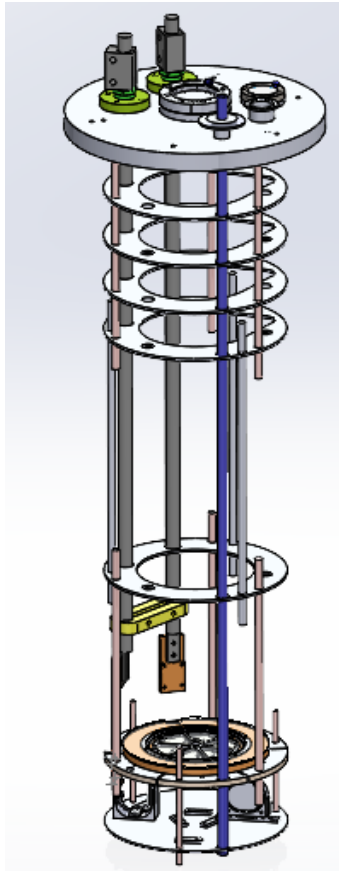


High Temperature Superconductor (HTS) Magnet Testing Bench – CEA Saclay



What?

Design and fabricate a testing bench that allows full displacement measurement of HTS magnet during cooling and powering up.

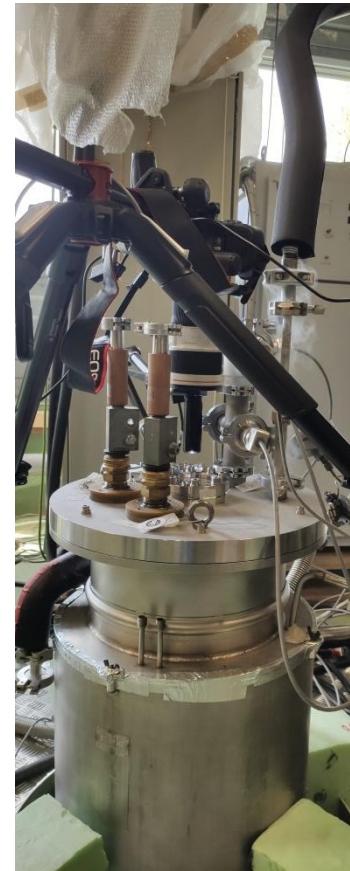
Primary study on the design constraints of the cryogenic (77 / 4 K) testing bench.



How?

Used **Solidworks** to design all parts.

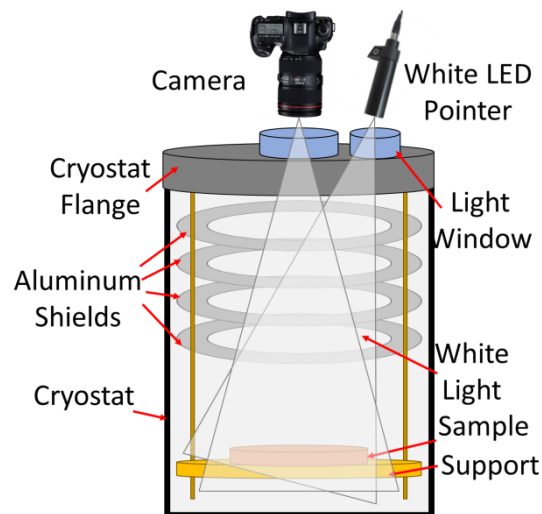
Applied **GD&T** on all drawings.



Results

Testing bench for HTS magnet at **77 / 4 K** operational with image acquisition for **full field displacement measurement** using **digital image correlation (DIC)**.

