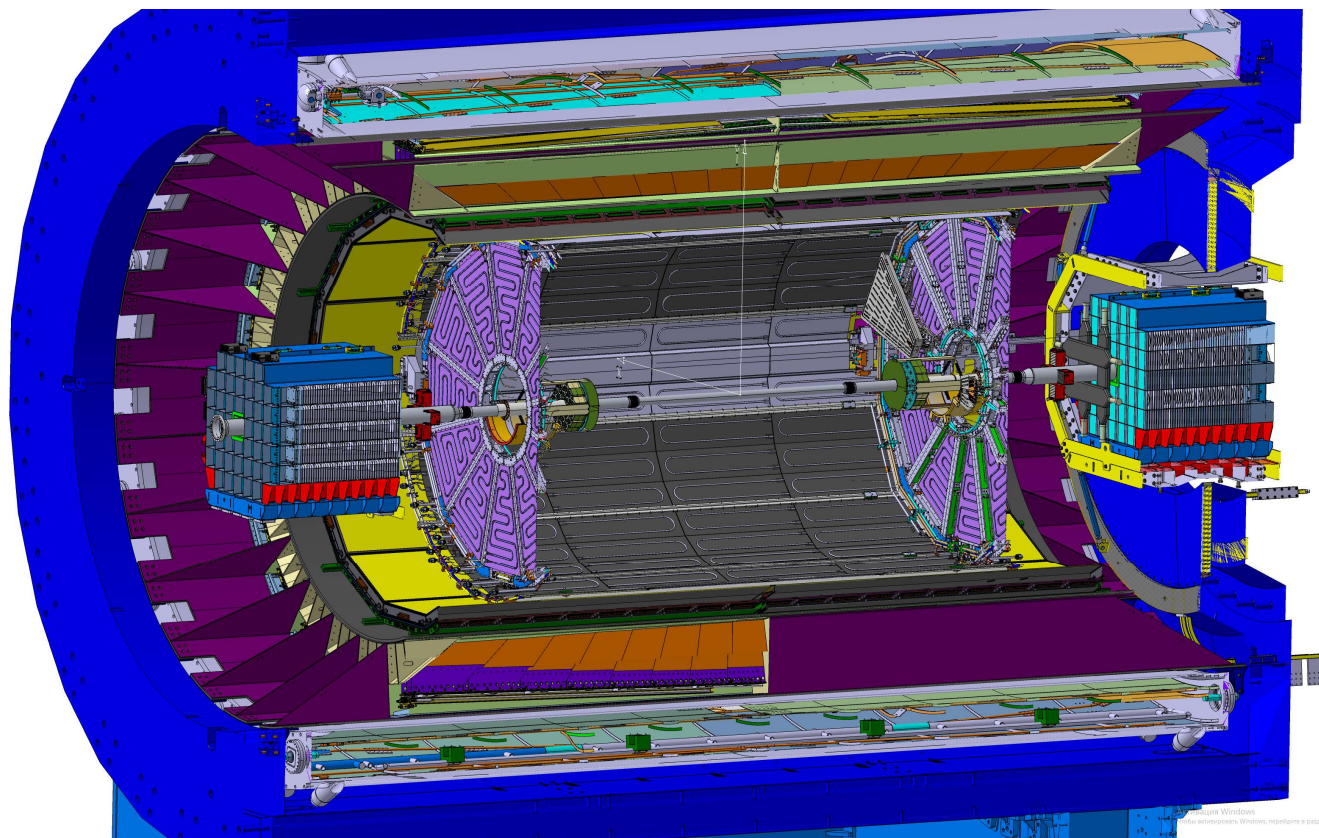


MPD ITS : mechanics, cooling and communications

*Seminar on Chinese-JINR Cooperation within the MPD ITS Project,
VB LHEP, Dubna 23-24 July 2024*

