

Wireless Energy Generation and Transmission- A Demolished Technology

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Abstract: This paper represents the transmission of power to terrestrial distance as per principles described by great Serbian scientist and engineer Nikola Tesla. In the year 1901 a tower has been constructed for wireless power generation, transmission and wireless telegraphy. This tower generates power by using earth's renewable energy and transmits power wirelessly to a terrestrial distance. The tower is named as Wardencllyffe tower. It was located in United states of America (Shoreham long island, NY). This magnifying transmitter is used to excite the earth by treating earth as a big spherical conductor. Tesla used the principles of electrostatic induction and electrical conduction which is called as disturbed charge of ground and air method. This tower has been destructed in the year 1917 due to economic and political problems. In view of high power demand and biggest power outage in India an ancient method of efficient power generation technique is referred to solve this problem.

1. INTRODUCTION

Electricity is one of the finest inventions of the earth. Since the invention of the electricity till now power transmission is done by wire. As well as power generation mostly depend on natural resources. Everything around the electricity has changed by crossing several decades. Today we live in a modern era where all electrical appliances have been upgraded. But the power generation and transmission sits idle since invention. In order to change the methodology a great electrical inventor and Serbian scientist has coined term wireless electricity. Had a great idea to generate bulk power using sustainable energy of earth and transmit wirelessly to the opposite pole of the earth. This idea has been explained by a single tower which was constructed in the year 1901. The two basic principles employed in the tower are electrostatic induction and electrical conduction. Tesla used longitudinal compression wave instead of electromagnetic induction hertzian type of transverse waves which was used by modern engineers for radio wave propagation. This tower has been demolished in the year 1917 due to economic and political problems along with the tower. Along with that such a wonderful method also demolished and transmission to antipodal point of the globe has also demolished. In this paper we have discussed about wireless power generation and

transmission, be economic issues on power scenario of India on considering the factors such as power outage of a nation, destruction of natural resources, leading inflation rate, lagging economic rate an ancient method of power generation and transmission has been discussed below because electricity is also a vital factor in the development of a nation.

2. GENESIS OF WARDENCLYFFE TOWER

Tesla's "World System" was theoretically based on three criteria namely,

1. The Tesla Transformer (Tesla coil)
2. The Magnifying Transmitter (transformer adapted to excite the earth)
3. The Wireless System (economic transmission of electrical energy without wires)

As Tesla states, "The first World System power plant can be put operation in nine months. With this power plant it will be possible to achieve electrical activities up to 7.5 billion watts, it is considered to work for as many technical achievements as are possible without due expense." [1] The article by Toby Grotz on the wireless transmission of power is an introduction to Tesla's plant. It describes the initial development of the tower. Grotz worked together with Dr. Corum on "Project TESLA," a business project designed to implement the wireless transmission of electricity. Dr. Corum notes on preliminary article on the ELF (extremely low frequency) oscillator of Tesla explain the modified circuit of magnifying transmitter by the earth ionosphere cavity [2][3]. Dr. James F. Corum and Kenneth L. Corum published an article on 2003 regarding Tesla Colorado Springs receivers this article gives brief description about the self-excited receiver of Tesla. There are two figures which describe in simple terms Tesla's wireless transmission of electrical power. The fig. 1 shows the mechanical "Analogy" of Tesla that is labelled in Corum's ELF article and the fig. 2 is the "Realization" of Tesla which explains the power transmission concept.

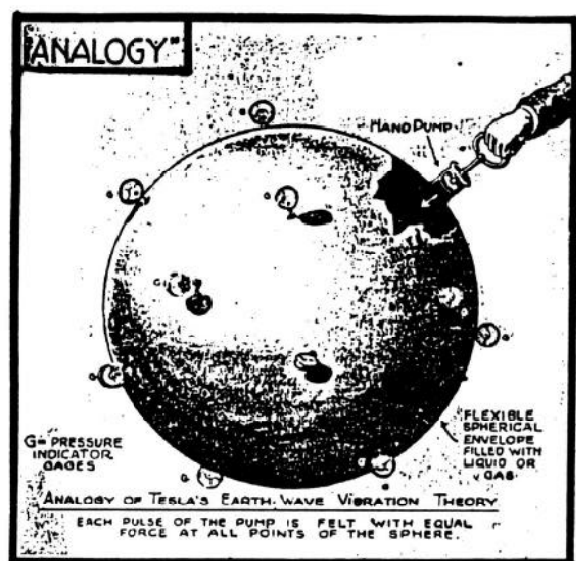


Fig. 1: The mechanical "Analogy" of Tesla



Fig. 2: The "Realization" wireless power transmission concept of Tesla.

3. CONSTRUCTION OF WARDENCLYFFE TOWER

The structural details of Wardencllyffe tower can be easily understood by circuits as Nikola Tesla termed by as shown in Fig. 3.

