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An Experimental Investigation of the Physical Effects in a Dynamic Magnetic System

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Abstract—It is demonstrated that a magnetic system based on rare-earth magnets is capable of converting various forms of the energy, provided that certain critical operating regime is set. As the critical regime is attained, the experimental setup becomes energetically fully autonomous. This is accompanied by local variations in the total structure weight, a decrease in the surrounding air temperature, and the formation of concentric "magnetic walls" at a distance of up to 15 m from the experimental setup. © *2000 MAIK "Nauka/Interperiodica".*

Introduction. We have experimentally studied the physical effects in a system based on rotating permanent magnets [1]. Below we describe the technology of manufacture, assembly, and the results of testing this experimental setup, which is referred to as the converter.

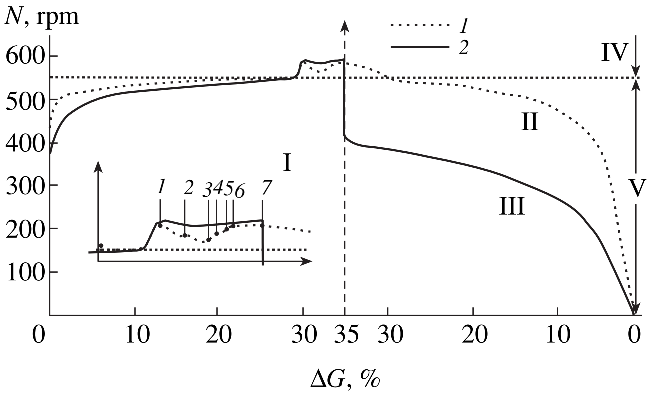
Technological description. The converter comprises an immobile stator and a rotor moving around the stator and carrying fixed magnetic rollers. The magnetic system of the working body of the converter has a diameter of about 1 m. The stator and magnetic rollers were manufactured from separate magnetized segments made of rare-earth magnets (REMs) with a residual magnetization of 0.85 T, a coercive force of [Hc] ~ 600 kA/m, and a specific magnetic energy of [W] ~ 150 J/m^3. The segments were magnetized by a conventional method based on a discharge of a capacitor bank through an inductor coil. Then the magnetized segments were assembled and glued together in a special mounting stage, which provided for the necessary tolerance in positioning the segments and for the removal of magnetic energy. Using this mounting stage, it was possible to glue the elements into the common unit. The stator incorporated REMs with a total weight of 110 kg and the rollers contained 115 kg of the same REM material.

The magnetic system elements were assembled into a single structure on a special platform made of nonmagnetic structural alloys. The platform construction was provided with springs and shock absorbers and allowed the converter setup to move in the vertical direction on three slides. The motion was monitored by an inductive transducer, which allowed changes in the platform weight to be determined in the course of the experiment. The total weight of the platform with the magnetic system in the initial state was 350 kg.

Description of observed effects. The converter was installed in a 2.5-m-high laboratory room using three concrete supports on a ground level. In additional to the ordinary steel- reinforced concrete ceiling blocks, the converter environment featured a usual electrodynamic generator and an electric motor, with a total iron weight of a several tens kilograms (only these parts could, in principle, introduce distortions into the electromagnetic field pattern observed).

The converter was set to operation by overspeeding the rotor wit the aid of the electric motor. The motor speed was gradually increased until the ampermeter connected in the motor circuit showed zero consumed current and the current direction reversal. This state corresponded to a rotor speed of approximately 550 rpm, but the motion transducer began to indicate a change in the platform weight already at 200 rpm. Then the electric motor was disconnected using an electromagnetic overrunning clutch, and a usual electrodynamic generator was connected instead to the main shaft of the converter via another electromagnetic clutch. On attaining the critical regime (~550 rpm), the rotor exhibited a sharp increase in the rotation speed; this was accompanied by a slow-down in the rate of the current weight variation. At this instant, the first 1 kW load was connected to the system. Immediately upon this connection, the rotation speed began to decrease, while the ΔG value kept increasing, and so on as depicted in figure.

The system weight variations depend both on the power consumed by the active load (the load consisted of ten ordinary 1-kW heating elements) and on the polarization voltage applied. For a maximum consumed power (7 kW), a change in the total platform weight reached 35% of the initial value in the immobile state (350 kg), which corresponded to 50% of the pure weight of the working body of the converter. An



A diagram illustrating various operation regimes of the magnetogravitational converter showing (I) load power (kW) and system weight variation: (II) 7-kW load (high voltage off); (III) 7-kW load (high voltage on); (IV) supercritical regime; (V) subcritical regime. (*1*, high voltae off; *2*, high voltage on).

increase in the load power above 7 kW led to a gradual decrease in the rotor speed and, eventually, to the system going out of the self-generation regime and the rotor speed decreasing until the full stop. The platform weight could be controlled by applying a high-voltage signal to the cellular ring electrodes situated 10 mm above the external roller surface. Upon applying a 20-kV signal (negative polarity on the electrodes), an increase in the load power consumption above 6 kW did not affect the ΔG value even when the rotor speed decreased down to 400 rpm. This was equivalent to "prolongation" of the effect and was accompanied by phenomena of the "remanent induction" type with respect to ΔG. The converter operation in various experimental regimes is illustrated in figure.

