



# Internal Review of DFH

## DFH in WP6a an Master Plan

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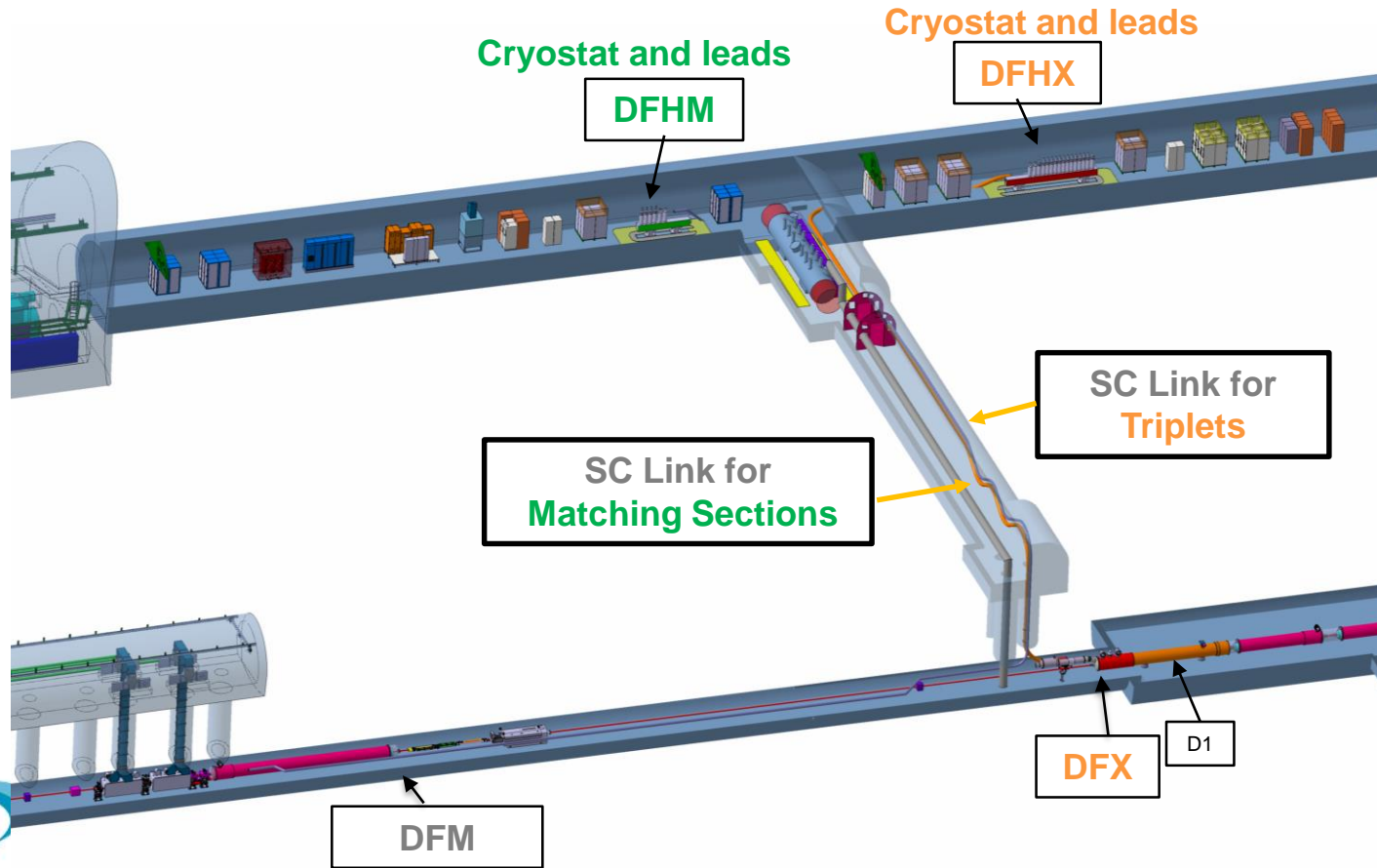
16/06/2020

