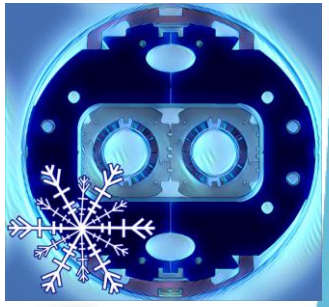
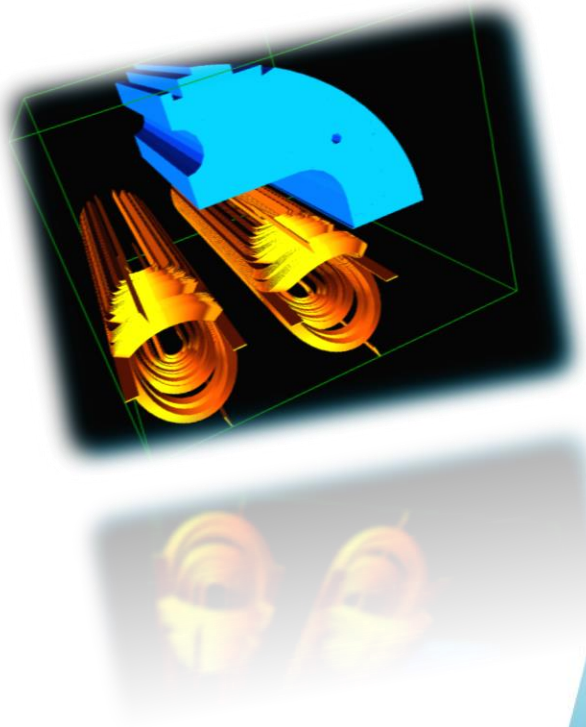




