

FINUDA Experiment Thin Solenoid



MAGNETS
FOR FUSION



MAGNETS FOR HIGH
ENERGY PHYSICS



MAGNETS FOR
MEDICAL
APPLICATIONS



SYSTEMS
FOR ENERGY



SERVICES & REPAIRS

It is one of the superconducting detectors of the DAΦNE experiment, the Frascati Synchrotron.

Delivered in 1997, the scope of supply comprised the design, construction, assembly and tests of the complete system which includes the 1.1 T thin solenoid (peak field 1.3 T), the thermal shields, the cryostat, the valve box, the iron yoke (barrel + end caps), the handling system of the end caps and the control system, for a total mass of 300 t. Preliminary cryo-tests were also carried out in the factory at nominal field before delivery in 1997. The two solenoid layers, bore 2.9 m, length 2.2 m, 753 turns, are wound with graded current density inside an Al cylinder by using an Al/Cu/NbTi co-extruded conductor; the stored energy is 8.1 MJ, while the operating current is 2845 A.

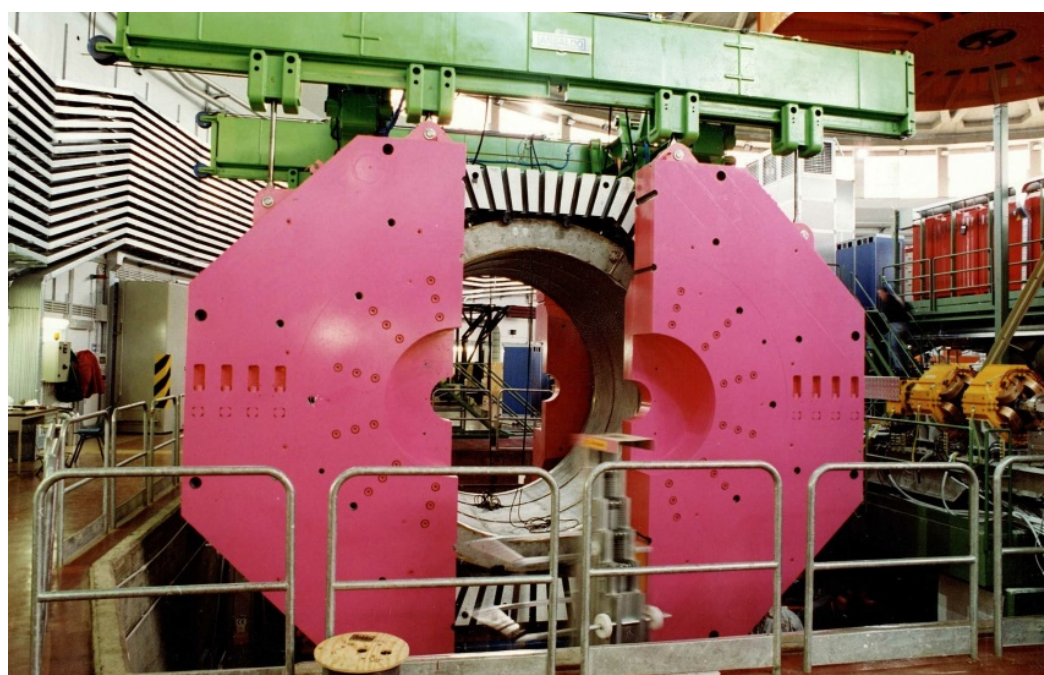
The electrical insulation consists in glass epoxy resin VP impregnated.

The magnet system is indirectly cooled, through via a set of pipes welded on the outer cylinder surface.

Maximum field	1.1 T
Stored energy	8.1 MJ
Inner diameter	φ 2929 mm
Magnet length	2200 mm
Inductance	2.2 H
Nominal current	2845 A
Conductor	NbTi-Al coextr.
Type of winding	Outer mandrel
Type of cooling	indirect



Test of insertion of complete magnet inside magnetic yoke



Solenoid magnet inside the iron structure, installation at LNF, DAΦNE accelerator