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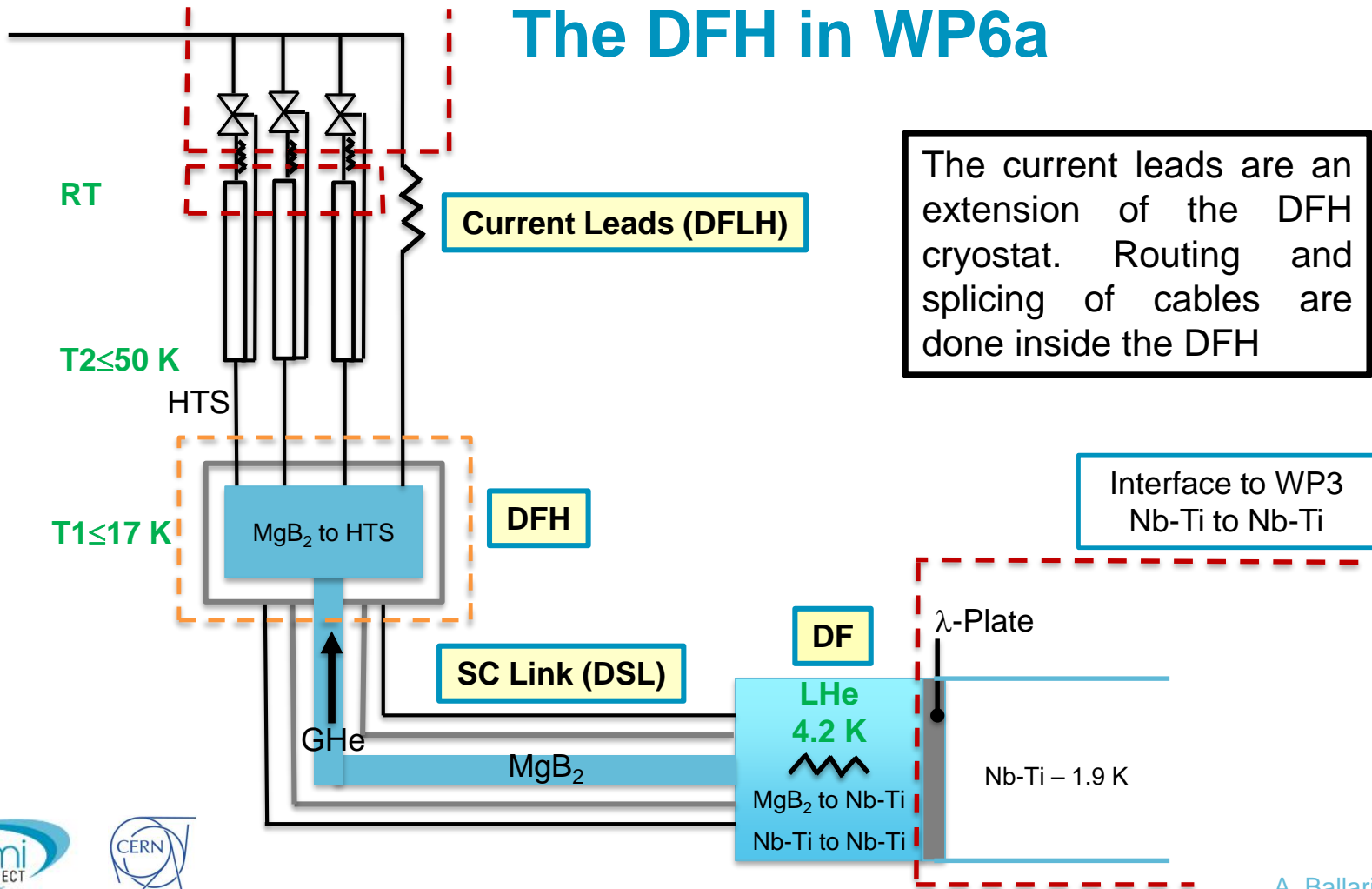
- DFHX and DFHM in WP6a
- DFH in WP6a: from Demo 1 to series production
  - DDFH in Demo 1 and Demo 2
  - Prototype System Test
  - Series qualification
- DFH in WP6a Master plan