- Introduction –

MBRD D2 Short model dipole
Cold test interface meeting #01

B 2173 (SM18), CERN, 8th June 2017

A. Foussat, (TE MSC-LMF)

Indico n 645011

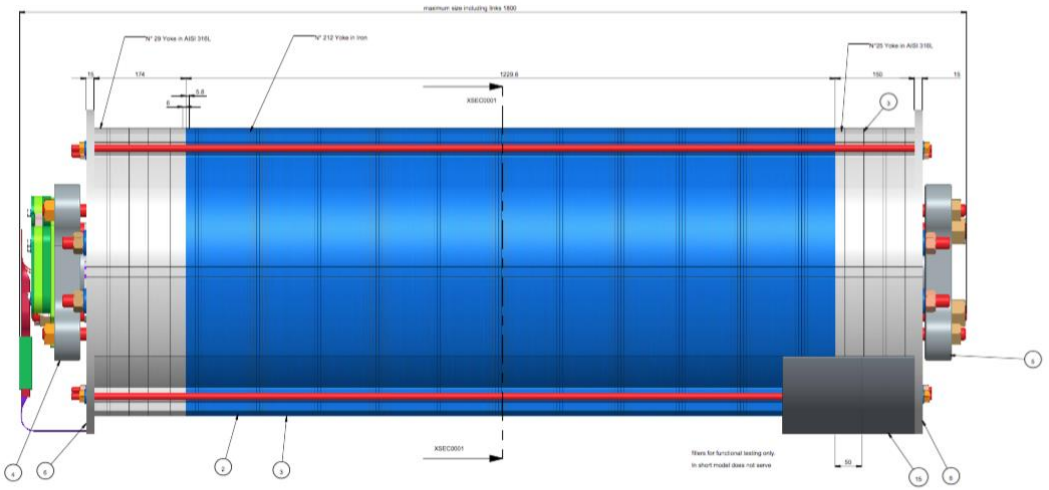
Agenda

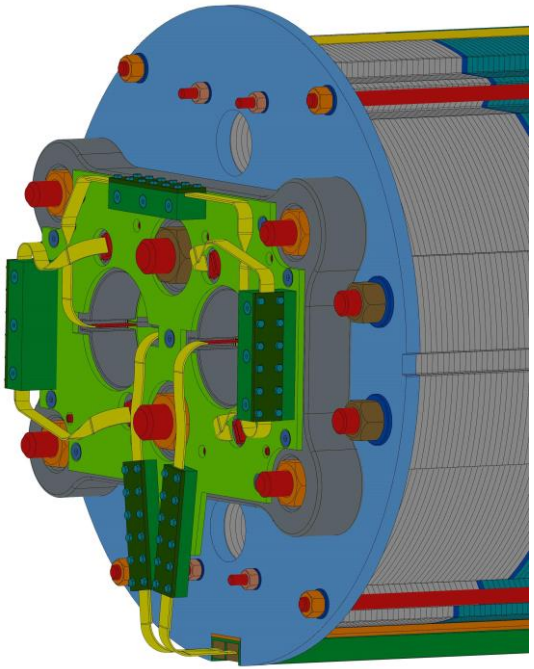
Time	Agenda Items
9 : 00 – 9 : 10	Introduction (CERN)
9 : 10 – 9 : 25	Presentation of D2 short model (layout, dimensions, interfaces, cables, structure design) (INFN)
9 : 25 – 9 : 40	Presentation of vertical test cryostat, main interfaces, common mechanical adaptation, (CERN TF)
9 : 40 – 10 : 00	Magnetic measurement requirements, (INFN) discussion on hardware adaptation, actions (CERN)
10 : 00 – 10 : 15	Instrumentation table by INFN, discussions (all)
10 : 15 – 10 : 30	Discussion on DAQ instrumentation interface : connectors types (QHs, VTs, SG, TS, leads lengths, number of channels (CERN TF, EN-MME M Guinchard)
10 : 30 -11 : 40	Optical strain fiber experience on MQX, discussion on OF sensing proposal (A. Chiuchiolo)
11 : 40 – 11 : 50	Discussion on interface preparation of coils, cryostat (structure preload, splices on leads, Cryostat interface flange) (INFN, CERN)
11 : 50 – 12: 00	QA Hi-Voltage test before transport (INFN) , at reception and after CD test (CERN
12 : 00 - 12 : 10	Quench protection test interface, Common Test scenario plan proposal (CERN), discussion (all).
12: 10 – 12: 15	Overall Schedule (INFN)

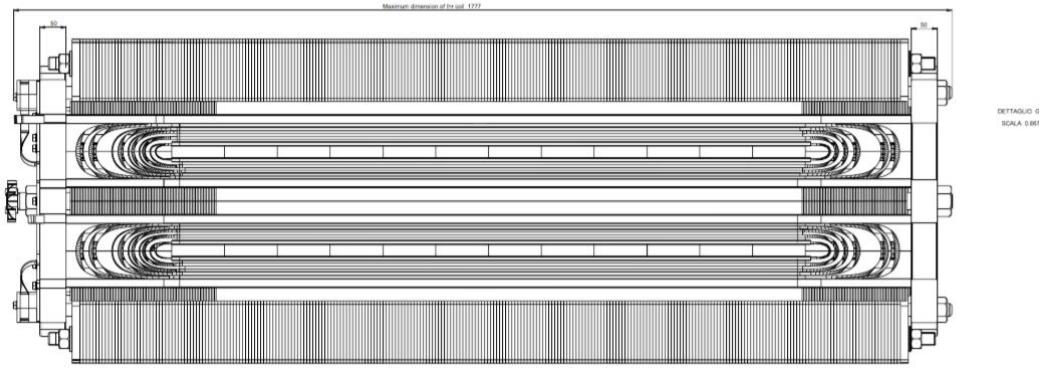
D2 features

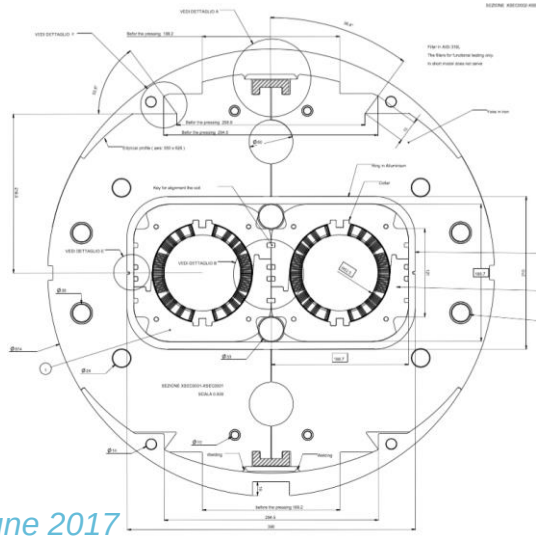
Parameter	Unit	Values
Bore field	T	4.5
Peak field	T	5.25
Current	kA	12.250
Temperature	K	1.9
Load line margin	(%)	35
Overall current density	A/mm^2	443
Stored energy	MJ	2.18
Differential inductance per meter	mH	27.3
Superconductor		Nb-Ti
Strand diameter	mm	0.825
Cu/No Cu		1.95
RRR		>150
Superconductor current density at 10 T, 1.9 K	A/mm^2	2100
Number of strands per cable		36
Cable bare width	mm	15.1
Cable bare mid thickness	mm	1.480
Keystone angle	degrees	0.90
Insulation thickness per side radial	mm	0.160
Insulation thickness per side azimuthal	mm	0.145