The effect of the system weight variation is reversible with respect to the direction of rotor motion and exhibits certain hysteresis. For the clockwise rotation, the critical regime is observed in the region of 550 rpm and is accompanied by development of the force acting against the gravity vector. For the counter-clockwise rotation, the onset of the critical regime is observed at approximately 600 rpm and the extra force coincides in direction with the gravity vector. The onset of the critical regime exhibited a scatter within 50–60 rpm. It should be noted that, probably, some other critical resonance regimes may exist, which correspond to higher rotor speeds and markedly greater useful load levels. Proceeding from the general theoretical considerations, the output mechanical energy must nonlinearly depend on the internal parameters of the converter magnetic system and the rotor speed, so that the observed effects are likely to be far from optimum. Establishing of the maximum output power, maximum weight variation, and the converter energy resource is of considerable theoretical and practical interest.

Besides the phenomena described above, a number of other interesting effects were observed in the system studied. In particular, the converter operation in the dark is accompanied by a corona discharge with a pinky-blue light emission and by the ozone production. The ionization cloud is formed around the stator and rotor, acquiring a toroidal shape. The general corona discharge background is superimposed with a wavy pattern corresponding to the surface of rollers: the zones of increased emission intensity are distributed along the roller height in a manner similar to that observed for the high-voltage microwave induction energy storage in the pre-breakdown state. These zones appeared yellowish-white, but the emission was not accompanied by sounds characteristic of the arc discharge. Nor did we observe any visible erosive damage on the stator and rotor surfaces.

One more effect, which was never reported previously, is the appearance of vertical "magnetic walls" surrounding the setup. We have detected and measured an anomalous constant magnetic field around the converter. The measurements revealed zones of increased magnetic field strength on the order of 0.05 T arranged coaxially relative to the system center. The direction of the magnetic field vector on the "walls" coincides with that in the rollers. The structure of these magnetic zones resembles the pattern of circular waves on the water surface. No anomalous field is detected by a mobile magnetometer, employing the Hall effect transducer, in the areas between zones. The layers of increased magnetic field strength are propagating with virtually no attenuation to a distance of 15 m from the converter center and then rapidly decayed at the boundary of this 15-m area. Each layer zone is 5–8 cm thick and exhibits sharp boundaries. The layers are spaced by 50–60 cm, the spacing slightly increasing with the distance from the converter center. A stable pattern was also observed at a height of 5 m above the setup (the measurements were conducted in a second-floor room above the laboratory; no tests were performed on a still higher level).

Another interesting phenomenon consists in an anomalous temperature drop in the immediate vicinity of the converter. At a general room temperature level in the laboratory (+22 ± 2°C), the temperature at the converter surface was 6–8°C lower. Similar temperature variations were detected in the vertical magnetic "walls." The temperature changes in the walls were detected by an ordinary alcohol thermometer with a reading set time of 1.5 min. The temperature variations in the magnetic "walls" can be even sensed by the human body: a hand placed inside the "wall" immediately feels cold. The same pattern was observed at a height of 5 m above the setup in a second-floor room above the laboratory (despite the steel-reinforced concrete blocks separating the rooms).

Discussion of results. All the experimental results described above are very unusual and need some theoretical rationalization. Unfortunately, attempts at interpreting the obtained results within the framework of the existing physical theories showed that no one of these models can explain the whole set of experimental data.

Recently, Dyatlov [2] attempted to combine the concepts of electricity and gravity by introducing the so-called electronavigation and magnetic-spin coefficients into the Heaviside gravity equations and the Maxwell field equations. This provides for a relationship between the gravitational and electrical components, as well as between the magnetic and rotational components in a given medium. The assumptions are built around a special model of inhomogeneous physical vacuum, called the vacuum domain model [2]. It is suggested that the extra relationships are absent outside the vacuum domain. Although it is difficult to imagine a long-living vacuum domain, the proposed model provides for a satisfactory explanation (at least on a qualitative phenomenological level) for the appearance of emission, the system weight variations, and the conversion of energy taken from the surrounding medium into the rotational mechanical moment of the rollers. Unfortunately, the theory cannot provide a physical pattern of the observed phenomena.

Conclusion. At present, the works on a developed variant of the converter are in progress at the Glushko “NPE Energomash” company (Moscow). This setup would allow a deeper insight into the physics of observed phenomena. Another aim is the creation of commercial samples for various practical applications.

REFERENCES

1. J. A. Thomas, Jr., *ANTI-GRAVITY: the Dream Made Reality: the Story of John R. R. Searl* (Direct International Science Consortium, London, 1994), Vol. VI, Iss. 2.
2. V. L. Dyatlov, *Polarization Model Heterogeneous Physical Vacuum* (Inst. Mat., Novosibirsk, 1998).

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SPELL: overspeeding, ampermeter, voltae, Energomash or Énergomash (text)—?