# DFX and DFM in WP6a

DFH and DFHX: cryostats in the new UR galleries



# The DFH in WP6a

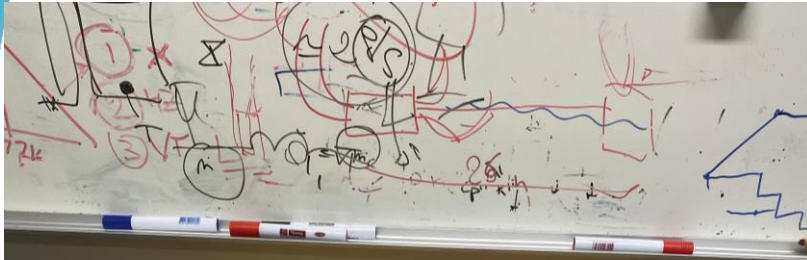


The current leads are an extension of the DFH cryostat. Routing and splicing of cables are done inside the DFH

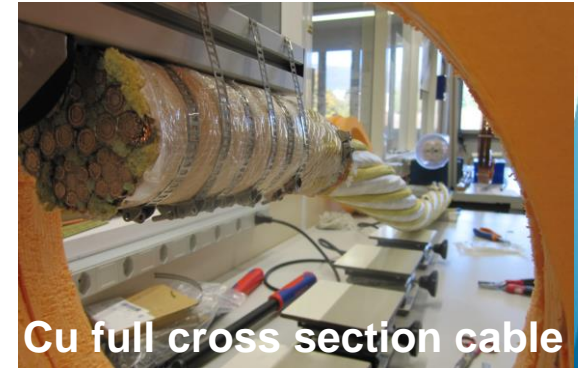
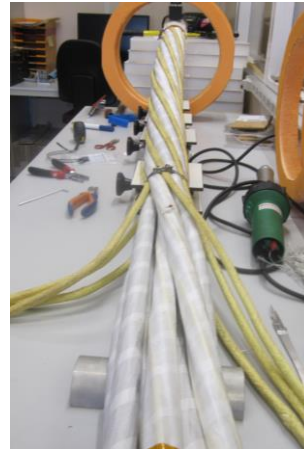
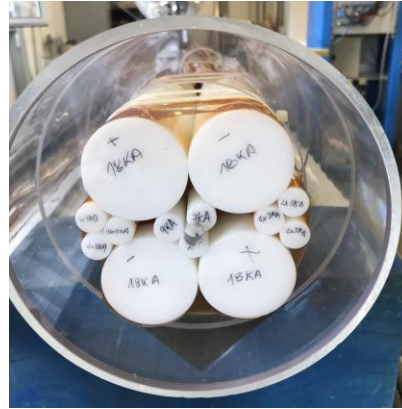
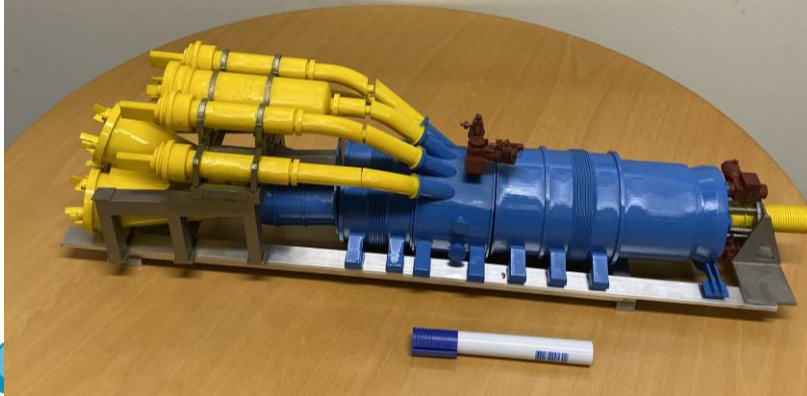
Interface to WP3  
Nb-Ti to Nb-Ti

