



SM18 update and summary of Superconducting Magnet Test Facility Workshop

M. Bajko CERN



TCC 7th if July 2016

Content

- Test stands @ CERN
- Cluster G upgrade
- Cluster D upgrade
- Service upgrade
- Status
- SMTS Workshop

Magnet test stands layout @ CERN

THE SUPERCONDUCTING MAGNET TEST STAND AT CERN in SM18

INSTALLATIONS

- 3 vertical cryostats ,
- 1 feed box for supercritical He,
- 1 cryostat for LN₂,
- 10 horizontal benches

OPERATION

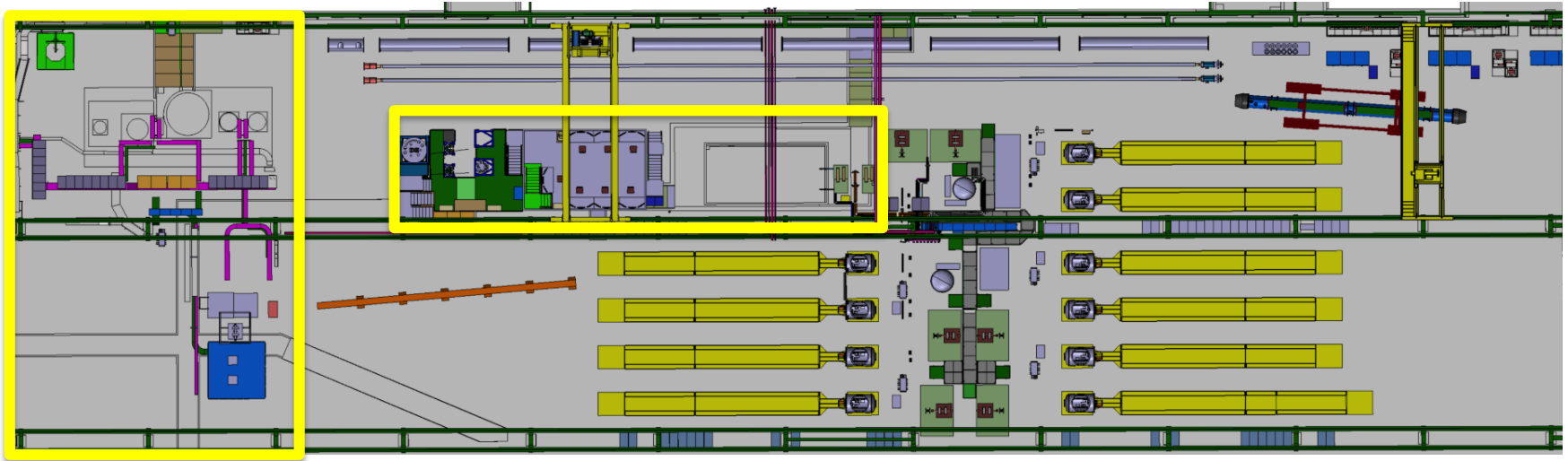
- $I = 0.12 \text{ kA} - 20 \text{ kA}$
- $T = 1.9 \text{ K} \text{ to } 70 \text{ K He}$
- withstanding $U = 1 \text{ V} \text{ to } 3 \text{ kV}$

LN₂ TEST ZONE

Vertical test stand upgrade

Cluster G

Cluster D



The vertical cryostats zone , called Cluster G of about 400 m² is under upgrade with an extra space called Cluster D of 150 m² to accommodate the test of **larger diameter** magnets @ **higher operating current** for HL LHC.

Cluster G upgrade: the FReSca2 cryostat(HFM)

20 KA
POWER
CONVERTER
with EE and
DUMP
RESISTOR

“DIODE/LEAD”
CRYOSTAT :
@ 4.2 K

“SIEGTAL”
CRYOSTAT :
1.4 m long and
800 mm diameter
@ 1.9 K

The circuit is
distributing
current towards
vertical
cryostats or the
feed box via a
commutator