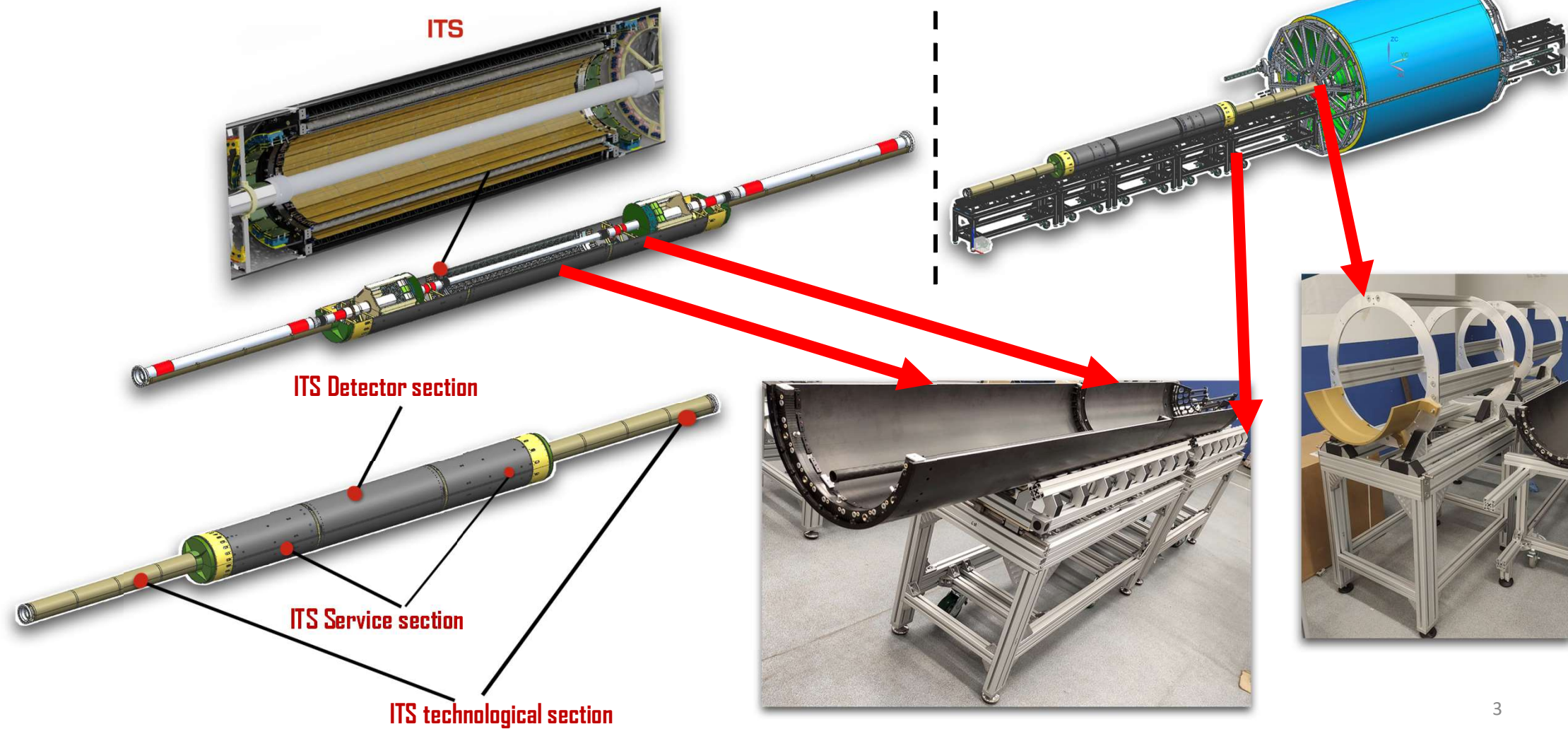




The innermost part of the MPD is 9 meters UHV compatible thin-wall beam pipe, two FFDs to be squeezed into the TPC bore with clearance of around 4,5 mm at the level of 4,5 meters up the floor

Solution proposed by Sergey Igolkin (SPbSU)

2022 - 2024 finalization of work on th MPD ITS mechanics by Denis Andreev+4 (JINR)

