R3B-GLAD superconducting magnet

MAGNETS FOR FUSION

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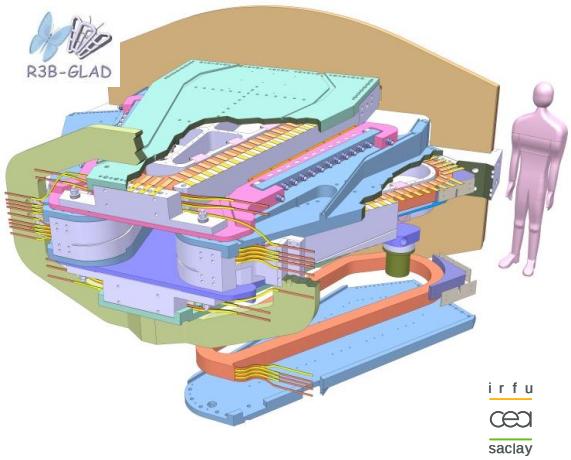
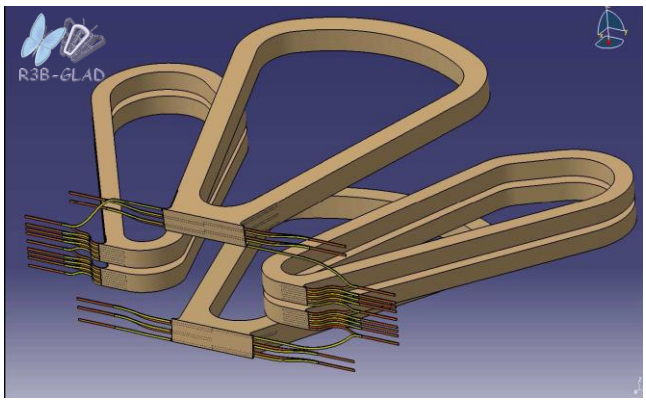
This magnetic system for the R3B experiment to be built in the future FAIR Facility at GSI, provides the field required for the large acceptance spectrometer dedicated to the analysis of Reactions with Relativistic Radioactive ions Beams.
ASG Superconductors delivered in 2010 the R3B GLAD magnetic system, consisting in six superconducting coils assembled into four aluminium casings.
The coils, indirectly cooled at 4.6 K, are made with Rutherford cable. The nominal current is 3600 A and the system generates a peak field on the conductor of 6 T.
The total weight of the cold mass is 22 tons, the overall dimensions are 4800x2800x39000 mm (W x H x L).



CEA overall preliminary view of R3B magnetic system

Nominal working conditions

Peak field on the conductor	6 T
Operational temperature	4.6 K
Overall current density	73 A/mm²
Stored energy	24 MJ
Nominal current	3.6 kA



Coil configuration

Main Coils (n.2)

N.5 Duoble Pancakes
N.100 turns/DP

Section	159x163.5mm
Dimensions	1890x2652mm
Lsm	6.7m
Weight	1082Kg

Lateral Coils (n.4)

N.4 Duoble Pancakes
N.80 turns/DP

Section	128x131.5mm
Dimensions	103x2806mm
Lsm	6.1m
Weight	625Kg

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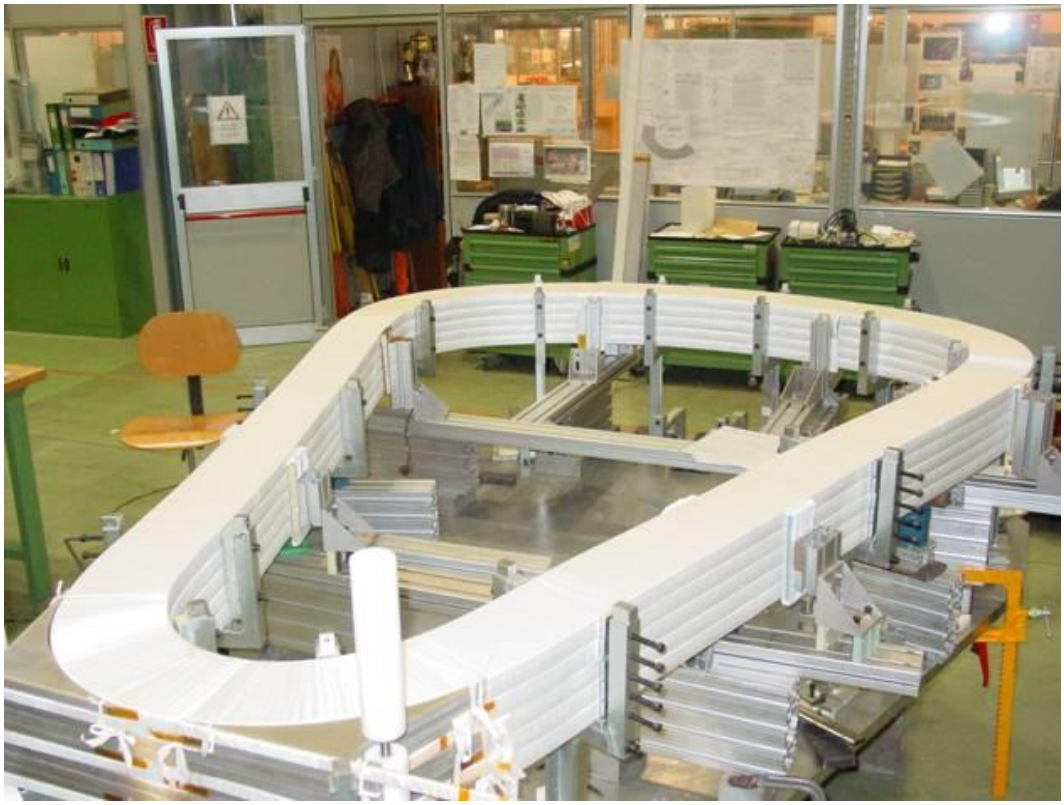