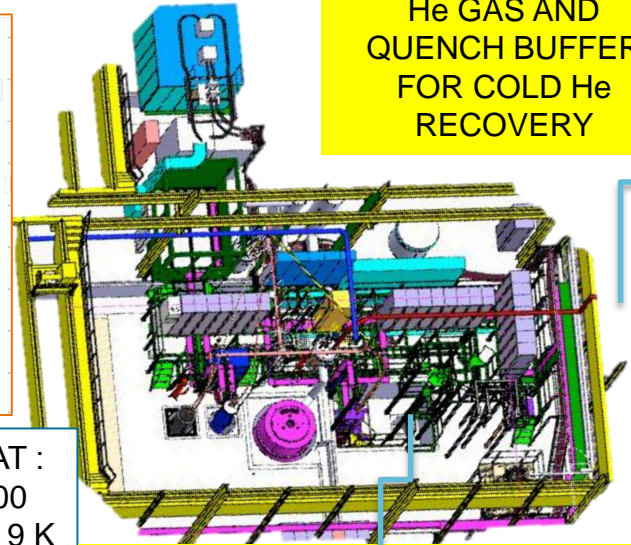
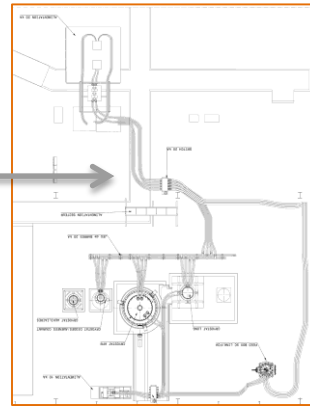
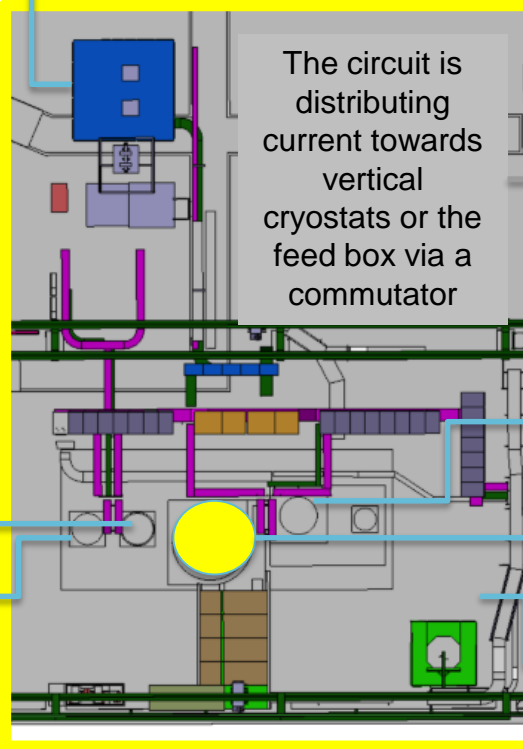
“LONG” CRYOSTAT :
3.8 m long and 600
mm diameter @ 1.9 K

CRYOGENIC
FEED BOX FOR
He 4.2-80 K

PRE COOLING WITH
He GAS AND
QUENCH BUFFER
FOR COLD He
RECOVERY

The new cryostat in this zone is the:

“HFM” CRYOSTAT ALLOWING
MAGNETS TO BE TESTED WITH
1500 mm diameter and 2.5 m length



