

Faraday Generator Test And Proof Of Concept

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FaradayGenTheory.mcd

Below is a link to further information concerning Bruce DePalma's N-Machine and his theories of unlimited energy space that supplies the energy to the machine. His ideas about energy space are in agreement with my own and visa-versa.

<http://www.rexresearch.com/depalma/depalma.htm>

What may be added to DePalma's theory is my concept of the least quantum electrogravitational velocity that must exist throughout all of space that is also intimately connected to the vector magnetic potential, commonly known as the A-Vector. Thus, there IS indeed an absolute frame of reference as opposed to Einstein's viewpoint of the opposite. That reference frame is the least quantum velocity equal to the square root of the fine structure constant in meter per second units and it is most likely connected to rotational motion, especially evident in the case of the faraday motor experiment involving a magnetic field.

The connection to the electrogravitational least quantum velocity occurs whenever a material 'system' of particles (or even one particle) exits in rotation about a central axis. The connection to energy space induces a parallel connection to energy space that induces a same vector momentum that fixes the direction of what is termed inertia by mainstream physics.

Mainstream physics must accept a least quantum velocity limit just as it has placed an upper limit of the velocity of light. It is this new concept that will allow for the production of limitless free energy as well as electrogravitational propulsion and control of spacecraft.

The Faraday Disk Field

The field dynamics of the Faraday disk homopolar generator can be explained in a more straightforward manner if the established field near the magnet is considered to be nearly stationary relative to any motion of the magnetic disk that creates it.

Then the established field can be considered to be a stator field without the necessity of an actual physical stator being present. As a result, no invocation of relativity is necessary to explain the actions of the Faraday disk. Only the relative motion between the conductive surface of the axially magnetic disk in rotation through a nearly zero velocity magnetic field that is independent by its nature from the motion of the magnetic disk field is necessary.

The nearly zero velocity field is independent of the relative motion of the disk and as a result, the field is akin to the nature of the magnetic vector potential, also known as the A-vector. The famous Aharonov-Bohm experiment proved in a quantum level experiment that the A-vector exists apart from the totally shielded magnetic field that created it and further that the A-vector can affect the momentum of particles passing through its influence. This has been proven by many others since the original experiment.

Then A-vector moves slowly around the magnetic B field 90 degrees to the B-field vector. The cross product of the A-vector and the B-vector forms a pressure wave that moves outwards from the cylinder formed by the cross product of the A-vector and B-field vector. This pressure wave is also free energy.

Having the virtual stator field always near zero velocity relative to the motion of the magnet field that created it explains why there is no voltage generated in a Faraday disk if the disk is held motionless and the magnet disk is rotated. The virtual stator field is independent of the motion of the magnet disk that creates it since it is always nearly zero rotation velocity.

The near zero rotation velocity is also independent of radius from the axis of near zero rotation since it must be a constant in the least quantum sense fixed at the square root of the fine structure constant in meter per second units. Thus, there exists a lower limit of velocity associated with the quantum state of motion as well as the upper limit of velocity equal to the velocity of light in the large scale of matter. It is this lower limit of velocity that is key to the nature of not only the nature of the magnetic field but also the gateway to the electrogravitational action as detailed on my web site at:

<http://www.electrogravity.com>

The above fundamental explanation yields the how and why that the generators built by Bruce De Palma and others function. See:

N-Machine Tests:

<http://jnaudin.free.fr/html/farhom.htm>

<http://www.rexresearch.com/kinchelo/kinche~1.htm>

I do not envision our universe as being in a closed bottle energy-wise. The scientific empirical facts are present that the universe is filling with energy and as a result, expanding at the same time. Therefore, “As above, so below” applies in that the energy flowing in from quantum field actions related to the dynamics of the A-vector, B-vector and pressure fields as described above are the cause of the expansion of the universe.