The transmitting circuit which involving of an uplifting terminal C which is superior part of the circuit. L_1 and L_2 are the supports coupled to the terminal, and Terminal C1 is movable it is also connected to C and C2LSE acts as a resonating system which acquires releases negative ions with C1. This effect in the creation of oscillation with CL1E1L1E1. This oscillatory circuit which paves the method for transmission over earth. On further analysis of the structure

of the transmitter and also he performed the calculations for his tower. Finally, He originated to a result that the present transmitter consists three vital towers for central plant. In order to reduce the height tower with same efficiency he reduced the height of plant by using combination of circuits as given in fig. 4 the above described details were occupied in communication between Tesla and Stanford white was record on May 29,1901 and Sept13,1901[4][3].

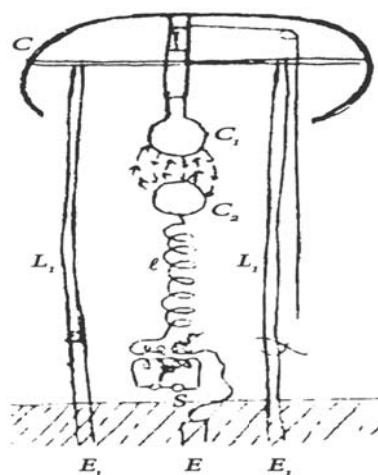


Fig. 3: Circuit diagram of Tesla's magnifying transmitter system [4]

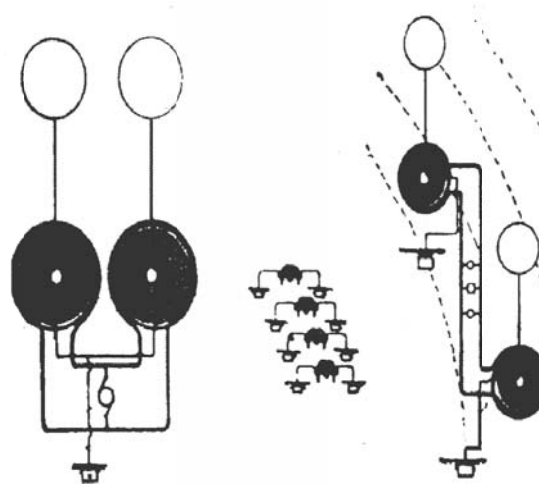


Fig. 4: Modified transmitter-receiver circuit diagram

Here the secondary system is grounded which can be excited only by primary in which capacitor discharges. The major criteria for the secondary system is that both the system should be perfectly tuned for the vibration of the secondary system. Both the system should maintain vibrate at the same rate whether the primary is closed or open. This open circuit form can be described by a wave shown in the

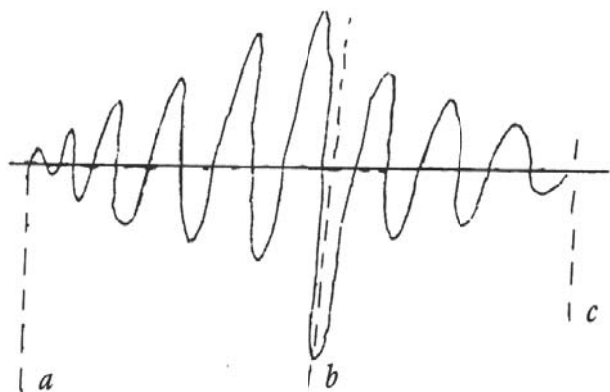


Fig. 5: Excitation levels of the open circuit transmitter-receiver system.

4. WORKING OF WARDENCLYFFE TOWER

The working of wardencllyffe tower can be explained by a similar way of working of capacitive coupling. The earth itself is a conductor whereas the ionosphere is another conductor which comprises of earth wireless transmission system. The continuous charging and discharging creates a passage of current by electrostatic induction principle. On 1932, journalist John. O. Neil interviewed Nikola Tesla. During that session he explained the working of tower in two criteria[5].

The first criteria is ionizing the upper atmosphere and making it as a good conductor also known as atmospheric conduction method. The second criteria is by turning the earth into a giant electrical oscillator which can be excited to vibrate electrically. These two criteria were considered as open and closed circuit system by Henry Bradford. The closed circuit system provides a conductive path between earth and atmosphere. It uses a large coil transmitter which is grounded using a capacitor. The power produced in the same way the conduction takes place in the neon tube. By varying the inductance or capacitance of the tower, required resonance condition can be attained[8].

Sensible ground connections of Tesla coil were given in order to maintain the grip of the earth. A tunnel has been founded and investigated on March 10, 1979. This tunnel has been founded under the tower to 300 feet and there is a possibility of creation of ions by using aquifer from fig. 6. This enables the transferring of ions to the ionosphere by using a giant oscillator. The other criteria of open circuit system is atmospheric conduction method in which transmitter-receiver system acts as lever and fulcrum. By perfect tuning of the two circuits power can be received by electrostatic induction. One is used for exciting purpose and another is used for matching the extreme resonance condition. This can be explained by using a train of wave[7]. The parameter 'a' shows the excitation level of primary system, 'b' shows the open circuit of

primary, 'c' shows the secondary wave stop as shown in fig. 5. This shows that the current and voltage are in phase because actual power supplied by the primary is in the form of product of voltage and current. Secondary circuit has to simply increase the amplitude alone. This performance characteristics was performed on Oct. 15, 1901 by N. Tesla[4].