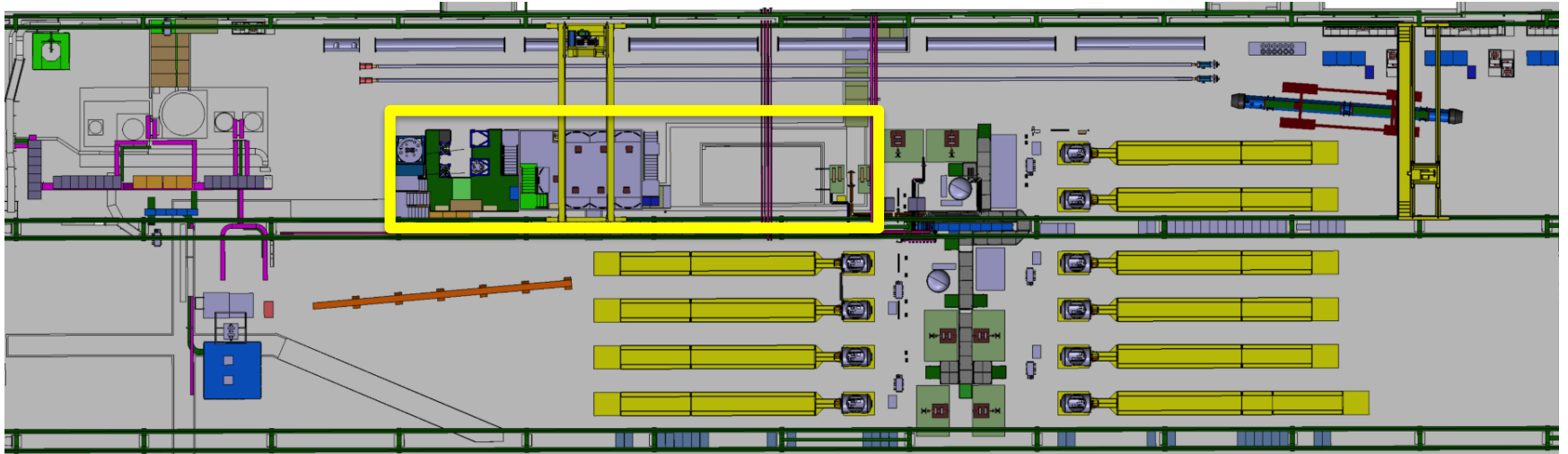
Cluster G upgrade :pictures



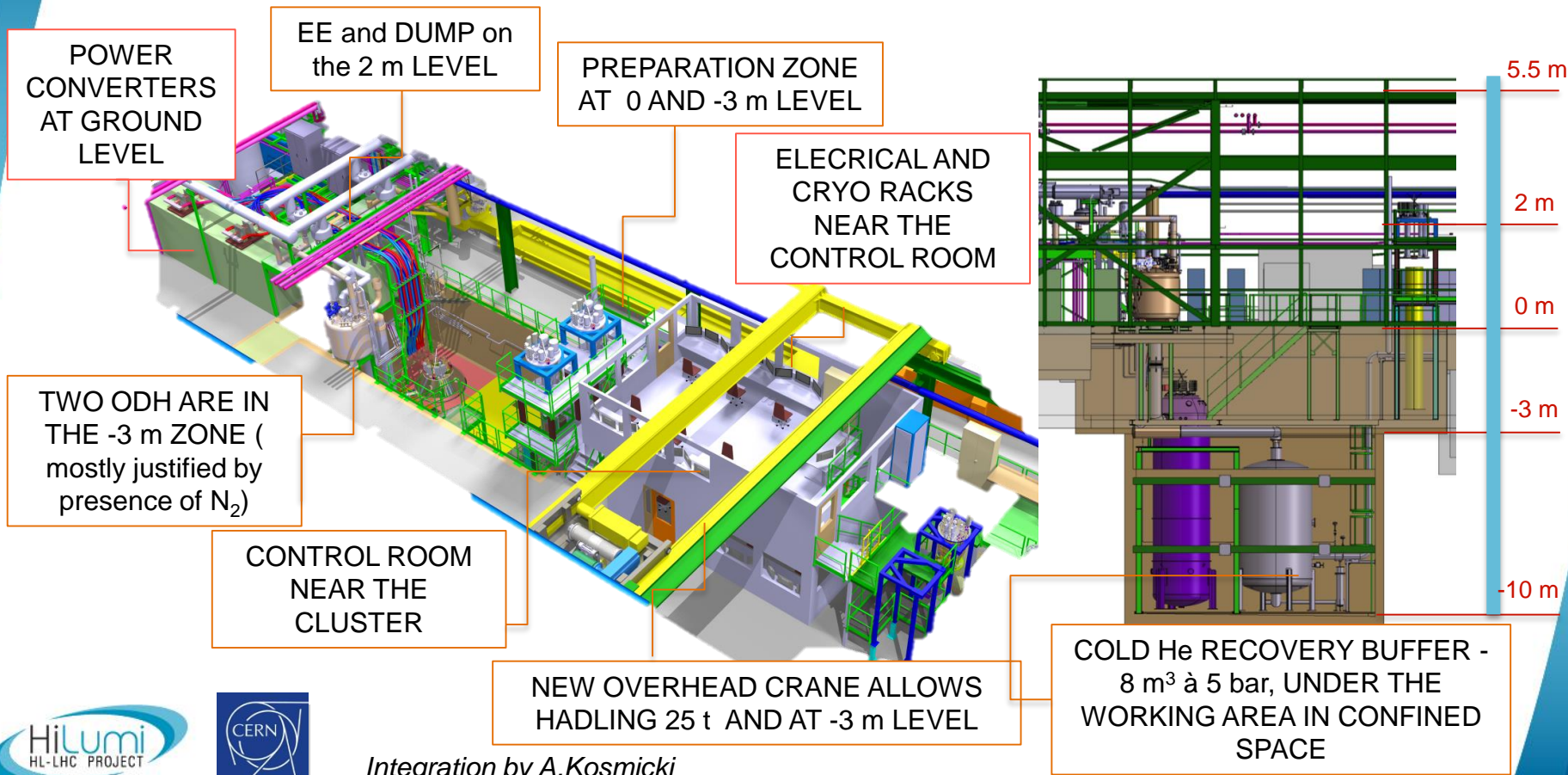
Marta Bajko for TCC on 7th of July

Vertical test stand upgrade

Cluster D



Cluster D: working area



Services upgrade in the test facility

UPGRADE DRIVEN BY The recommendation enabling to carry out the full test programme with no constraints

