

## Magneto-Hydro-Dynamic (MHD) 5T System



MAGNETS  
FOR FUSION



MAGNETS FOR HIGH  
ENERGY PHYSICS



MAGNETS FOR  
MEDICAL  
APPLICATIONS



SYSTEMS  
FOR ENERGY

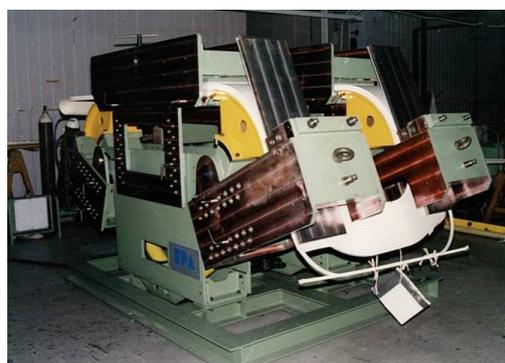


SERVICES & REPAIRS

It is a superconducting magnet system, wound using cable in conduit, for a magneto-hydraulic experimental linear generator. The system, delivered in 1993, is composed of two saddle shaped coils, each 3750 mm long, 1423 mm width and 1160 mm high; the magnet bore has a dimension of 800 mm x 1100 mm. The coils weight is 7.5 tons each and they are mounted on a support structure of about 15 tons. The conductor is NbTi/Cu cable in conduit with a nominal current of 9000 A, cooled with supercritical helium. The coils are wound following a planar geometry and then bent before VPI impregnation. The overall system weight is 45 ton and the maximum field in the centre is 5 T.

The conductor jacket is made of 316 LN stainless steel and it is fabricated starting from round pipes in solution annealed state. The whole conduit is assembled by butt welding of the pipes and after insertion of the transposed cable, the conduit is made square 16.3 mm x 16.3 mm by rolling in one step.

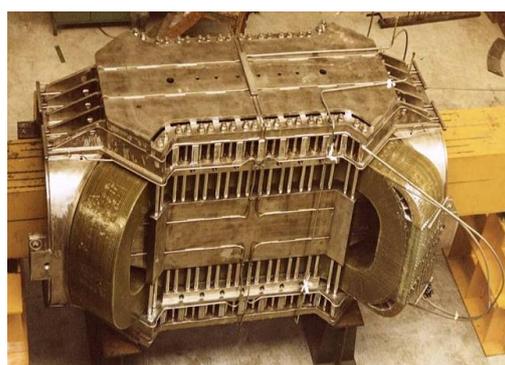
The cryostat was entirely designed in-house, it was made of stainless steel and realized by a sub-contractor.



**Bending press**



**Dipole coils after VPI impregnation**



**Coils assembled into the cold support**

Maximum field in the centre	5 T
Stored energy	64 MJ
Active length	2 m
Warm bore	0.35 m <sup>2</sup>
Type of winding	Rectangular saddle dipole
Nominal current	9.000 A
Conductor	NbTi/Cu cable in conduit
Type of cooling	supercritical helium
Magnet weight	45.000 Kg