# DFH in the R&D WP6a program

- Conceptual Baseline Design in summer 2019 (CDR Nov. 2019)

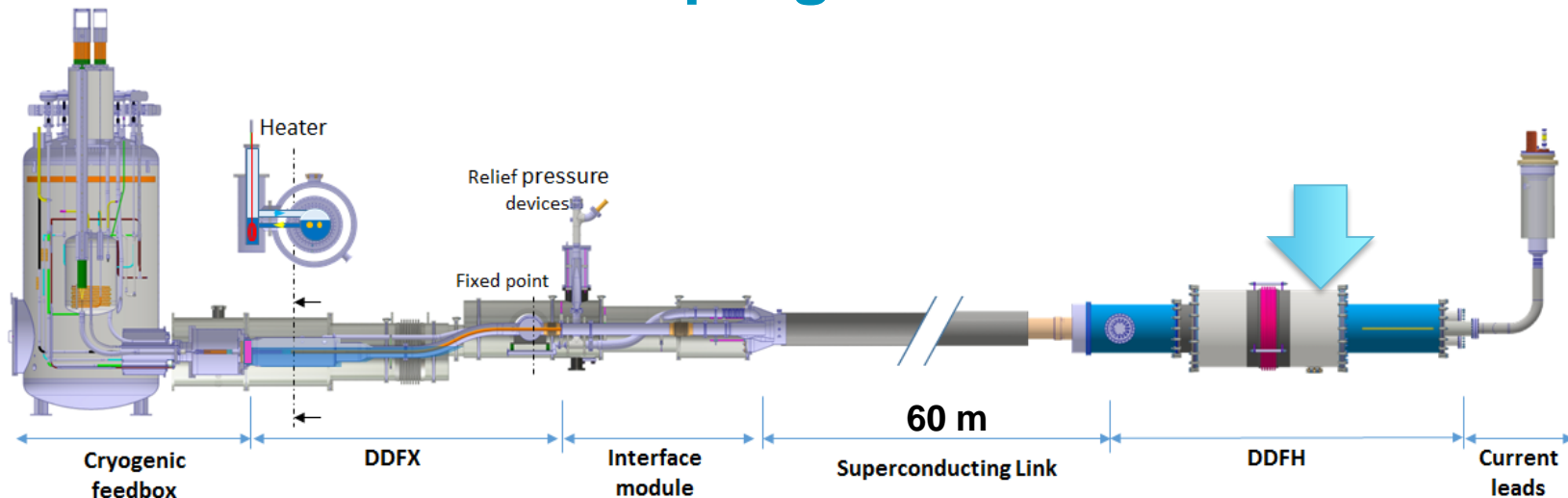


Current leads in horizontal configuration



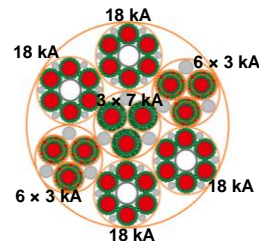
Cu full cross section cable

# DFH in the R&D WP6a program – Demo 1 and Demo 2



**Demo 1:** one pair of 18 kA HTS cables, prototype 18 kA HTS HL-LHC Current Leads. One power converter – powering from feedbox. Tested in March 2019

**Demo 2:** full cross section  $MgB_2$  cable for Triplets, prototype 18 kA HL-LHC HTS Current Leads (same as Demo 1), simultaneous powering of several circuits – powering from feedbox and from DDFH. Tested cryogenic control