CRYOGENIC COOLING PRODUCTION: + 35 g/s LHe

NEEDS essentially for the running of the HL LHC IR STRING in parallel with magnet testing

DEMINERALISED WATER PRODUCTION: + 150 m³/h

NEEDS FOR DEMINERALISED WATER ENTIRELY COMING FROM MAGNET operation

HANDLING: 25 T and longer rope

NEEDS FOR OVERHEAD CRANE CHANGE ENTIRELY COMING FROM MAGNET OPERATION

POWERING FROM THE NETWORK: 2 MVA

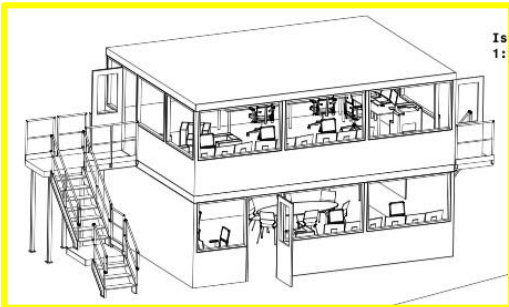
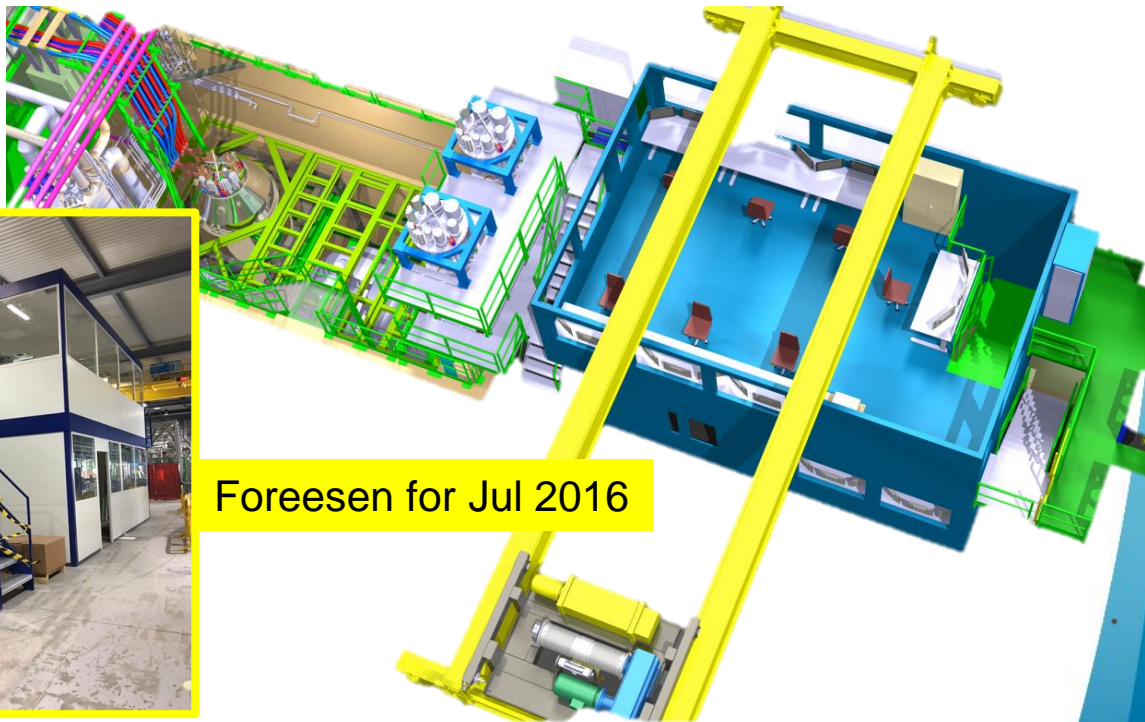
NEEDS FOR NEW OR MODIFIED PC COMING FORM MAGNETS and IR STRING

nCONTROL ROOM

NEEDS TO EXTEND THE TOO SMALL CONTROL ROOM OF THE VERTICAL TEST FACILITY TO BE USED ALSDO FOR HORIZONTAL BENCHES AND Sc link