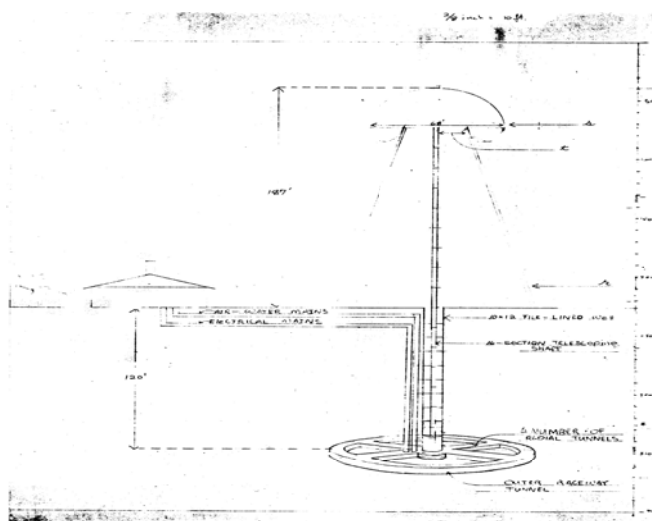


Fig. 6: Underground structure of tower

5. ECONOMIC ISSUES ON ENERGY SCENARIO

Now-a-days electricity is one of the fundamental of every human life. Without electricity it is impossible to survey on modernized world. Every species on the earth were dependent on electricity. Especially the country with large population has vast energy demand. India is the world's second largest population in 2011 and seventh largest landmass. India is expected to become the world popular nation around 2025. In 2009, 289 million Indians have no access to electricity, due to failure of grids. This population growth increases per-capita energy consumption every year energy demand also plays a vital role on economic growth of a country. Reduction of coal production power generation in India mainly based on natural resources. In 2009, India's primary energy source was coal holding a share of 42%. Due to modernization of urban areas, many natural resources have been destructed. On the other hand corruption plays a major role in power outage as per the report from Herald Net says that "transmission and distribution losses in some states are as much as 90 percent because of corruption by employees in power industry" [8][9]. Coal shortage is the major reason for power outage this reflects in the raise of many dangerous developmental projects. Northern India has turned using solar a way to meet their energy crisis. Increased using of solar always will increase the price hike rate on solar panels. Many problems arise such as invasion on problems arise such as foreign invasion on photovoltaic cells fabrication, increased inflation, destruction of green areas these developmental projects aimed on solving energy crises

only on which results in destruction of many rural areas. In Tamilnadu, hydraulic fracturing is going to be done to nearly 166 sq. km this method is absolutely wasteful natural resource by overcoming the energy demand. The above mentioned tesla's central plant will save the nature and solve the power crises. It eliminates the dragging of cables for power transmission. It vanishes the power outage. Agriculture is the backbone of India. This shouldn't be exhausted due to power demand.

6. CONCLUSION

In this paper, we have discussed about the construction and working principles of wardencliff tower. This will be a key to knock the power crisis problem which has been discussed above. The dream of great scientist shouldn't be lost dream. wardencliff tower has been retarded by the laws of nature. We have crossed several decades and population of human has been increased in an unpredictable extent. Electricity generation also should increase as per the population. If we use natural resource our power we are living on our capital and exhausting it rapidly. The wireless power generation and transmission to a terrestrial distance using a single tower will eliminate the artificial grids and mobile communication tower. Power generation in this tower will knock the outage from the

globe by proper utilization of wardencliff tower will change the radiated atmosphere and nature.

REFERENCES

- [1] Toby Grotz, "Wireless transmission of power", Courtesy of the Tesla BBS at 719 486-2775, August 28, 1990.
- [2] Corum James and Ken Corum, Tesla's ELF oscillator for wireless transmission, in harnessing the wheel work of nature : tesla science of energy,
- [3] Thomas Valone, "Harnessing the wheelwork of Nature" published by Adventures Unlimited Press, Kempton, IL
- [4] Leland Anderson, Rare notes from tesla on wardencliff from the tesla museum in Belgrade, April/may/jun 1997, Issue 26.
- [5] Henry Bradford, Gary Peterson, Tesla on Global wireless energy transmission and other purpose, Radio department, May 1919.
- [6] Nikola Tesla On His Work With Alternating Currents and Their Application to Wireless Telegraphy, Telephony, and Transmission of Power, Leland I. Anderson, Editor, Twenty First Century Books, 1992, pp. 129-130.]
- [7] www.tuks.nl/wiki/index.php/main/teslararenotesonwardencliff/Tunnel drawing from Leland Anderson. cited on 30- Aug-2014.
- [8] Nikola Tesla, The Problem of Increasing Human Energy, century, June, 1990.
- [9] www.iea.org/worldenergyoutlook2013. cited on 8 Nov 2014