

DISC MOTOR FOR ELECTRIC VEHICLES –
– CHARACTERISTIC OF MAGNETIC FIELD

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ABSTRACT *A coreless disc motor with permanent magnets, made in IEL was investigated with respect to the distribution and leakage of its magnetic field. Computations of the 3D field were made for verification.*

Neodymium magnets with remanence induction of $B_r = 1,3093\text{ T}$ were used to build the motor. The measurements were made using an FM 210 teslometer with a Hall probe, calibrated with an 1 T etalon. The investigations were performed using an open magnetic circuit (both discs mounted without armature). In the first case the measurements were made at the surface of magnets according to the net shown in Figure 3. The results are presented in Table 1 and Figure 4. Measurements with closed magnetic circuit were made at half width of the air gap at 9 points (Table 3). The magnet was divided into 16 measuring fields, symmetrically with respect to axes x and y. The measurements were made at the edges of the middle 9 fields. Results of measurements and 3D computations are very close.

Keywords: *disc motor, coreless motor, permanent magnets, magnetic induction measurement, FEM 3D field analysis*