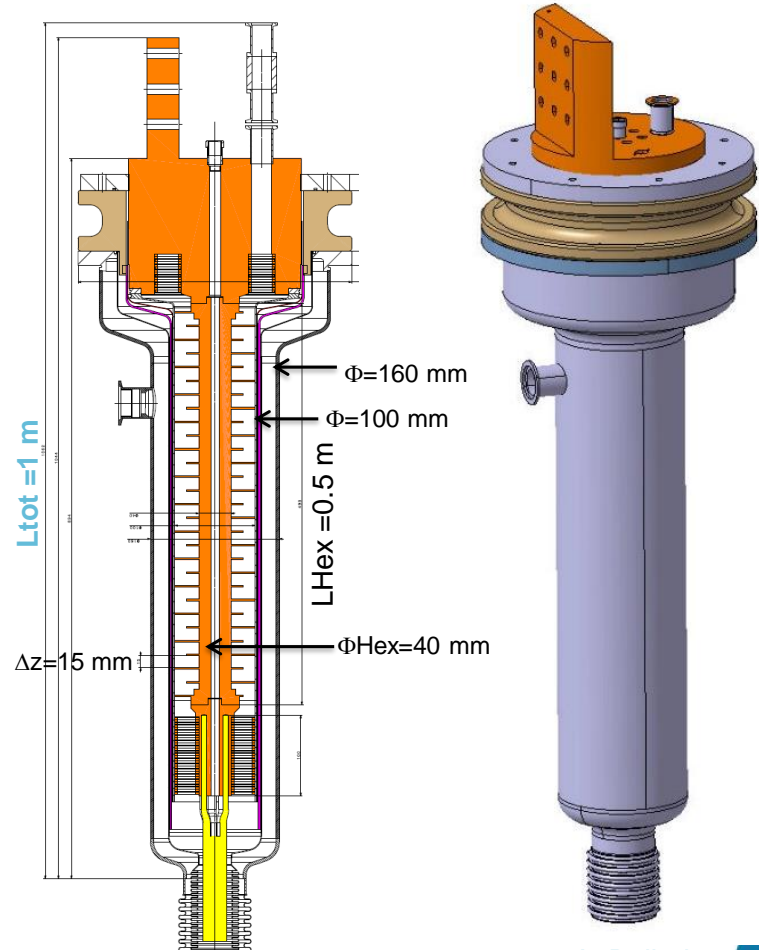


$\Phi \sim 90 \text{ mm}$

# Electrical components of DFH (1/4)

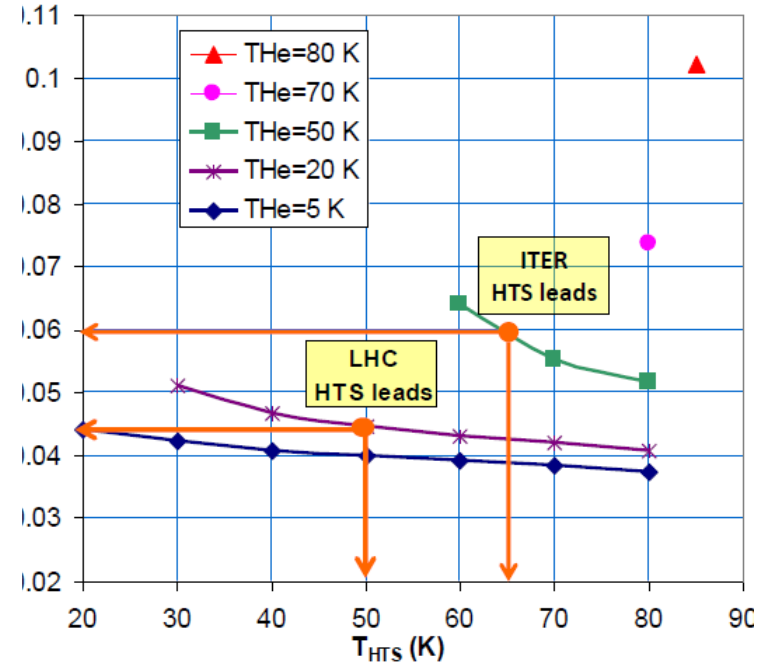
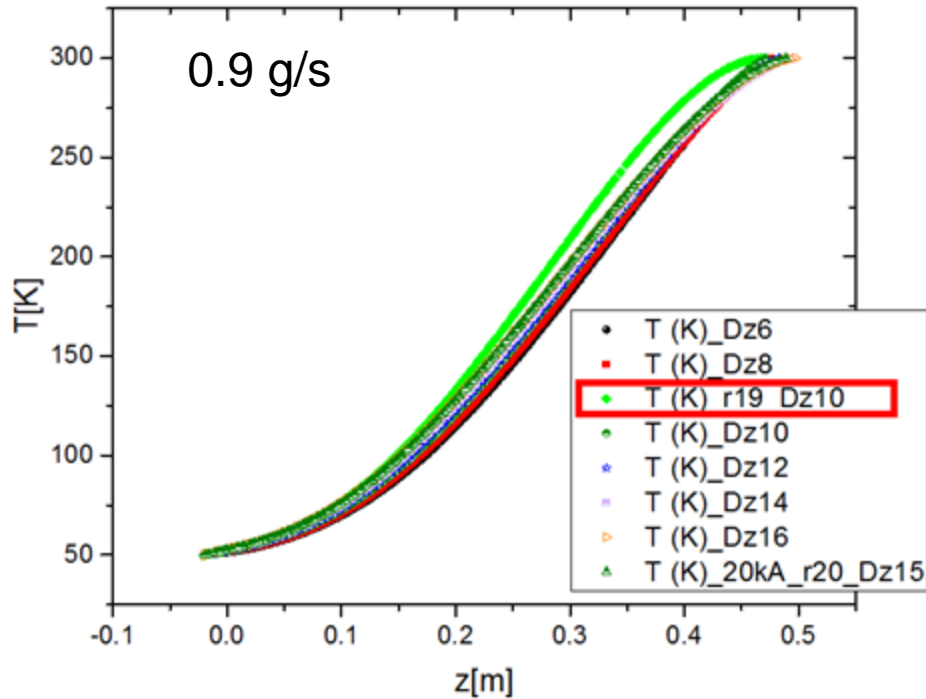
## HTS Current Leads

Conceptual design presented at the **International Review of Cold Powering**, in July 2017. Since then, **two 18 kA current leads produced at CERN**, with the Main Workshop, and **successfully tested in Demo 1 and Demo 2**. Design based on LHC HTS current leads.



