



25T 無冷媒超伝導マグネット

25T Cryogen-free Superconducting Magnet

最内層に高温超伝導を用いた無冷媒では世界最高磁場を発生する無冷媒超伝導マグネットです。52mmの室温ボアに最高25.1Tの磁場を発生させることができます。長時間安定して精密磁場を発生できる特徴を活かして、高精度測定や長時間熱処理などに威力を発揮します。



Magnets (HTS): 11.2T@209A

38 Ni-alloy/Bi2223 double pancakes
 $\phi 96\text{mm} \times \phi 280\text{mm} \times h 390\text{mm}$
 Max. hoop stress 322MPa @25.5T

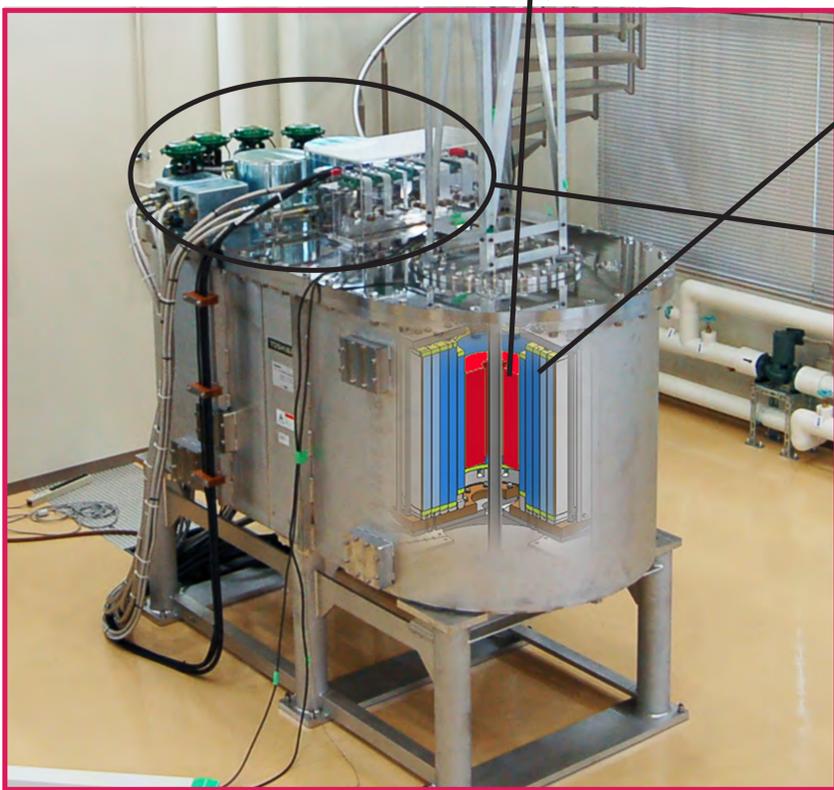


Magnets (LTS): 14T@854A

3 CuNb/Nb₃Sn Rutherford solenoids
 $\phi 300\text{mm} \times \phi 539\text{mm} \times h 628\text{mm}$
 Max. hoop stress 251MPa