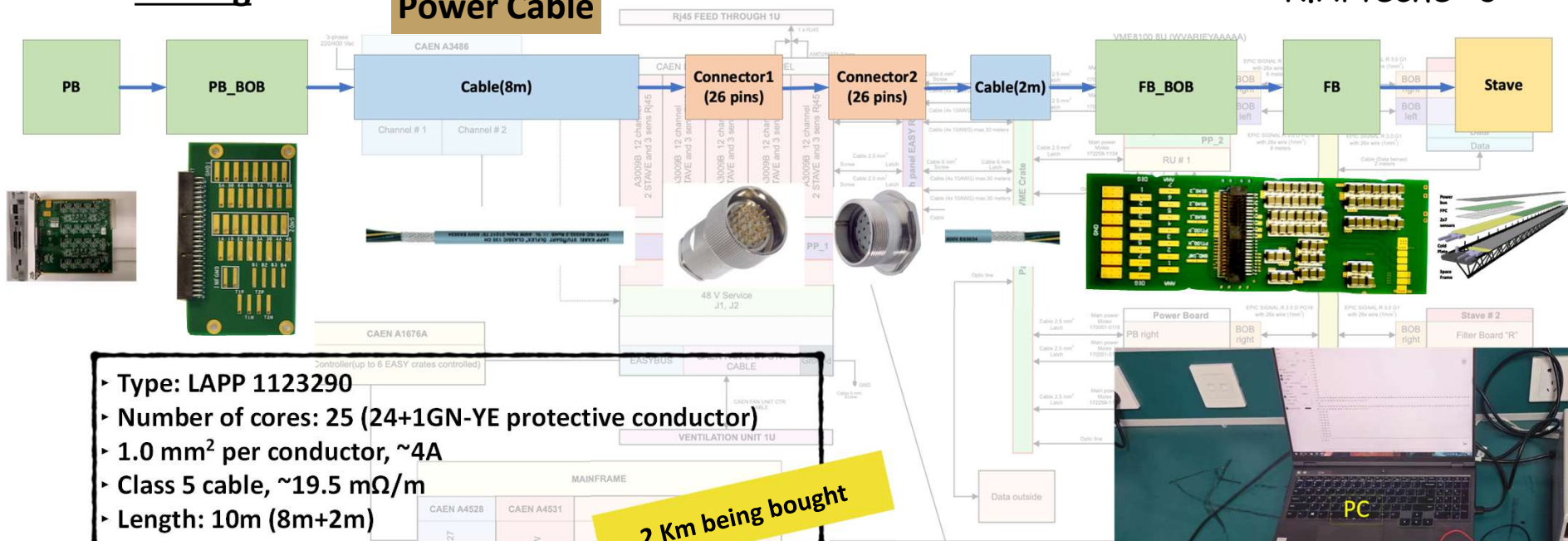


Cabling

Power Cable

Electronics

R.Arteche +3

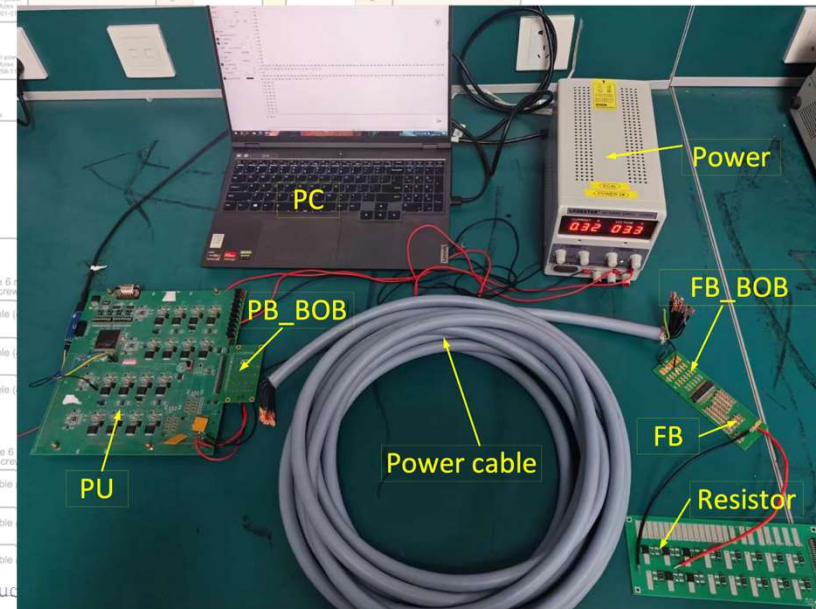


- ▶ Type: LAPP 1123290
- ▶ Number of cores: 25 (24+1GN-YE protective conductor)
- ▶ 1.0 mm² per conductor, ~4A
- ▶ Class 5 cable, ~19.5 mΩ/m
- ▶ Length: 10m (8m+2m)

