

# Hallbach cylinder

## DESCRIPTION PRODUCT

Invention is referring to a Hallbach cylinder, generator of rotational and homogenous magnetic field used at measurement systems of magnetic properties for materials. Assembly has two cylinders A and B placed concentric with permanent magnets 1 and 2. In order to homogenize the magnetic field with a variation lower than 5% is realized cylinder A2 with different section, so at rotating of cylinders A and B in different direction are obtained values of magnetic field from 0.05T up to 1T with homogeneity of 96%-97% in A2 inside cylinder.

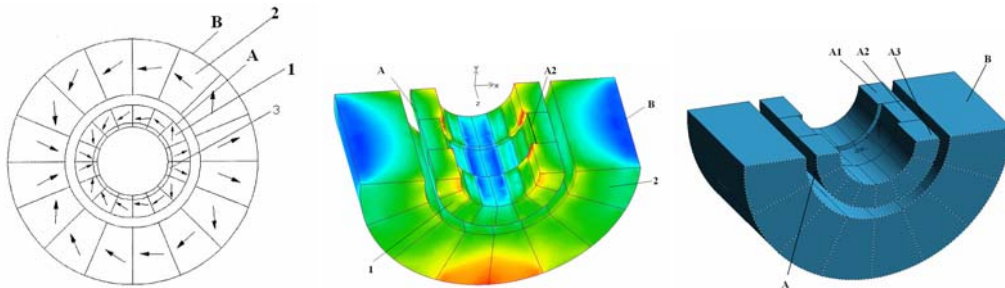
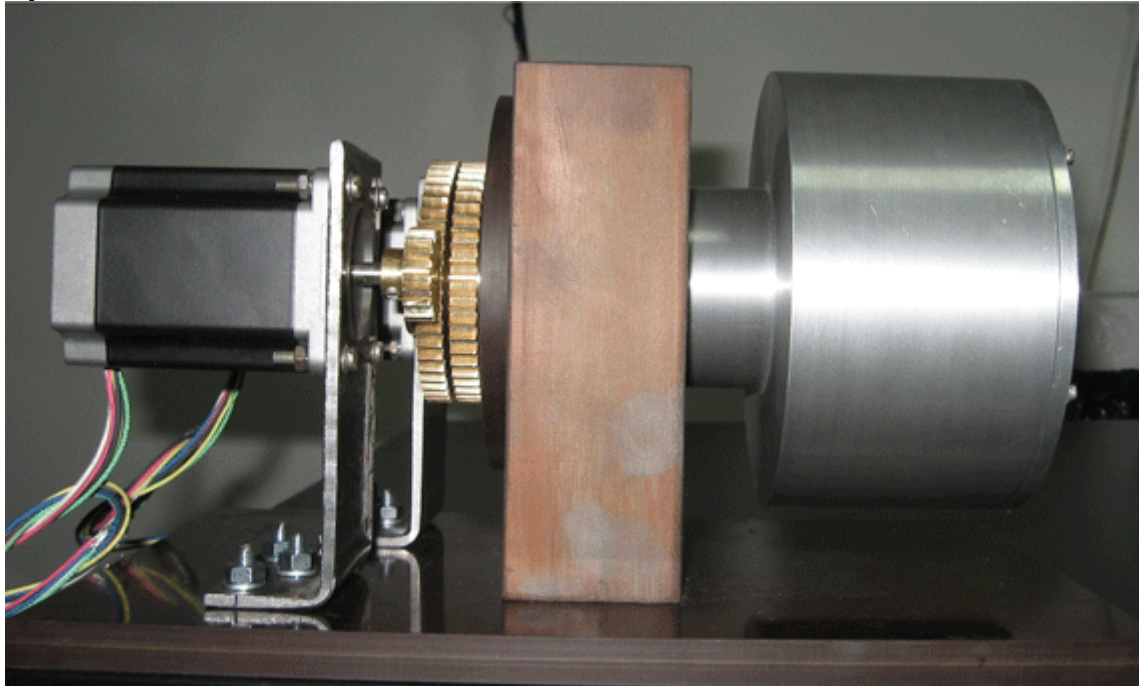
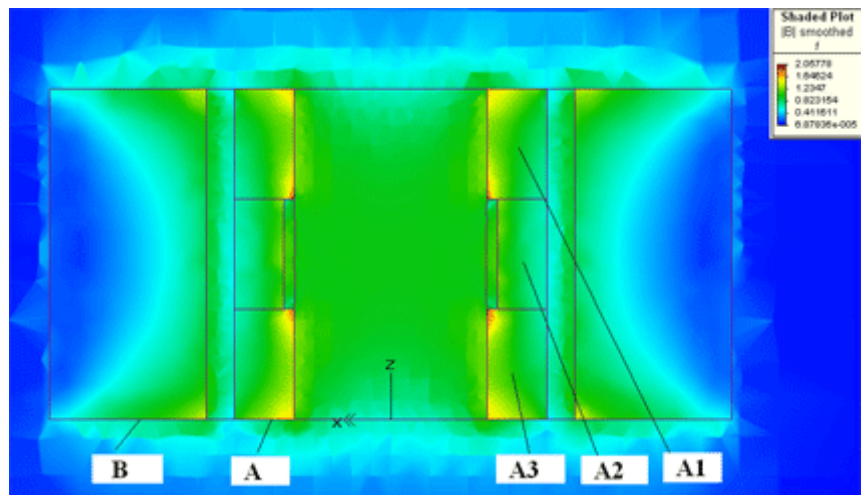
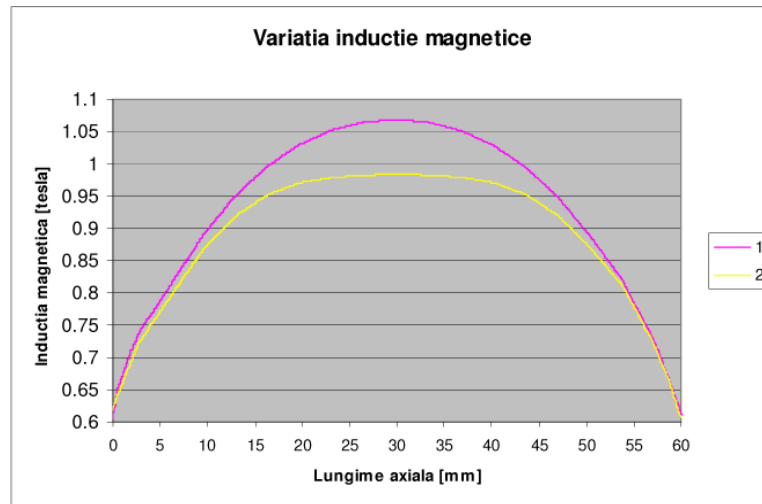


Fig.1. Hallbach cylinder

- a) magnetization directions of permanent magnets,
- b) constructive structure in which is shown the A2 region which homogenize the magnetic field,
- c) 3D distribution of magnetic induction

Fig. 2 Distribution of magnetic induction in section





**Fig.3. Variation of magnetic induction on axial length**

**ADVANTAGES:**

- Low manufacturing costs;
- Reducing the energy consumption to produce the uniform magnetic fields.

**USERS:**

Measurement systems of magnetic properties for materials, for example:

- Microscopy with Kerr magnetic effect
- Vectorial magnetometer
- Medical investigations
- Applications on space ships