

## Multi Purpose Detector Magnet for NICA project



MAGNETS  
FOR FUSION



MAGNETS FOR HIGH  
ENERGY PHYSICS



MAGNETS FOR  
MEDICAL  
APPLICATIONS



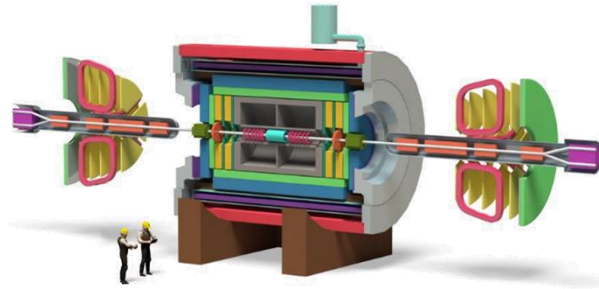
SYSTEMS  
FOR ENERGY



SERVICES & REPAIRS

ASG has been awarded a contract in the field of high-energy physics for the construction of the magnet for the Multi Purpose Detector Magnet (MPD) for the NICA heavy-ion accelerator, which will be installed at the JINR international research center in Dubna, Russia.

The superconducting magnet of MPD is intended as a single solenoid more than 7m long and with a diameter of about 5m.



The magnet is wound using a conductor manufactured by co-extrusion of stabilizing high-purity aluminum (99,998 %, RRR>1000) and a s.c. NbTi strand, diameter 1,73 mm ( $\pm 0,005$  mm). The strand is a composite of NbTi/Cu filaments in high conducting copper matrix. The magnet is equipped with an active (resistive) modulation system. It shall provide a highly homogeneous magnetic field of 0.5 T in the TPC (Charged Particle Tracker) area.

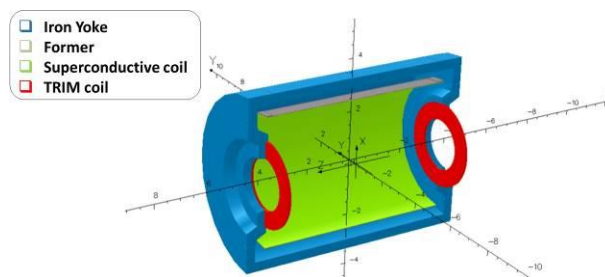
Nuclotron-based Ion Collider state-of-art design involves innovative solutions in superconductive applied technology. Typical solutions have been specifically optimized in order to guarantee the maximum flexibility in all operative conditions.

### Low Field Magnet

The main component of the MPD is a superconducting solenoid magnet with a superconducting NbTi coil and an iron yoke for the flux return.

The magnet provides a highly homogeneous magnetic field of 0.5 T in a cylindrical volume (4596 mm diameter, 3400 mm length) to ensure the transverse momentum resolution within the range of 0.1-3 GeV/c at NICA.

Correction to the main field is provided by two resistive copper coils (TRIM coils) which can be individually tuned in current to reach the requested homogeneity.





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### Production

ASG has been directly involved in the whole construction of the MPD magnet, from the design to the production.