# Electrical components of DFH (2/4)

## HTS Current Leads – 18 kA Prototype



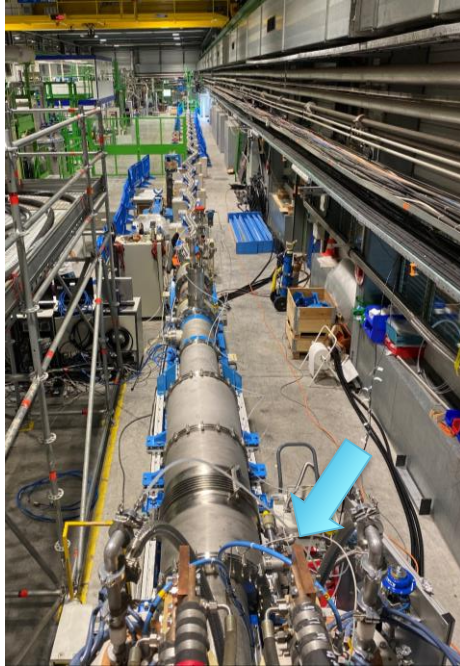


# Electrical components of DFH (3/4)

## Current Leads

Current Leads

Demo 1 and Demo 2, 18 kA - no humidity



## SC Cables' routing and splices

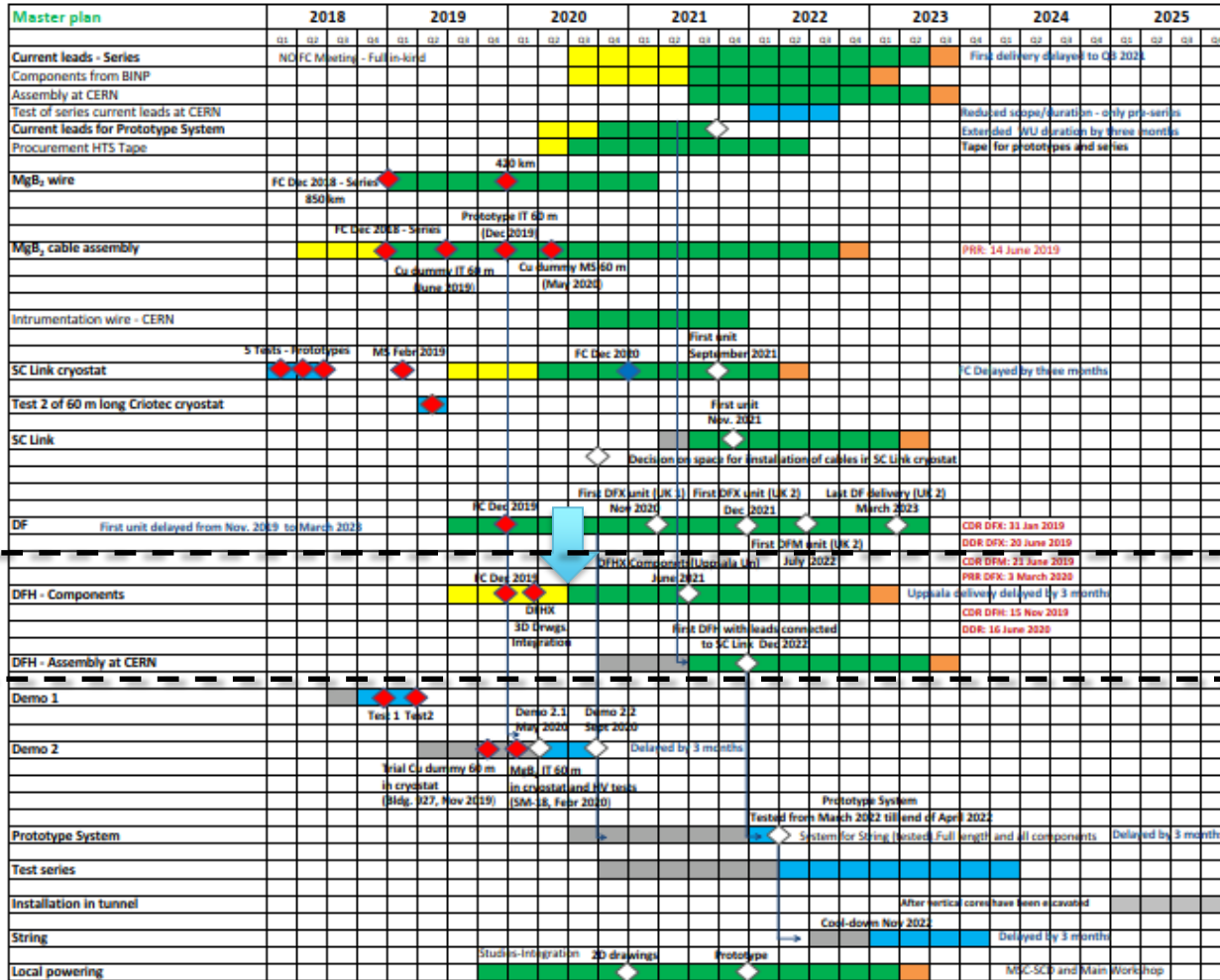


Demo 2

# Electrical components of DFH (4/4)

- Instrumentation routing and extraction from cold mass validated with Demo 1 and Demo 2 (more than 150 signals in Demo 2)
- Baseline on instrumentation signals available. Final instrumentation location and number of signals (in particular number of T sensors) to be reviewed after Demo 2

