



WP13 Meeting TRIESTE – 19 April 2023

Implications on the necessary developments / upgrades of Technological Platform :

H. Platforms for Manufacturing, treatments and test of Magnet components for accelerator

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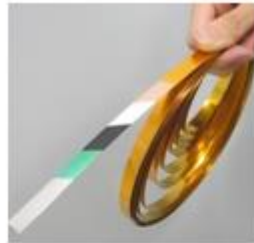
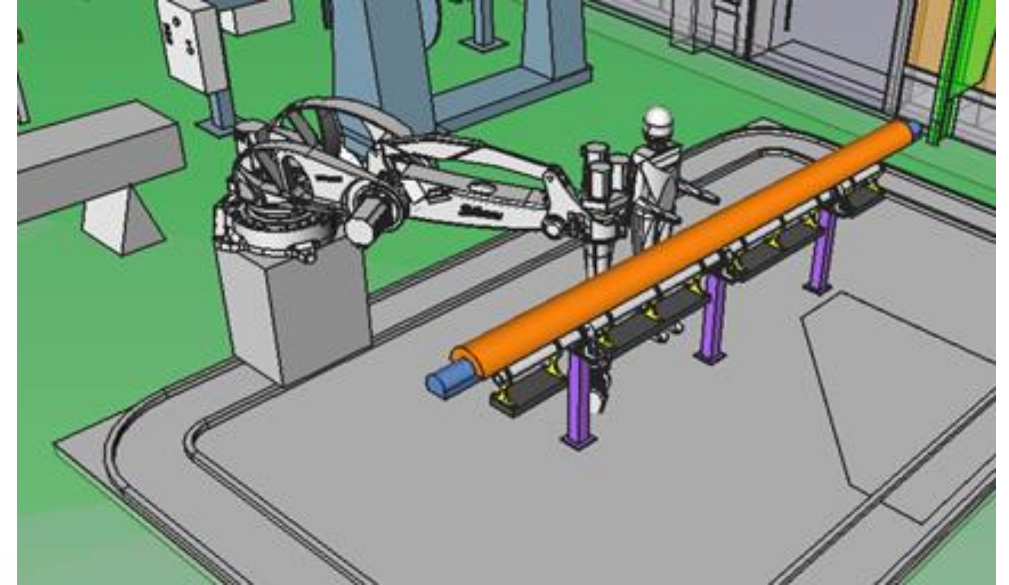
Why Manufacturing Infrastructure Development?

- ❖ Most of the existing tooling available in European laboratories was developed for NbTi magnets more than 20 years ago, in the framework of the LHC.
- ❖ Since the 1980s, a new generation of superconducting materials has appeared, making it possible to operate at much higher and more easily attainable temperatures.
 - Nb₃Sn ; ultimate target 16 T
 - HTS Conductor ; target 20 T or more
- ❖ Also, it is necessary to replace or update old equipment with a set of new ones adapted to Nb₃Sn and HTS magnets.

Winding Machines

Platform for the fabrication of superconducting coils.

Objectives: modular and versatile winding machines suitable for several types of winding configuration and different superconducting cables or tapes: dipole coils, splayed block coils, quadrupole coils and solenoids.



ReBCO High Temperature Superconducting tape



Heat treatment furnace

Platform for the fabrication of superconducting coils.

Objectives: Heat treatment of NB3Sn superconducting coils, up to 5 m.

Non contractual photo



Impregnation plant for superconducting magnets

Platform for the fabrication of superconducting coils.

Objectives: Impregnation of superconducting coils up to 5 m.



Non contractual photo



Equipped platform for control and test

Platform for the fabrication of superconducting coils ; Control and test.

Objectives: This Platform, equipped with various measuring devices, will allow controls:

- Dimensional (3D measuring arm/scanning)
- Electrical (resistance, inductance, capacitance, discharge, insulation short-circuit, data acquisition, etc.). All the equipment gathered on a movable trolley.
- Characterization (viscosity and glass transition of the impregnating resins used).



Industry can collaborate in R&D activities for Insulation definition or coils and magnets components fabrication.

As many existing equipment in CEA Technological infrastructure, these new equipment will be available on request for industry.

Contact using AMICI website

https://amici.ijclab.in2p3.fr/technology_infrastructure

and Focus on CEA at

https://amici.ijclab.in2p3.fr/technology_infrastructure/cea.

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Thank you for your attention



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