3 NbTi Rutherford solenoids
 $\phi 545\text{mm} \times \phi 712\text{mm} \times h 628\text{mm}$
 Max. hoop stress 138MPa



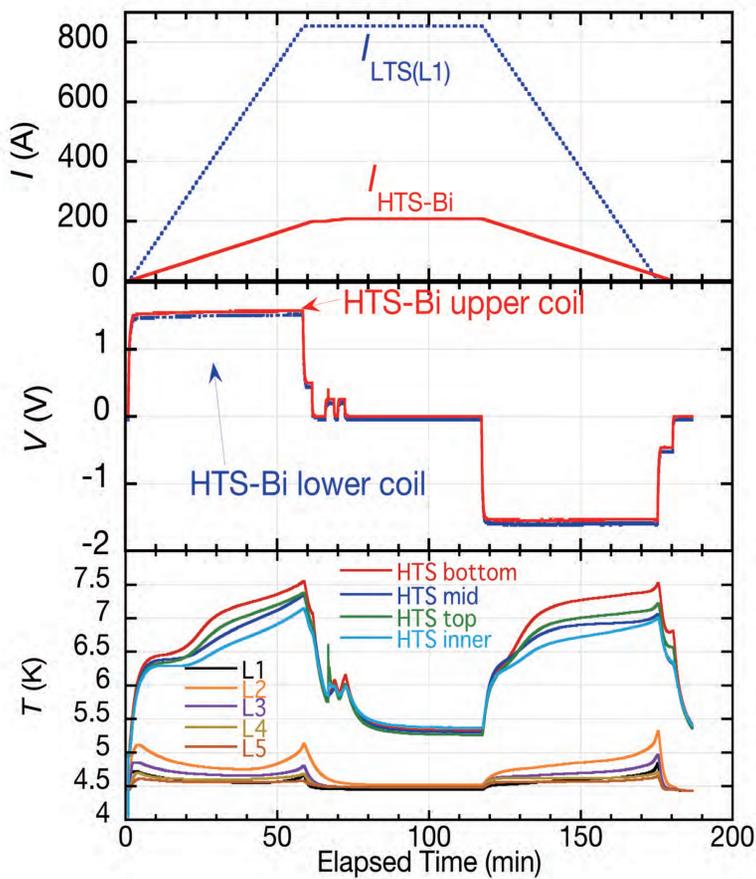
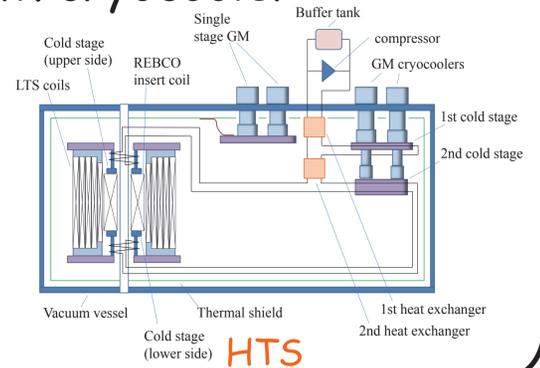
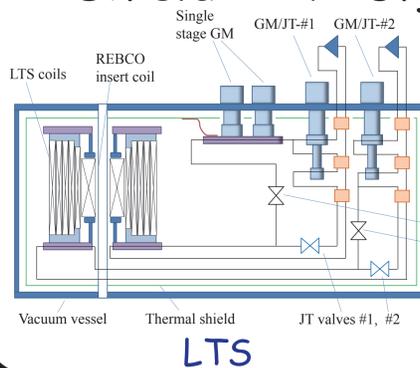
Cooling system

Conduction cooling using He circulation

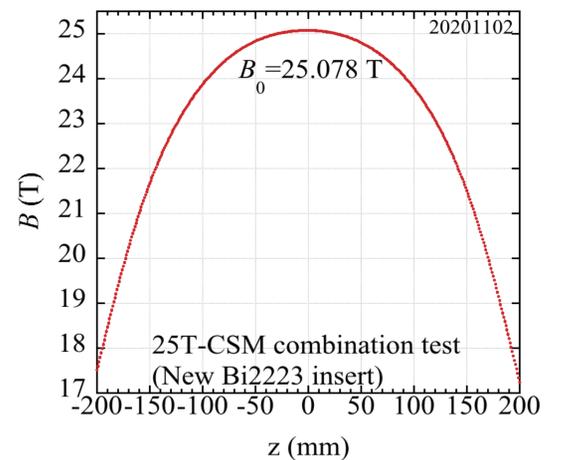
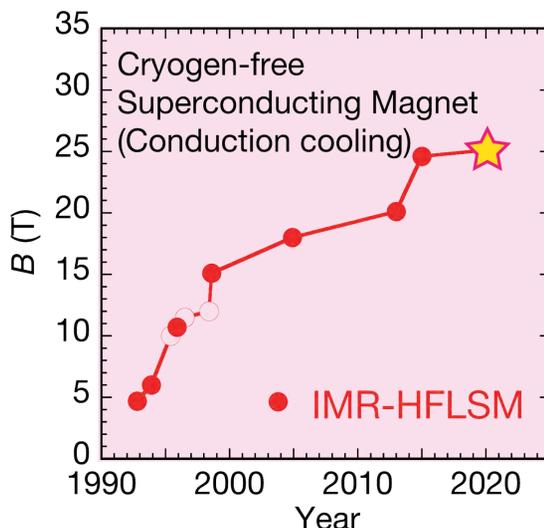
HTS: 2 x 4K-GM cryocooler
 (3W@4.2K, 10W@8K)

LTS: 2 x GM/JT cryocooler
 (8.6W@4.3K)

Shield: 2 x 1 stg GM cryocooler



1時間で25.1T磁場発生!
 25.1 T can be achieved with a 1-h ramping time!



無冷媒超伝導マグネットの発生磁場世界記録を更新!

Most of CSMs were obtained by the High Field Laboratory for Superconducting Materials (HFLSM). We achieved the world's highest magnetic field for CSMs of 25.1 T, denoted as 25T-CSM.