D2 Short model CAD drawing









Courtesy of INFN

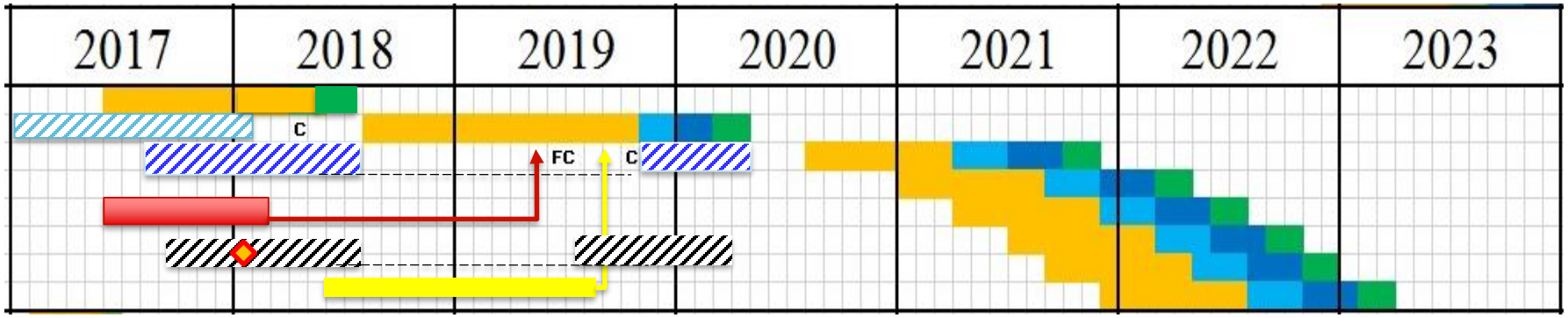
Objectives of meeting

- To complete the current table of instrumentation on Short model as function of past experience, recommendations;
- To confirm test cryostat, review test station environment interfaces (connectors, DAQ system)
- To confirm the interfaces features on the D2 short model
  - ✓ ***Instrumentation***
    - Mechanical strain gages wires, Strain Optical fibers (tbc)
    - Voltage taps wires
    - Quench heaters wires
    - T Sensors wires
  - ✓ ***Handling*** interface at horizonthal, vertical positions
  - ✓ Stabilized ***power leads*** extension
- To agree upon the actions of adaptation onto the cryostat flange for magnetic measurement, supporting.
- To discuss the test plan of short model;
- To discuss the options of technical support by CERN/EN-MME (choice or supply, installation of sensors, cabling) on short model on going contract and/or next prototype.

D2 Short model procurement scheme

- In the framework of CERN-INFN agreement, the short model D2 is being manufactured by ASG company under coordinatipn of INFN.
- CERN is providing main material for SM till series for the fabrication purpose;
- CERN is responsible for cold mass assembly (prototype and series) and cold testing;
- D2 short model is 1.6 m long equipped with dedicated instrumentation and ideally with connectors (tbc) at delivery,
- Expected delivery by end April 2018

D2 Schedule (May 2017 version)



Integration study / drawing of D2 cold mass, including MCBRD A/B (CERN)

Integration study / manufacture drawing of test cryostat / Series cryostat

CfT, Order of Collars, yoke raw material, shells supply for Prototype, series D2 + MCBRD (CERN)

Manufacture cold mass assembly drawing Proto & series and components dwgs updates

Procurement, commissioning of specific tooling (lifting, welding press, busbars, instrumentation, tool drawing)

Construction phase (INFN contractor)

Assembly cold mass (@ CERN)

Assembly cryostating (@ CERN)

Cold test

Approval process