2 Km being bought

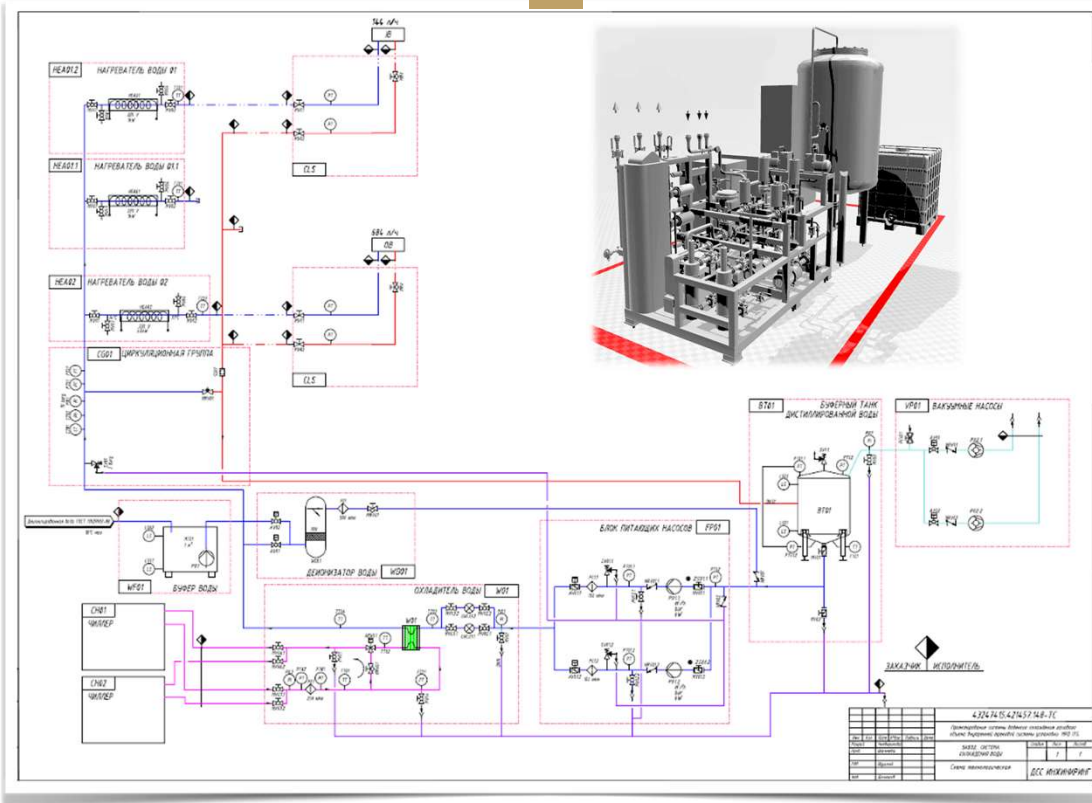
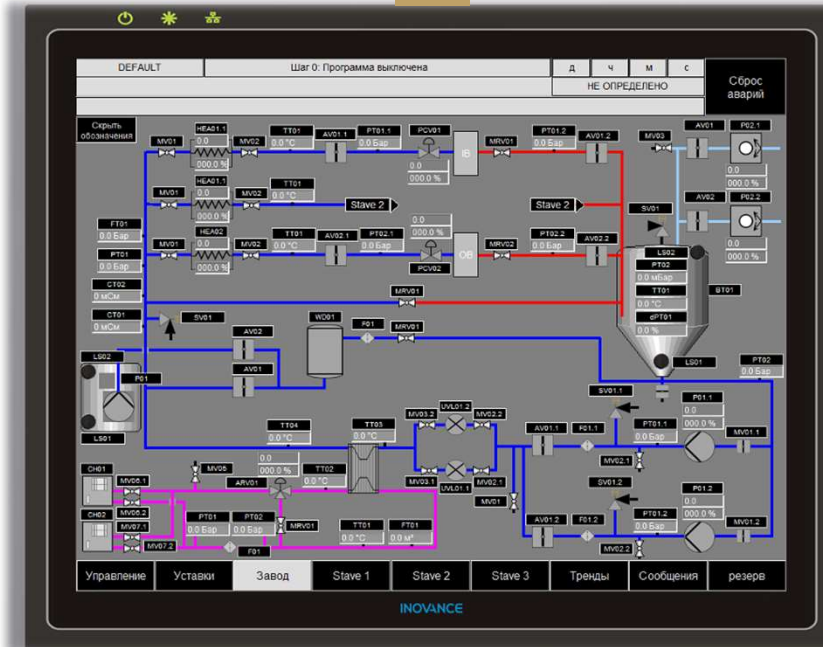
Load resistance(Ω)	Voltage at PU(V)	Voltage at load(V)	Current(A)	Voltage drop(V)	Resistance between PU and load(Ω)
1.2	1.805	1.313	1.094	0.492	0.450
1.8	1.802	1.442	0.801	0.360	0.449
4	1.798	1.617	0.404	0.181	0.448
5	1.798	1.649	0.330	0.149	0.452
7.5	1.798	1.696	0.226	0.102	0.451