# WP6a Master Plan



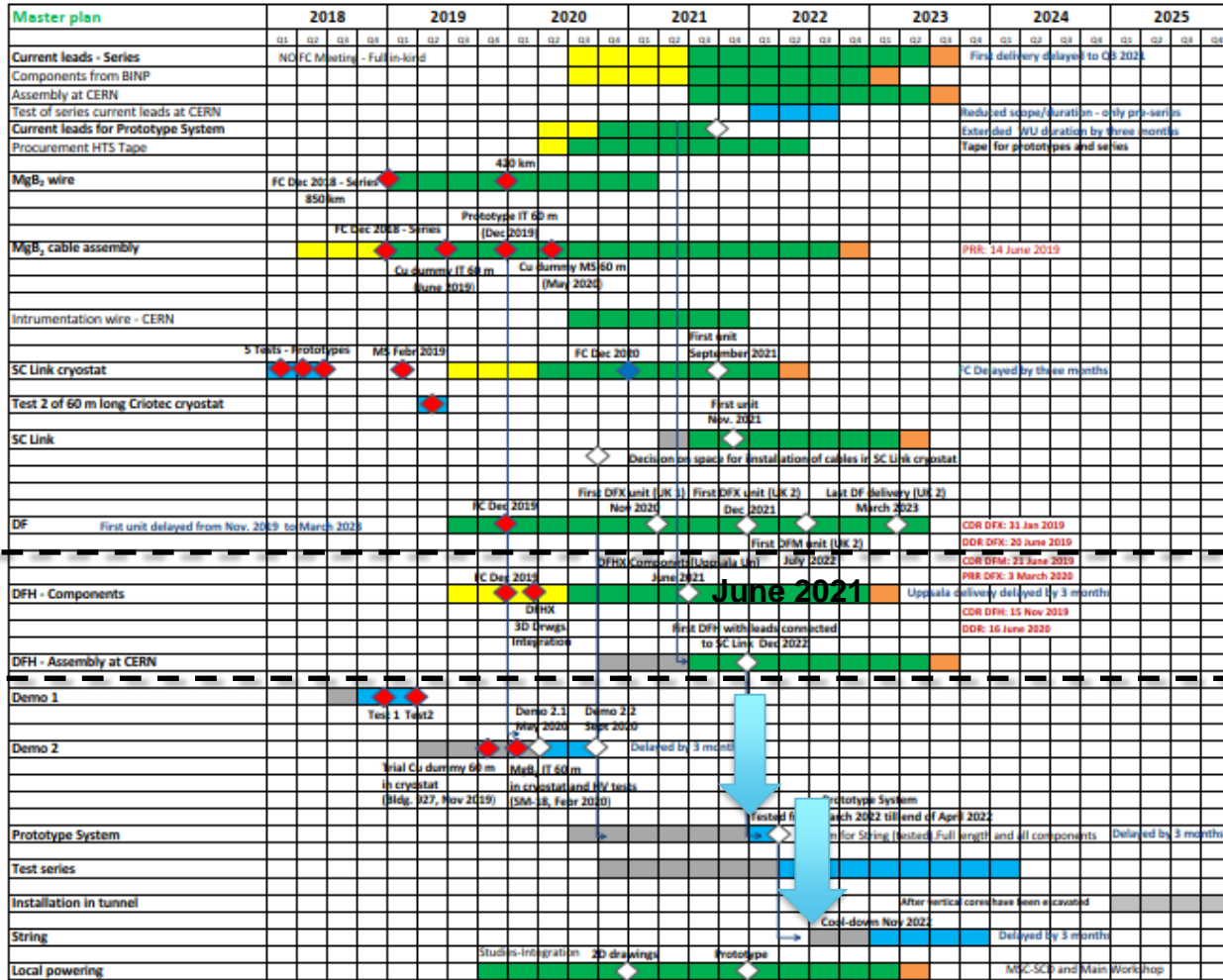
- Tendering
- Manufacturing
- Tests
- Installation
- Spares

- Achieved milestone
- Future milestone
- Future dates FC

DFH



# WP6a Master Plan





***Thanks for your attention***