FaradayDiskVoltTest.MCD

The voltage V between the inner radius r1 and the outer radius r2 of a Faraday acyclic (homopolar) generator is given by the following mathematical expression where B is the strength of the magnetic flux in webers/meter² and ω is the frequency of rotation in radians per second.

$$V = \omega \cdot \int_{r1}^{r2} B \cdot r \, dr \quad \text{or:} \quad V = \frac{1}{2} \cdot r2^2 \cdot \omega \cdot B - \frac{1}{2} \cdot r1^2 \cdot \omega \cdot B \quad \text{Thus:} \quad V = \frac{1}{2} \cdot \omega \cdot B \cdot (r2^2 - r1^2) \quad 1)$$

A disk magnet diameter is selected if 2 inches with a center small diameter of 0.250 inches.

$$\text{Let:} \quad D_L := 2.0 \cdot \text{in} \quad D_S := 0.25 \cdot \text{in} \quad r2 := \frac{D_L}{2} \quad r1 := \frac{D_S}{2} \quad B := 5150 \cdot \text{gauss}$$

$$f1 := 51.667 \cdot \text{Hz} \quad (\text{For } 3100 \text{ rpm}) \quad \omega1 := 2 \cdot \pi \cdot f1 \quad \text{in radians/second.}$$

$$\text{Then: } V_1 := \frac{1}{2} \cdot \omega l \cdot B \cdot (r_2^2 - r_1^2) \quad V_1 = 0.053 \text{ volt} \quad 2)$$

It is seen that the output voltage increases as the square of the difference of the inner and outer radius distance. If the internal resistance remains constant, then the output power increases as the square of the voltage over the internal generator resistance. The below surface resistance per disk is assumed as a larger than actually expected value.

$$\text{Let: } R_g := 5 \cdot 10^{-05} \cdot \text{ohm} \quad 50 \text{ micro-ohms. The actual } \Omega \text{ may be considerably less.}$$

Then the power into a matched load impedance is:

$$\text{1 disk: } S_{g1} := \frac{V_1^2}{2R_g} \quad S_{g1} = 28.184 \text{ watt} \quad 3)$$

The power for 1 disk can be expressed directly in terms of twice the radius as: $r_3 := 2 \cdot r_2$

$$\text{or: } S_{g2} := \frac{\left[\frac{1}{2} \cdot \omega l \cdot B \cdot (r_3^2 - r_1^2) \right]^2}{2 \cdot R_g} \quad S_{g2} = 461.738 \text{ watt} \quad 4)$$

$$\underline{\text{Doubling the radius multiplies the output by 16 times!}} \quad \frac{S_{g2}}{S_{g1}} = 16.383 \quad 5)$$

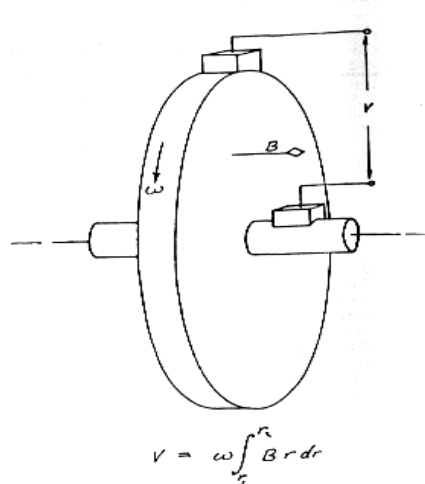
The power output changes as the fourth power of the radius difference between the inner and outer diameters and the square of both the magnetic flux strength B and the rate of angular velocity ω . This is not brought out in contemporary analysis of the Faraday Homopolar Generator.

The conclusion is obvious. Holding the rate of rotation constant, doubling the radius causes a power increase of 16-fold while the inertial forces on the disk increase only in a linear fashion as a direct function of the radius increase. Then it is possible to design a generator for commercial use of large diameter and thus very substantial power output at a fairly low rotation rate.

The power S_g into a short circuit must be dissipated by the surface area of the disk magnets. They may be placed in water for cooling if necessary.

Below is a figure copied from JLN Labs web site showing a single disk magnet configuration.

Figure 1.



The inertial force on the magnet disk can be held as a constant while increasing the radius and still achieve increased power output as the following analysis will show.