Test station



Cooling Plant for Leak-less water cooling of the ITS

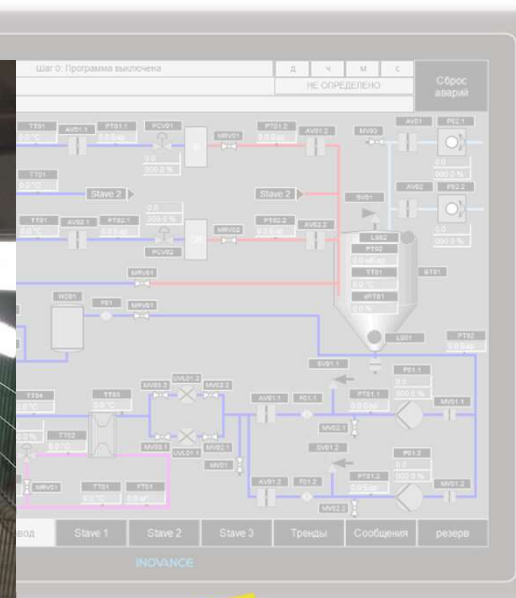
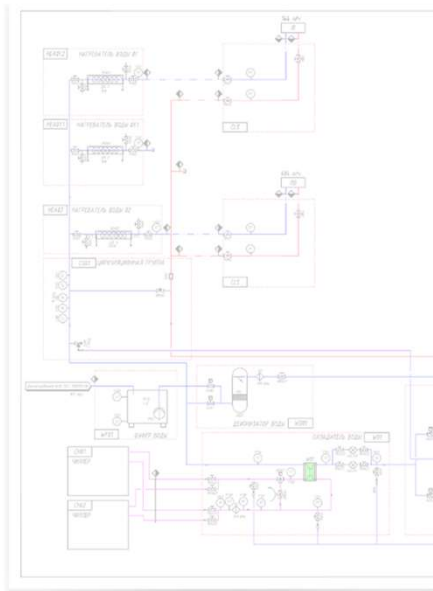
V.Elsha+DSSE

TX

ATX


Barrel type	No. of Staves	No. of Panels	No. of Circuits	Power in the circuit [W]	Flow [l/h]
IB	96	96	24	240	288
OB	54	108	9	2187	684
Total ITS	150	204	33	2427	972

V.Elsha +DSSE

Preparation of the location of the cooling stand in room 216.



