

## KATRIN DPS2-F

The magnetic system DPS2-F, to be installed in the forward differential pumping section of the KATRIN experiment at KIT, has been manufactured and commissioned by ASG Superconductors in December 2010. It is made of 5 superconducting coil modules arranged in an omega shape by tilting magnetic axes of  $\pm 20$  deg., cooled in pool boiling by LHe and housed in a common vacuum chamber. The system overall dimensions are: 6.6 m in length, 1.2 m in diam. and 4.1 m in height for a total weight of approx 8.5 tons. The magnetic stored energy is 1.5 MJ and the system has been designed to transport a flux tube across the whole length with an associated magnetic flux of  $191 \text{ T cm}^2$  and flux density of minimum 0.5 T between the modules. These latter are spaced 400 mm apart to fit in the beam tube pumping ports. The field at the coil centre is 5.68T. The s.c. coil modules are made of a central solenoid (130 mm inner diam.) and two end coils for a total length of 1 m. They are wound by multifilamentary Cu/NbTi round wire and fed with 200 A. The max field on the conductor is 6 T. The system works in persistent mode featuring a s.c. switch. The beam tube (86 mm inner diam.) operates at 77 K and features four DN 250 pumping ports for tritium residual particle extraction.



MAGNETS  
FOR FUSION



MAGNETS FOR HIGH  
ENERGY PHYSICS



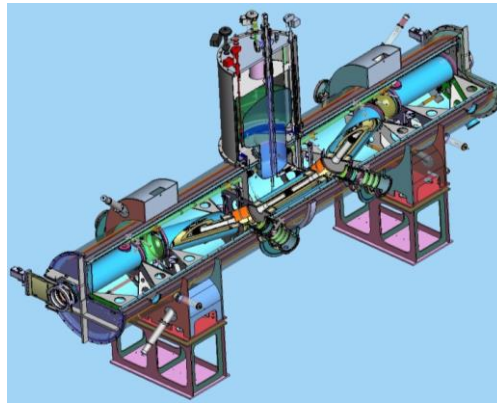
MAGNETS FOR  
MEDICAL  
APPLICATIONS



SYSTEMS  
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SERVICES & REPAIRS



**DPS2-F System for KATRIN Experiment**    **Blank assembly of cold mass inside vacuum chamber**



Maximum field in centre	5.68 T
Stored energy	1.5 MJ
Type of winding	5 solenoids
Nominal current	200 A
Conductor	Cu/NbTi
wire	
Cooling	liquid helium pool boiling
Total weight	8,5 tons
Insulation	PVA/epoxy resin

**Cold mass with main He vessel and cryogenic services on top**



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***KATRIN DPS2-F at KIT***