Main coil DPs assembly

Lateral coil after impregnation

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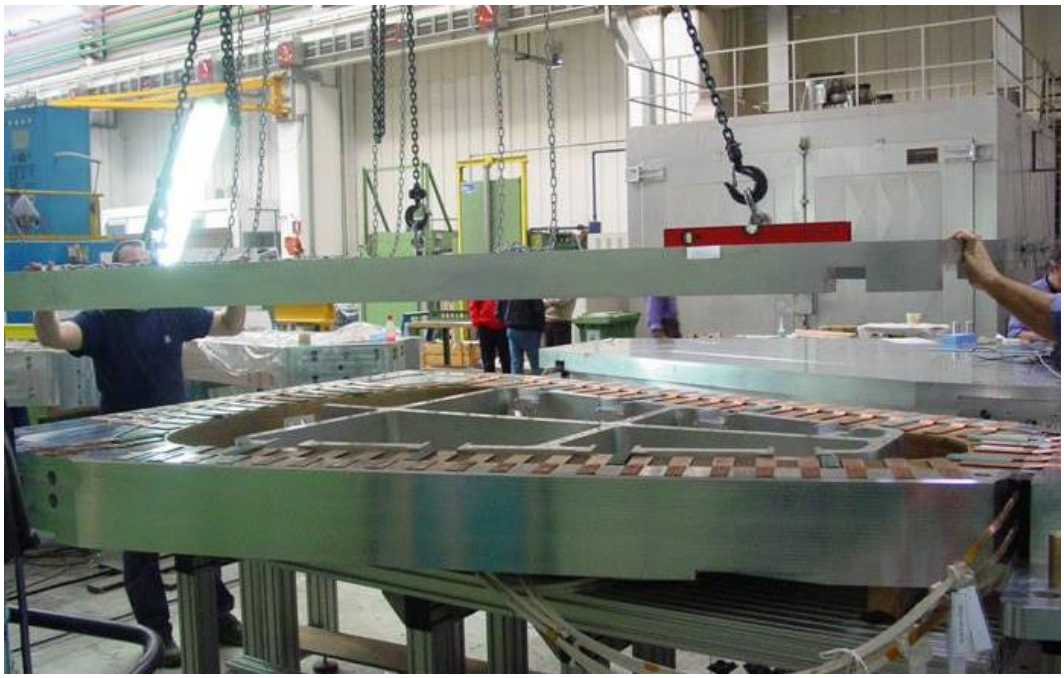
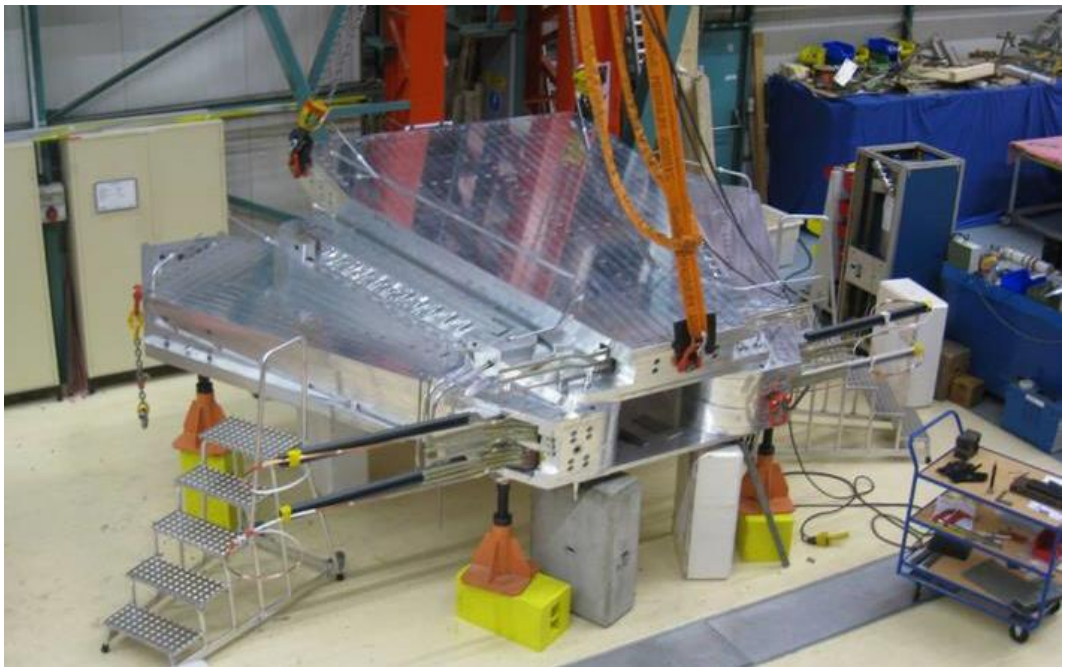


Main coil integration into its casing



Cold mass assembly at CEA