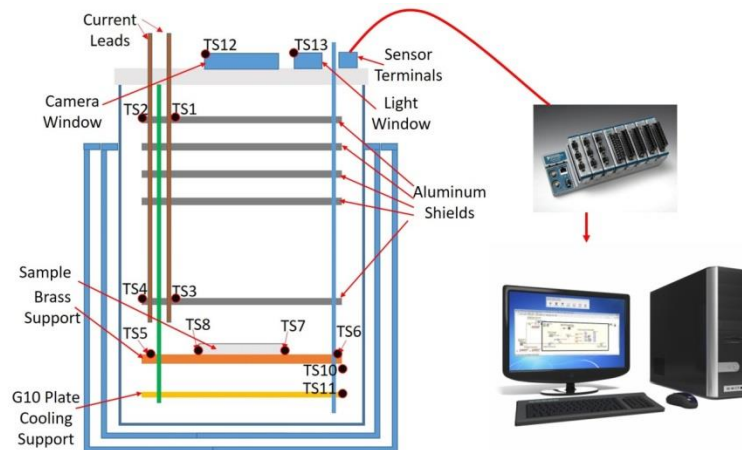
HTS Magnet Testing Bench Sensor/Camera/Data Acquisition – CEA Saclay



What?

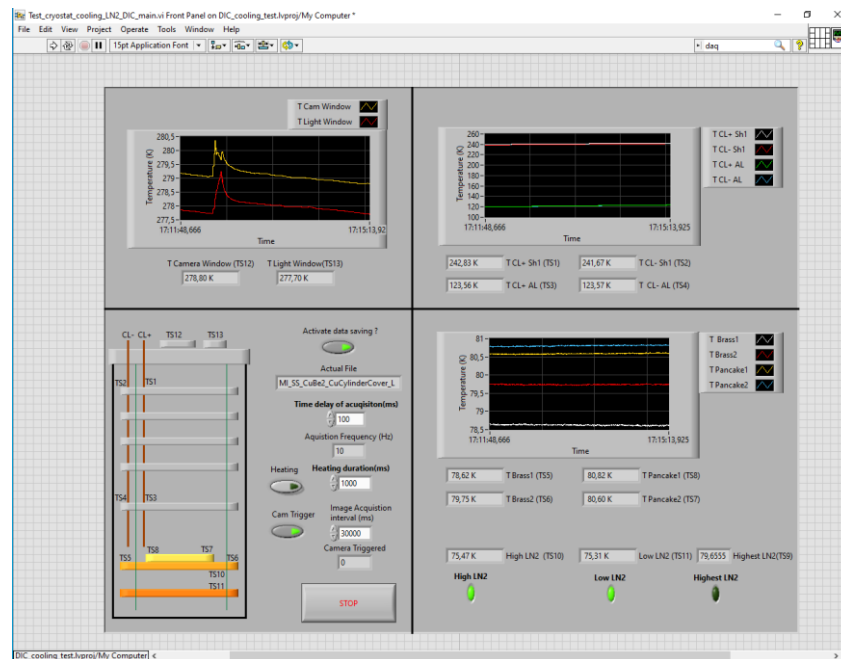
Temperature measurement is necessary to monitor and ensure the magnet temperature value.

Temperature acquisition is synchronized with image acquisition for data analysis.



How?

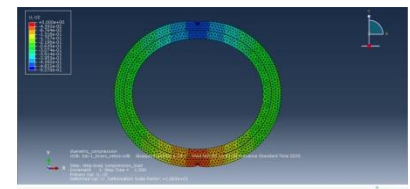
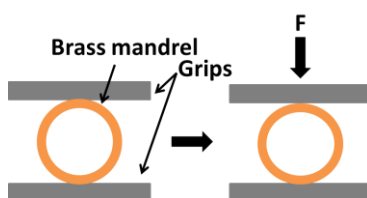
LABView and NI DAQ module are utilized for temperature measurement and image acquisition.



Results

Temperature measurement and image acquisition are synchronized using LABView. This permits the comparison of measured displacement by DIC to that of theoretical displacement at the same temperature.

Material Characterization / Diametric Compression Test– ENS Paris Saclay



What?

Characterize HTS (REBCO) tape in cylindrical coordinates for stress calculation.

How?

Diametric compression test with Finite Element method update (FEMU) using DIC and Abaqus.

Results

Winding configuration affects the measured radial young modulus of the HTS tape due to surface roughness and contact between the winding turns.

Similar conclusion reached when modelling the test on Abaqus 6.14.