

High-intensity Halbach type magnetic field systems

The compact system of permanent magnets NdFeB, designed according to the principle of the dipole Halbach-structure, allows to get, inside the bore, rather homogeneous magnetic field with the magnetic flux density up to 2-3 Tesla. The system can be an efficient alternative to electro-magnetic sources of the magnetic field, and can be used in scientific and applied research requiring magnetic fields of high intensity.

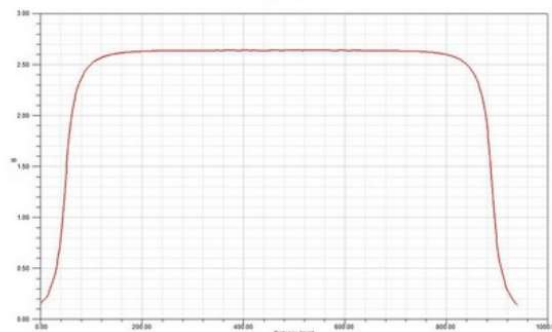
Geometrical dimensions and magnetic flux density in Halbach-type systems can vary widely, the given below data and photos are typical examples.



Specifications:

External diameter:	165 mm
Bore diameter:	40 mm
Length:	125 mm
Weight:	13 kg
Field direction:	transverse to the bore axis
Flux density in the working volume:	1.2 Tesla
Uniform field ($\pm 0.5\%$) area:	$\varnothing 40 \times 20$ mm

The Halbach system with the flux density up to 1.2 Tesla.



Field distribution in the working area of the system.

The Halbach system with the flux density of 2.6 Tesla.

Specifications:

External diameter:	250 mm
Bore diameter:	20 mm
Length:	880 mm
Weight:	~ 330 kg
Field direction:	transverse to the bore axis
Flux density in the working volume:	2.6 Tesla
Uniform field ($\pm 0.5\%$) area:	12 mm
Field distribution along the system axis:	Shown on the picture

AMT&C LLC offers the manufacturing of steady magnetic field systems according the customer technical specifications. To improve the temperature stability the system can be assembled of SmCo magnets.

Additional information about High-intensity Halbach type magnetic field systems can be found in [article «Highly intensive magnetic systems»](#), prepared by AMT&C for «Magnetics Technology International Journal».