New Control room

CONTROL ROOM WITH
LARGER SPACE than today



Cluster D in pictures



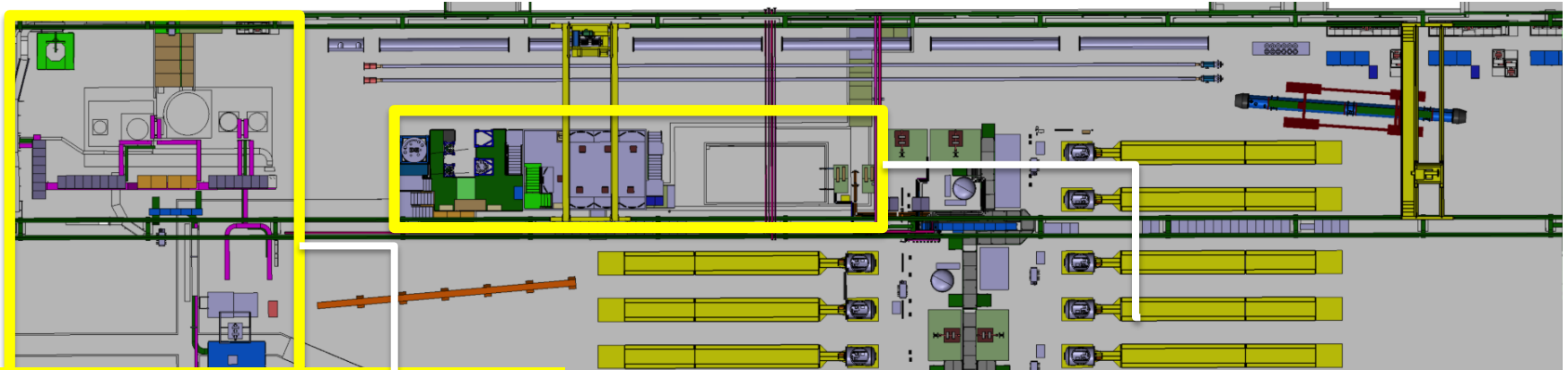
Ref.
Construction:
H. Botella, R. Morton, E. Perez Duenas,
Safety: *E. Paulat*



