Electro Dynamo Theory & Schumann Resonance

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Abstract: *The goal of this paper is to propose the electrical harvesting of electromagnetic energy from the earth using the known Schumann resonant frequency. By modeling the earth mantle as a rotating stator in space I calculate the electrical frequency based on a rotational speed of 465 m/s. I then articulate how rotational frequency and tangential frequency are proportional, which leads to a tangential frequency of 7.75Hz at the earth's surface. This number nearly matches Schumann Resonance, thus concluding that Schumann Resonance is generated from the action of the earth's electro dynamo. Energy harvesting from the earth electromagnetic field using Tesla Coil technology on the scale of Wardenclyffe Tower is thus shown to be theoretically practical.*

Keywords: *Earth Mantle, Electro Dynamo, Schumann Resonance, Wardenclyffe Tower*

1. INTRODUCTION

In previous work the earth was modeled as a simple machine to better comprehend how the Earth mimics an electrical motor [1] [2]. Briefly we determined how the circuit of the planet may be connected and discussed how the rotational speed of the outer Earth is maintained at 465 m/s. A view of the earlier model is shown below to reacquaint the reader with the electrical schematic and the context of this paper. I draw attention to the stator circuit at Earth's outer mantle and the field winding R_f shown as a spheroid. The calculation of the tangential frequency of the field or stator winding is the focus of this manuscript.

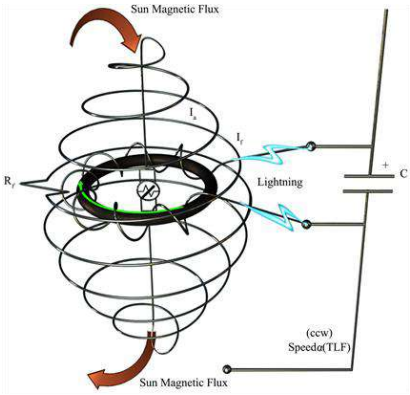

Figure 1. *Electrical Schematic of Earth*

2. CALCULATE THE FREQUENCY OF EARTH STATOR USING ROTATIONAL SPEED

The formula to make this calculation is the number of cycles (Hz) times 60 (for seconds in a minute) times two (for the positive and negative pulses in the cycle) divided by the number of poles. Calculating the magnetic field speed for an armature of a synchronous machine is dictated by the following equation.

$$N = 120f/P \quad [3]$$

Or,

$$f = N \times P / 120$$

where,

N = speed of the earth stator at .000694 RPM

P = number of poles, or 2.

Inserting the value for rotational speed and number of poles I obtain an Earth mantle, f = .000011566Hz.

3. CONVERT EARTH STATOR RPM TO LINEAR VELOCITY

RPM stands for rotations per minute and is used to quantify the speed at which an object spins, such as an electric motor or a centrifuge. Linear speed measures the actual distance travelled in meters per second. Because a rotation always covers the same distance, I can convert from rpm to linear distance using the following equation:

The RPM to Linear Velocity formula is:

$$v = r \times \mathrm{RPM} \times 0.10472 \quad [4]$$

where:

v = Linear velocity in m/s

r = radius in meters, which for the earth is 6,378,000 m

RPM = Angular velocity, which is .000694RPM

Inserting these values, the linear velocity is calculated as 465 m/s.

4. ROTATION SPEED VS. TANGENTIAL SPEED

Tangential speed is the linear speed of something moving along a circular path. A point on the outside edge of the surface of the earth travels a greater distance in one complete rotation than a point nearer the earth's core. Travelling a greater distance in the same time means a greater speed, and so linear speed is greater on the outer edge of a rotating object than it is closer to the axis. This speed along a circular path is known as *tangential speed* because the direction of motion is tangent to the circumference of the circle.

Rotational speed or *angular speed,* involves the number of revolutions per unit of time. All parts of the earth's

mantle turn about the axis of rotation in the same amount of time. Thus, all parts share the same rate of rotation, or the same number of rotations or revolutions per unit of time. It is common to express rotational rates in revolutions per minute (RPM) or in terms of the number of "radians" turned in a unit of time. There are 2πradians in a full rotation. When a vector direction is assigned to rotational speed, it is known as rotational velocity or angular velocity.