InertialForceSum.MCD

$$T := \frac{3}{8} \cdot \text{in} \quad \text{Mass}_{\text{total}} := 143 \cdot \text{gm} \quad \text{NdFeB Grade N42, Ni-Cu-Ni plating disk magnet.}$$

$$\text{Vol}_{\text{total}} := \pi \cdot (r_2^2 - r_1^2) \cdot T \quad \text{Density} := \frac{\text{Mass}_{\text{total}}}{\text{Vol}_{\text{total}}} \quad \text{Density} = 7.525 \times 10^3 \frac{\text{kg}}{\text{m}^3}$$

$n := 1, 2 \dots 100$ Range variable for incrementing the radius.

$$r(n) := \frac{r_2 - r_1}{99} \cdot (n - 1) + r_1 \quad \text{Check:} \quad r(1) = 0.125 \text{ in} \quad r(100) = 1 \text{ in}$$

$$\Delta \text{vel}(n) := 2 \cdot \pi \cdot f_1 \cdot r(n) \quad \Delta \text{Vol}(n) := T \cdot \pi \cdot (r(n+1)^2 - r(n)^2) \quad \Delta M(n) := \text{Density} \cdot \Delta \text{Vol}(n)$$

$$\text{Force1}_{\text{total}} := \sum_{n=1}^{100} \frac{\Delta M(n) \cdot \Delta \text{vel}(n)^2}{r(n)} \quad \text{Force1}_{\text{total}} = 59.337 \text{ lbf} \quad 6)$$

= Inertial pounds of force radial (total).

Doubling the major radius to r3 while holding the frequency f constant:

$$r(n) := \frac{r3 - r1}{99} \cdot (n - 1) + r1 \quad \text{Check:} \quad r(1) = 0.125 \text{ in} \quad r(100) = 2 \text{ in}$$

$$\Delta\text{vel}(n) := 2 \cdot \pi \cdot f1 \cdot r(n) \quad \Delta\text{Vol}(n) := T \cdot \pi \cdot (r(n+1)^2 - r(n)^2) \quad \Delta M(n) := \text{Density} \cdot \Delta\text{Vol}(n)$$

$$\text{Force2}_{\text{total}} := \sum_{n=1}^{100} \frac{\Delta M(n) \cdot \Delta\text{vel}(n)^2}{r(n)} \quad \text{Force2}_{\text{total}} = 476.124 \text{ lbf} \quad 7)$$

= Inertial pounds of force radial (total).

The increase of inertial force is about 8 times by doubling the radius at a fixed rotation rate.

$$\frac{\text{Force2}_{\text{total}}}{\text{Force1}_{\text{total}}} = 8.024 \quad 8)$$

Finally, holding the radius at the original beginning r1 radius and doubling the frequency:

$$f2 := 2 \cdot f1 \quad f2 = 103.334 \text{ Hz}$$

$$r(n) := \frac{r2 - r1}{99} \cdot (n - 1) + r1 \quad \text{Check:} \quad r(1) = 0.125 \text{ in} \quad r(100) = 1 \text{ in}$$

$$\Delta\text{vel}(n) := 2 \cdot \pi \cdot f2 \cdot r(n) \quad \Delta\text{Vol}(n) := T \cdot \pi \cdot (r(n+1)^2 - r(n)^2) \quad \Delta M(n) := \text{Density} \cdot \Delta\text{Vol}(n)$$

$$\text{Force3}_{\text{total}} := \sum_{n=1}^{100} \frac{\Delta M(n) \cdot \Delta\text{vel}(n)^2}{r(n)} \quad \text{Force3}_{\text{total}} = 237.347 \text{ lbf} \quad 9)$$

= Inertial pounds of force radial (total).

$$\frac{\text{Force3}_{\text{total}}}{\text{Force1}_{\text{total}}} = 4 \quad 10)$$

Faraday Disk Analysis Results:

Doubling the frequency yields four times the inertial pounds of force due to the square of the velocity parameter in the inertial force equation above. However, doubling the radius will yield a force increase somewhat less than but close to eight times. More importantly, doubling the radius will yield 16 times the power but less than eight times the inertial pounds of force. **Obviously, simply increasing the radius while slowing the rate of rotation to keep the inertial force a constant will yield an increase in power output, all other parameters also being held constant.**