Planning

Cluster G

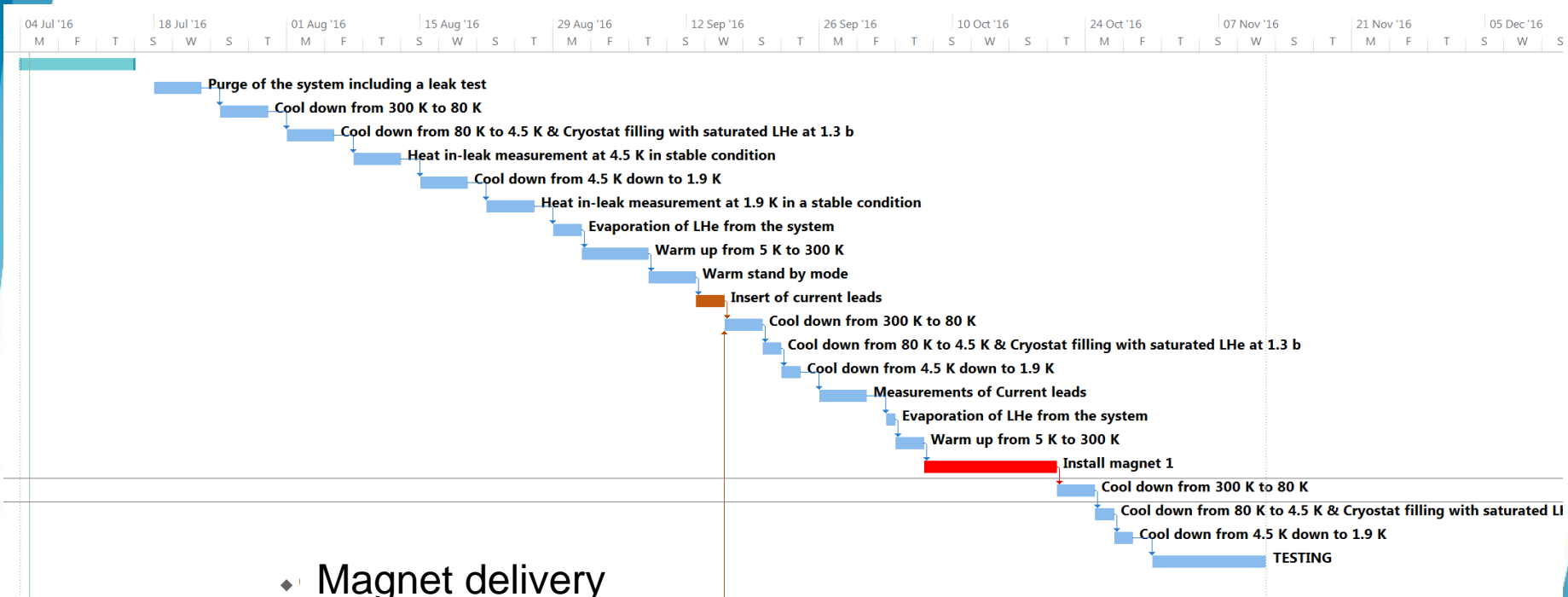
Cluster D



Installation finished
Commissioning in July-August
Operational in September????

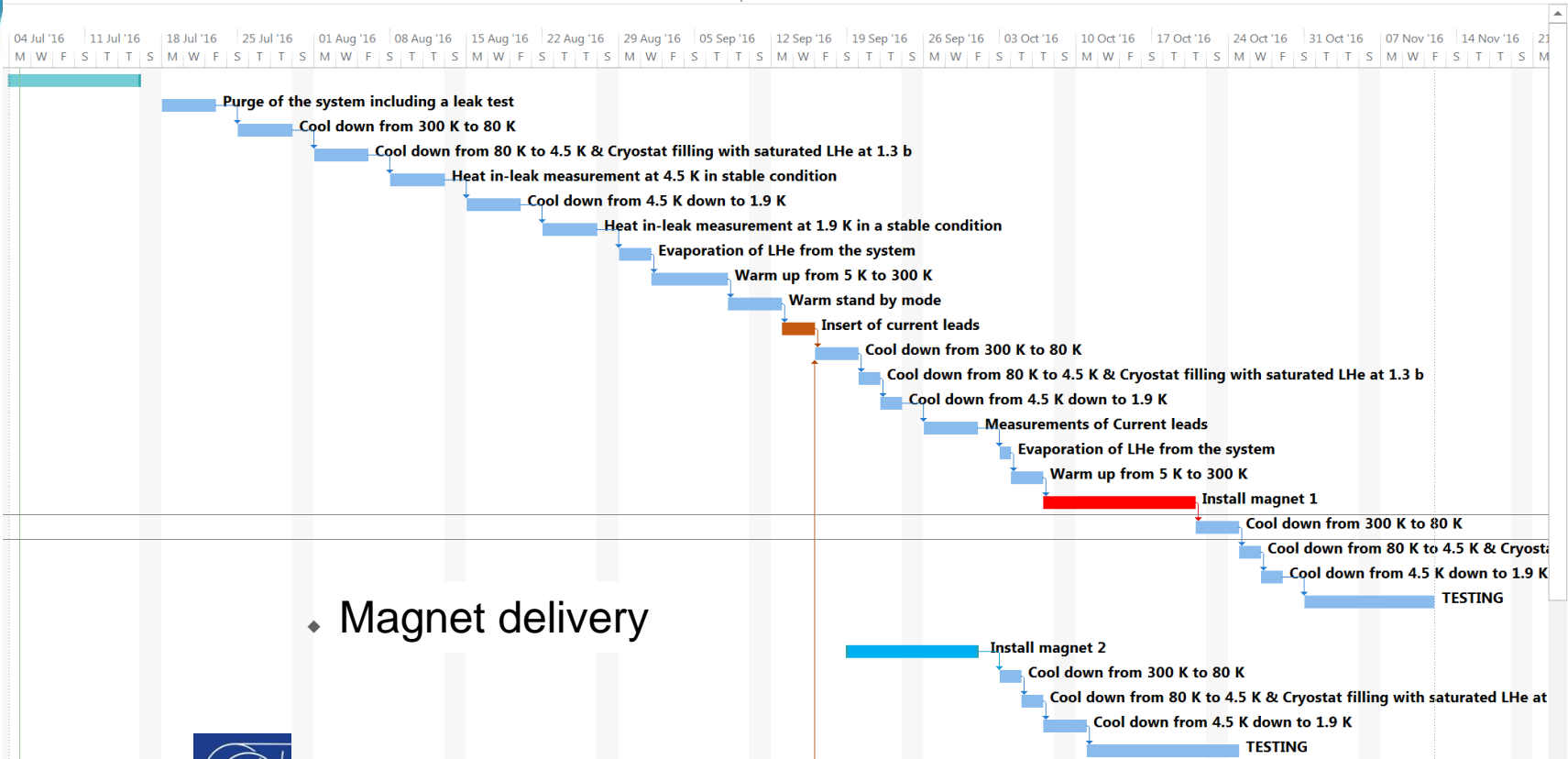
Civil engineering finished
Installation started
Commissioning the earliest in September
Operational in December?

