Description of Operation

A) **List of Components.** Figure 1.0

1) 4 permanent magnets; M1, M2, M3, M4.

2) 4 Type II High Temperature Superconducting Wire and Coils C1, C2, C3, C4.

B) As the inner coil C1 & C2, rotates around magnets M1 & M2, a current is induced in the wire/coil. According to Lenz's Law an electromagnetic force is produced around the wire/coil which acts to stop the rotating action as shown in figure 1.0 by Force 1 and Force 2, (The Conservation of Energy).

C) The inner coil C1 & C2, which is surrounded by magnets M1 & M2, dictates the magnitude and direction of current flow, which in turn is determined by Faraday's Law;

When a magnet approaches an infinitely long wire or coil an electric voltage is induced in the wire. The magnitude of induced voltage (Emf) is determined by:

1) The number of turns in the coil, N.
2) The strength of the external magnetic field, B.
3) The area perpendicular to the magnetic field or the area of the coil, A.
4) The rate (speed) at which the magnet approaches the wire, Δ t.

D) The inner coil C1 & C2, has a greater number of turns N, a stronger magnetic field strength B and a greater area perpendicular to the magnetic field A than the outer 2 coils C3 & C4 which correspond to magnets M3 & M4.

E) As the current I flows out through the outer 2 coils C3 & C4, an electromagnetic field is produced Force 3 and Force 4, which encourages the direction of rotation rather than opposing it as was seen by the inner coil and the forces F1 and F2. This can be explained by the Left Hand Rule of Electricity for motors and the Right Hand Rule of Electricity respectfully, where the thumb points in the direction of force applied F, the index finger points in the direction of the magnetic field B , and the middle finger in the direction of the current flow I.

F) Because Type II High Temperature Superconducting Wire/Coils are employed there is no resistance in the wire and no loss of output current due to the windings resistance in the exterior coils.

G) Image 2 details what magnitudes and directions of torques are produced within the generator. The calculations show that by changing either the magnetic field strength B, or the length of the outer coil L, or the length of the lever arm the lever arm 3 or 4, the complimentary torque produced at the outer coil can be greatly affected and utilized to negate not only the negative emf's but resistance in the bearings and the wire if a conventional generator design is utilized i.e. copper or silver wire .

Risks and Uncertainties:

H) There is an assumption being made in this design proposal which suggests that current will flow from the inner coil out through the outer coils and that the outer coils will not generate their own current. If there is an initial current being generated in the outer coils it will be overcome by the current generated by the inner coil because the inner coil will be designed to produce a current of greater magnitude and duration.

I) Care must be taken to ensure that coils C3 & C4 and the rate (speed) at which the wire/coil approaches magnets M3 & m4 Δ t, does not have a negative effect on the generator's performance.

J) Current sensitive switching may be employed if needed to ensure the desired direction of current flow.

CA 02437745 2003-08-15