Inertial Force Equalization With Increasing Radius And Net Power Gain Calculation:

Triple the major radius D_L and reduce the rate of rotation so that the inertial forces are equal.

$$\text{Let: } D_L := 6.0 \cdot \text{in} \quad D_S := 0.25 \cdot \text{in} \quad r_2 := \frac{D_L}{2} \quad r_1 := \frac{D_S}{2}$$

$$f_3 := 9.9253 \cdot \text{Hz} \quad \omega_3 := 2 \cdot \pi \cdot f_3 \quad \text{in radians/second.} \quad r_2 = 3 \text{ in} \quad r_1 = 0.125 \text{ in}$$

$$\text{Density remains the same.} \quad \text{Density} = 7.525 \times 10^3 \frac{\text{kg}}{\text{m}^3}$$

$n := 1, 2 \dots 100$ Range variable for incrementing the radius.

$$r(n) := \frac{r_2 - r_1}{99} \cdot (n - 1) + r_1 \quad \text{Check:} \quad r(1) = 0.125 \text{ in} \quad r(100) = 3 \text{ in}$$

$$\Delta \text{vel}(n) := 2 \cdot \pi \cdot f_3 \cdot r(n) \quad \Delta \text{Vol}(n) := T \cdot \pi \cdot (r(n+1)^2 - r(n)^2) \quad \Delta M(n) := \text{Density} \cdot \Delta \text{Vol}(n)$$

$$\text{Note:} \quad \frac{f_1}{f_3} = 5.206$$

$$\text{Force}_{1\text{total}} = 59.337 \text{ lbf} \quad \text{Beginning}$$

$$\text{Force}_{3\text{total}} := \sum_{n=1}^{100} \frac{\Delta M(n) \cdot \Delta \text{vel}(n)^2}{r(n)} \quad \text{Force}_{3\text{total}} = 59.337 \text{ lbf} \quad \text{Final} \quad 11)$$

= Inertial pounds of force radial (total).

$$\text{Then:} \quad V_3 := \frac{1}{2} \cdot r_2^2 \cdot \omega_3 \cdot B - \frac{1}{2} \cdot r_1^2 \cdot \omega_3 \cdot B \quad V_3 = 0.093 \text{ volt}$$

Finally, the power into a matched load impedance while holding the inertial force a constant is:

$$1 \text{ disk:} \quad S_{g3} := \frac{V_3^2}{2R_g} \quad S_{g3} = 86.639 \text{ watt} \quad S_{g1} = 28.184 \text{ W} \quad \frac{S_{g3}}{S_{g1}} = 3.074 \quad 12)$$

Conclusion:

This proves the feasibility of the Faraday Generator for large power generation. Reducing the rate of rotation to keep the inertial forces constant still achieves a significant increase in output power while increasing the radius of the disk magnets. Then the output power by this method is directly proportional to the increase in radius while the inertial force remains the same.

Therefore, increasing the rate of rotation is not the way to increase the output power since eventually the inertial force will pull apart the magnet. Simply increasing the radius while reducing the rate of rotation will hold the inertial forces within safe limits and is the proper way to increase the output power.

It may be argued that increasing the radius will increase the resistance proportionally but this is not the case since resistance is proportional to the product of resistivity times length divided by area and area increases as the square of the radius. This means that the resistance would actually be proportional to the inverse of the radius increase. Thus, resistance would actually go down which would increase the current output, not decrease it. Utilizing the above concept, a point will be reached where the power output is more than required to make up for bearing and brush friction. The theoretical current output is unlimited into zero ohms. A cryogenic approach may yield fantastic results concerning small size Faraday generators that are able to achieve tremendous power outputs.

It is a fact that the current or power drawn from a Faraday generator does not reflect back to the generator as a load. Thus drawing power from the Faraday generator does not cause it to slow down at all. As a result, it is much more suitable for generating power than the conventional generators that use changing magnetic fields which are load sensitive.

Finally, the use of the Faraday generator as a space flight power supply would be ideal since the size of the disk magnet would not be limited by gravitational force stressing the magnets due to their shear weight consideration.