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**Swami Keshvanand Institute of Technology,
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WIRELESS POWER TRANSMISSION

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Abstract

Power is very important in modern systems. Generally, the power is transmitted through wires. The purpose of this paper is to discuss concept of transmitting power without wires. This paper describes an original idea to eradicate the hazardous usage of electrical wires which involve lot of confusion in particularly organizing them. Wireless Power Transmission (WPT) is the efficient transmission (approx. 95%) of electric power from one point to another through vacuum or an atmosphere without the use of wire or any other substance. The methods applied for wireless power transmission like Induction, Electromagnetic transmission, Electrodynamics induction, Radio and microwave are discussed. We have also discussed the technological developments in Wireless Power Transmission (WPT).

Keywords—wireless transmission system, electricity, power, techniques.

INTRODUCTION

Wireless Power Transfer (WPT) is the process of transferring power from one circuit onto another without passing through any manmade conductive elements. Several schemes for wireless power transfer exist – Inductive, Capacitive, Laser, Microwave etc. Of these, Inductive Power Transfer (IPT) is the most popular and is being extensively studied particularly from the last two decades. The area of wireless power transmission is very interesting. The technology is in its infancy but the overall benefits from its maturation could be significant to society as a whole. World population is expected to continue to grow exponentially. Five sixths of the world's population lives in developing nations. Most developing nations such as China, India, and Pakistan are rapidly improving their wireless technology. [1].

However, the conductive elements has a very short lifetime and moreover in some developments owing to both practically and economically infeasible or may involve significant resists to human life. In communication the goal is the transmission of information, so the amount of power reaching the receiver is unimportant as long as it is enough that signal to noise ratio is high enough that the information can be received intelligibly.

The basis of a wireless power system involves essentially two coils - A Transmitter and Receiver Coil [2]. The transmitter coil is energized by alternating current to generate a magnetic field, which in turn induces a current in the receiver coil. The basics of wireless power transfer involve the inductive transmission of energy from a transmitter to a receiver.

According to the Department of Energy, California lost about 19.7×10 kWh of electrical energy through transmission/distribution in 2008. This amount of energy loss was equal to 6.8% of total amount of electricity used in the state throughout that year. At the 2008 average retail price of \$0.1248/kWh, this amounts to a loss of about \$2.4B worth of electricity in California, and a \$24B loss nationally. This loss is mainly due to resistive loss and corona loss during transmission of current through wires. The power is dissipated in the form of useless heat as the current attempts

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Renewable energy and sustainable development are the key technologies to offer solutions to the ever-increasing environmental pollutions and depleting conventional fuel reserves. With an aim to discuss the state of art technologies pertaining to the renewable energy domain, RTU (ATU) TEQIP III Sponsored 3rd International Conference on New and Renewable Energy Resources for Sustainable Future (ICONRER-2021) was organized by the Department of Mechanical Engineering, Swami Keshvanand Institute of Technology, Management and Gramothan, Jaipur in collaboration with Rajasthan Technical University and Department of Mechanical Engineering, Assiut University, Assiut (Egypt) from February 11 to 13, 2021. ICONRER is a series of the conference started in 2017 and it was 3rd event of that series.



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