Present plan of commisioning



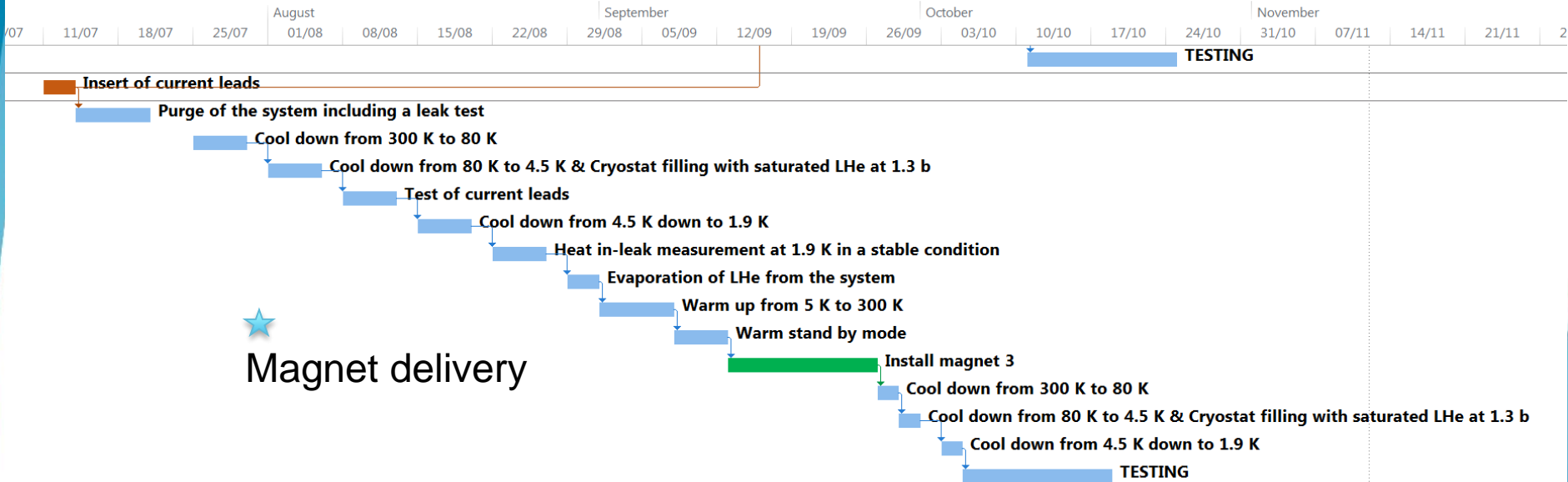
◆ Magnet delivery

Alternative plan1 of commissioning



◆ Magnet delivery

Alternative plan2 of commissioning



Magnet delivery

“You can only do as well as you can measure”

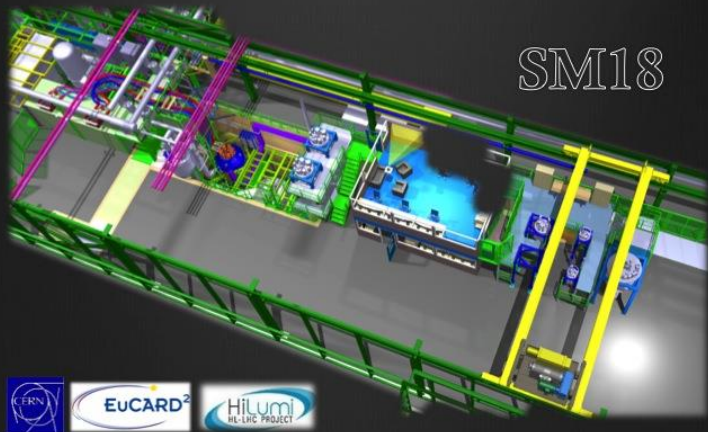
Joseph Whitworth

1st International WORKSHOP of the Superconducting Magnets Test Stands

GENEVA 2016 13-14 June



BNL
CERN
CEA SACLAY
FNAL
FREIA
GSI
JINR
LBNL
INFN
KEK
NAFASSY
PSI



SM18



EuCARD-2 is co-funded by the partners and the European Commission under Capacities in the 7th Framework Programme, Grant Agreement 312453

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1st International WORKSHOP of the Superconducting Magnets Test Stands