Tangential speed and rotational speed are related: the greater the RPMs, the larger the speed in meters per second. Tangential speed is directly proportional to rotational speed at any fixed distance from the axis of rotation. However, tangential speed, unlike rotational speed, depends on the distance from the axis. For the earth rotating with a fixed rotational speed, the tangential speed of the inner earth is less than the outer earth. Towards the edge of the surface of the earth the tangential speed increases proportional to the distance from the axis. The equation is expressed as follows:

$$v \propto r\, w[5]$$

where *v* is tangential speed and ω (Greek letter omega) is rotational speed. One moves faster if the rate of rotation increases (a larger value for ω), and one also moves faster if movement farther from the axis occurs (a larger value for *r*). In any kind of rotating system, tangential speed depends on how far you are from the axis of rotation.

5. CALCULATE TANGENTIAL FREQUENCY OF EARTH MANTLE

Since our motor speed equation includes a constant of P/120 and rotational speed is *proportional* to tangential speed, we can also state that rotational frequency is *proportional* to tangential frequency. By substituting in the tangential velocity, we obtain a new frequency result.

$$f = N_t \times P / 120$$

where,

N_t = tangential speed of the earth stator at 465 m/s

P = number of poles, or 2.

Inserting the value for tangential speed and number of poles I obtain a frequency at the surface of the earth, f = 7.75Hz. A value that is nearly identical to Schumann Resonance of 7.83 Hz. The difference being less than 1%.

6. CONCLUSION

The electrical rotational frequency of the earths mantle is an extremely low .00001156Hz which is considered direct current for all practical purposes. The electrical tangential frequency at the surface of the earth is shown to be 7.75Hz nearly matching the fundamental Schumann Resonance. The work suggest that Schumann Resonance is derived, and proportional to the extremely low electrical frequency of the outer earths rotational speed. This finding is consistent with Schumann Resonance operating in the cavity between the earth's surface and the Ionosphere.

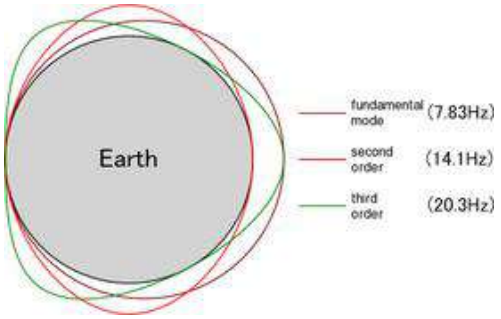

Fig. 2 *Diagram of Schumann Resonance*

The ratio of Schumann Resonance to .00001156Hz is a rough magnitude of 670,000. Assuming the earth average power use of 3.14e18 watts, this suggest that a tuned power plant receiver could conceivably harvest 4.68 Terawatts from the earth electromagnetic field at 7.75 Hz. The work suggests that Nickola Tesla experimental reports from Colorado Spring regarding detection of resonant electrical currents emanating from the earth during lightning disturbance at approximately 8 Hz would match those predicted by the electro dynamo theory. It is recommended that Nickola Tesla's patent on the Wardenclyffe Tower be resurrected and power be harvested directly from the earth electromagnetic field and transmitted wirelessly to local area networks. [6]

Acknowledgement

The author wishes to acknowledge Nickola TeslaSerbian-American engineer who patented hundreds of breakthroughs in the production, transmission and application of electric power. In the 1890s Tesla invented electric oscillators, meters, improved lights and the high-voltage transformer known as the Tesla coil. He also experimented with X-rays, gave short-range demonstrations of radio communication two years before Guglielmo Marconi and piloted a radio-controlled boat around a pool in Madison Square Garden. Together, Tesla and Westinghouse lit the 1891 World's Columbian Exposition in Chicago and installed AC generators at Niagara Falls. Tesla built the first tested wireless transmission in Colorado Springs in 1900. He secured backing from financier J.P. Morgan and began building a global communications and power network centered on a giant tower at Wardenclyffe, on Long Island. But funds ran out due to a recession at the turn of the last century. The Wardenclyffe Tower was dismantled by the federal government at the outset of WWI. The Wardenclyffe site is now a museum dedicated to this great inventor.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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