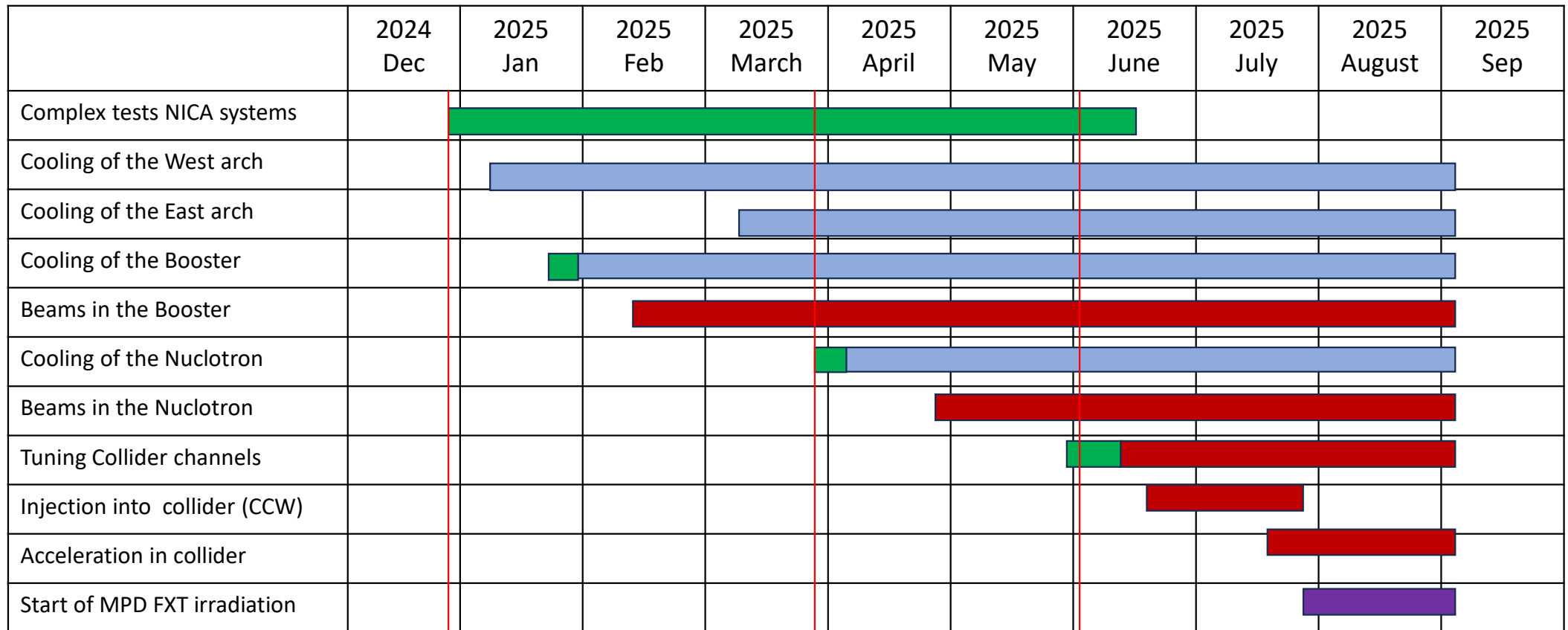
To be finished by Dec. 2024

Next:

- Delivery of instrumentation and control equipment (Oct. 2024).
- Delivery of installation materials (Oct. 2024)
- Production and tests (Jan. 2025).

Plan for NICA beams preparation campaign

From 25.12.2024 till 05.09.2025



Extracted from A.Butenko report at NICA Coordination Meeting

Milestones of the MPD assembling in 2024-2025

	Year 2024	
1	Январь 25 – Март 10	Охлаждение Соленоида то температуры ниже жидкого азота - 72К
2	Апрель – Июнь 25	Прокладка труб водяного охлаждения и кабелей питания в зале MPD для источников питания Соленоида и корректирующих катушек.
3	Апрель – Август 31	Прокладка Криогенных инфраструктуры по постоянной схеме LN2 , LHe (риски поставки от ИЯФ Новосибирск)
4	Июль 18	Готовность к включению источников питания магнита. Ожидание готовности охлаждающе воды!
5	Июль 20 – Август 10	Отработка режимов включения источников питания и безопасной эвакуации энергии
6	September 1 – October 2	Cooling of solenoid to operational temperature 4K
7	October 5 - December 30	Magnetic Field mapping at B=0.2T, 0.3T, 0.4T, 0,45T, 0.5T, 0,55T
8	November 30	Leak-less Cooling System of TPC/Ecal readiness
9	November 30	40 Ecal supermodules (out of total number 50 ready).
10	December 20	Assembly of TPC gas chamber with readout proportional chambers readiness
	Year 2025	
11	January 9 - January 17	Mounting of the CF support mainframe into the solenoid
12	January 9 - January 27	Assembly of the FHCal .
13	January 24 – January 27	Mounting sector-like Ecal supermodules
14	March 1 - March 27	Ounting of the TOF supermodules (установочные платформы с двух сторон магнитопровода)
15	April 2 - June 10	Integration TPC
16	January 13 - January 30	Прокладка кабелей из детектора к электронным стойкам на платформе
17	June16 – June 27	MPD beampipe integration with the TPC
18	July 2025	The MPD readiness to take to do the first measurements !

Extracted from V.Golovatyuk report at NICA Coordination Meeting