THE EARTH'S ELECTROSTATIC CHARGE

1 Read the article and guess the meaning of the highlighted words.

Tesla's intent was to condense the energy trapped between the earth and its upper atmosphere and to transform it into an electric current. He pictured the sun as an immense ball of electricity, positively charged with a potential of some 200 billion volts. The earth, on the other hand, is charged with negative electricity. The tremendous electrical force between these two bodies constituted, at least in part, what he called cosmic energy. It varied from night to day and from season to season but it is always present.

The positive particles are stopped at the ionosphere and between it and the negative charges in the ground, a distance of 60 miles, there is a large difference of voltage – something on the order of 360,000 volts. With the gases of the atmosphere acting as an insulator between these two opposite stores of electrical charges, the region between the ground and the edge of space traps a great deal of energy. Despite the large size of the planet, it is electrically like a capacitor which keeps positive and negative charges apart by using the air as a non-conducting material as an insulator.

The earth has a charge of 96,500 coulombs. With a potential of 360,000 volts, the earth constitutes a capacitor of .25 farads (farads = coulombs/volts). If the formula for calculating the energy stored in a capacitor (E =1/2CV2) is applied to the earth, it turns out that the ambient medium contains 1.6 x 1011 joules or 4.5 megawatt-hours of electrical energy. In order to utilize this high-voltage energy you must do two things — make an energy sink and then devise a way of making the "sink" oscillate.

Such a "sink" has to be at a lower energy state than the surrounding medium and, for the energy to continually flow into it, the energy must be continually pumped out of it. Additionally, this "sink" must maintain a lower energy state while meeting the power requirements of the load attached to it. Electrical energy, watt-seconds, is a product of volts x amps x seconds. Because the period of oscillation does not change, either voltage or current has to be the variable in this system's energy equation. Bifilar wound coils are used in the system because a bifilar wound coil maximizes the voltage difference between its turns, the current is then minimized.

A coil in our system, then, will be set into oscillation at its resonant frequency by an external power source. During the "zero-point" portion of its cycle the coil will appear as one plate of a capacitor. As the voltage across the coil increases, the amount of charge it can siphon will increase. The energy that is taken into the coil through the small energy window (zero-point) appears to be the key to the success of this system. It is at this zero-point where energy is condensed into positive and negative components of current. When energy escapes from the "sink" the magnetic field collapses and a strong magnetic quake is created in it's wake. A properly tuned system can capture and convert radiant energy in such a prescribed arrangement.

The radiant energy system is a self-oscillating capacitive system. Once it is set into oscillation, very little power is expended in keeping it going. Because it is an electrostatic oscillating system, only a small amount of charge moves through the system per cycle, that is, the coulomb per seconds = amps are low. If the charge is used at a low rate, the energy stored in the system will be turned into heat at a slow rate enabling the oscillations to continue for a long period of time.

By reviewing history it is understandable why some inventions are not commercialized. It is economics, not science, that is the main factor. It will be remembered that alternating current was opposed by powerful financiers in Tesla's time.

2 Spojte slova s českým ekvivalentem.

intent	ohromná	využít	bifilar wound coil
immense	kondenzátor	Teslova cívka	quake
tremendous	okolní prostředí	odčerpat	utilize
insulator	záměr	chvění	convert
despite	obrovský	zachytit	alternating current
capacitor	navzdory	přeměnit	siphon
ambient	izolátor	střídavý proud	capture

https://www.youtube.com/watch?v=NFcj5Op2cC0

3 Watch the video and anwer the questions.

1. How wide is the three dimensional resonant cavity, called Schumann's cavity?
2. By how much power you can transmit electromagnetic energy in the Schumann's cave at almost no attenuation?
3. Where did Nikola Tesla develop the technology to to produce astonishingly high voltages and currents?
4. How many kilovolt amperes did the Westinghouse transformer have?
5. At what frequency all the biological systems operate?
6. When did Tesla construct his legendary Wardenclyffe tower?