13-14 June 2016
CERN

- Overview
- Scientific Programme
- Timetable
- Industrial Exhibition
- Interactive visit of the SM18 test facility
- Registration
- Participant List
- Videoconference Rooms
- Accommodation
- How to get to CERN
- Poster
- Useful information
- Contacts
- Group picture

Flash the QR code and then access at
1st International WORKSHOP of the Superconducting Magnets Test Stands
Timetable



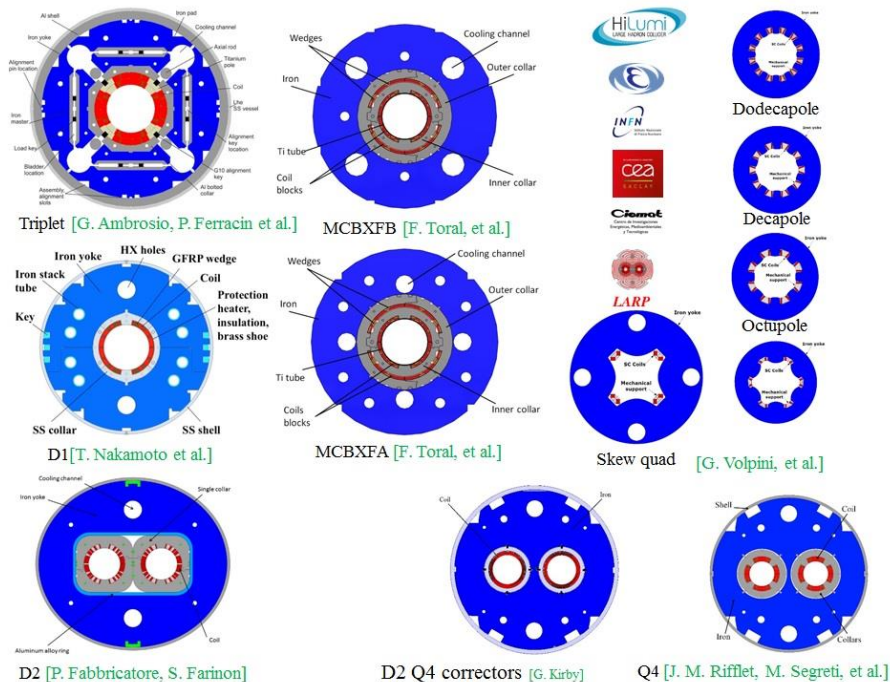
Starts 13 Jun 2016 07:00
Ends 14 Jun 2016 18:10
Europe/Zurich

Marta Bajko

CERN
80-1-001 - Globe of Science and Innovation - 1st Floor

- Materials**
- HL-LHC.pdf
 - HL-LHC.pptx
 - Scientific Programme

HL-LHC as a trigger for the workshop- *present*



The HL-LHC project with its 100 superconducting magnets to be built within a very large and international collaboration, triggered the idea of this workshop.

The goal is to **HARMONIZE** the tests performed in different places and to **BUILD A GOOD COMMUNICATION CHANNEL** between us: working in the same field at the four corners of the world.

Courtesy of E. Todesco HL-LHC WP3

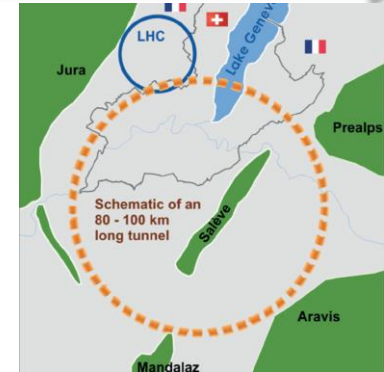
See presentation of L. Rossi

Marta Bajko for TCC on 7th of July

We are looking into the *future*



The SMTS Workshop would be held typically **ONCE A YEAR** and at the different test stations. It can be linked to events organized by HL-LHC project or conferences where the participants are usually present.



See presentation of L. Bottura

Two side-by-side black and white photographs showing large industrial production facilities, likely for particle detectors or components. The left image shows a long, narrow hall with many rows of equipment. The right image shows a similar hall with more complex machinery and structures.

FCC production and test ?!?



logo
area

Welcome everybody!

BROOKHAVEN
NATIONAL LABORATORY

PAUL SCHERRER INSTITUT

PSI

UPPSALA
UNIVERSITET



Fermilab



GSII



cea



The 65 registered PARTICIPANTS

- USA
- J
- CH
- PL
- FR
- IT
- S
- DE



*Most of these participants
has a valuable long
experience and expertise
in superconducting magnet
testing*

Created with mapchart.net ©

for TCC on 7th of July

