

Piezoelectric Power Generation using Piezoelectric and Wireless Phone Charging

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Abstract - To deliver electric power from mechanical response and after that it changed over to electric charges. It is difficult to supplant the power age however we can lessen the reliance on the customary power age. Here we are talking about the piezoelectric utilizing stride power age and wireless phone charging. Here the power is producing by utilizing piezoelectric. Specifically, as to arrange applications, we audit the static charger planning procedures, portable charger dispatch methodologies and wireless charger organization techniques. Moreover, we examine open issues and difficulties in actualizing wireless charging innovations. At long last, we imagine some handy future system utilizations of wireless charging.

Keywords - Piezoelectric, wireless charging, phone, power

I. INTRODUCTION

With the expanding number of people in a nation, human need and utilize the vitality to do work or more to a spot and prosperity as far back as existed a great many years prior, numerous assets have been squandered with pollution. Along these lines, non-regular vitality is fundamental as of now on our country. In the human body there is a wellspring of vitality which is the procedure of human sustenance eat and drink each day and time. People need to utilize vitality to perform every day exercises, for example, doing work and running. Unknowingly, the vitality utilized is really one of the vitality squanders [1]. Strolling is basic action performed by individual in the person in question regular daily existence. At the point when an individual is strolling, the vitality will be decreased because of the weight move to the outside of the foot during strolling. In this way, the vitality of the individual from the stride can be changed over to the power vitality. This gadget can be places where there is persistent human traffic, for example, in city shopping center, railroad station stages, city pathways and different spots, the power created from these gadgets can be utilized for lighting [3][6].

II. LITERATURE REVIEW

With the progression of the innovation, individuals will in general create number of fringe gadgets for moving of little record, photographs, sounds, recordings, and for versatile correspondence and so forth. Nevertheless, presently multi day's the greater part of the general population utilize the advanced mobile phone [1]. Vitality collecting is characterized as catching moment measures of vitality from at least one of the encompassing vitality sources. People

have just begun to utilize vitality reaping innovation as windmill, geothermal and sun powered vitality. The vitality originated from regular sources, named as sustainable power source. Sustainable power source collecting plants create kW or MW level power, it is called full scale vitality gathering innovation. Additionally, smaller scale vitality likewise can create from that normal sources, that is called miniaturized scale vitality reaping [2]. A piezoelectric transducer is a gadget that uses the piezoelectric impact to gauge weight, increasing speed, strain or power by changing over them to an electrical sign. The unit cell contains a little emphatically charges molecule in the inside. At the point when a pressure is connected this molecule progresses toward becoming moved one way which makes a charge dissemination, and resulting electric field [3]. Despite the fact that the EV use is presently expanding, an innovation leap forward would be required to conquer battery related disadvantages. To address battery related impediments, the idea of Wireless Power Transfer (WPT) empowered in which EV is being charged while it is in movement or stationery [4]. The framework is alright for clients and neighboring electronic gadgets. To get increasingly precise wireless charging framework, it needs to change the plan of the couple of catchphrases. Research was led to examine the flow and future uses of wireless power transmission. To comprehend the essential hypothesis, dynamic advancements, and impeding impacts of this innovation inside the earth and society, a far reaching writing audit was shaped. Electronic polls were dispersed, and individual meetings were vi led to acquire point by point portrayals of present day usage strategies inside various businesses [5]. There is an essential law in thermodynamics; the law of protection of vitality, which expresses that vitality may not be made nor pulverized simply can be changed. Nature is a specialist utilizing this material science basic law favoring life and development of species all around the planet, it very well may be said that we are acclimated with live under this law that we don't focus on its reality and how it impacts our lives [6]. The transmission of electrical vitality is starting with one point then onto the next point without utilizing wire yet through air space is called as inductive charging [4]. An inductive charging utilizes idea of inductive coupling to move vitality between two circuits through electromagnetic field as its fundamental task [7]. The advancement of wireless charging innovations is progressing toward two noteworthy headings, i.e., radiative wireless charging (or radio recurrence (RF) based wireless charging) and non-radiative wireless charging (or coupling-

based wireless charging). Radiative wireless charging receives electromagnetic waves, ordinarily RF waves or microwaves, as a medium to convey vitality in a type of radiation [8]. Wireless isn't new; information ended up wireless some time back. Be that as it may, for all the portability we appreciate nowadays, regardless we tie our cell phones to the divider by the day's end to revive them. Gradually yet most likely an upheaval is going on; purchasers are requesting the capacity to charge wirelessly and innovation empowering agents are reacting [9]. For better appreciation hypotheses identified with Magnetic Resonant Coupling, quality factor and improvement procedures for wireless power move frameworks are introduced here alongside the working standards and developments of different parts. Attractive coupling is an old and surely known technique in the field of wireless power move [10].

III. IMPLEMENTATION AND RESULT

Block diagram of proposed system

Transmitter part

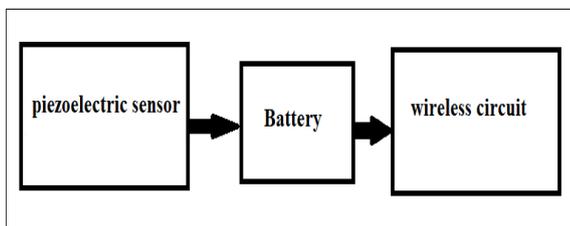


Figure 1: block diagram of transmitter part

Receiver part

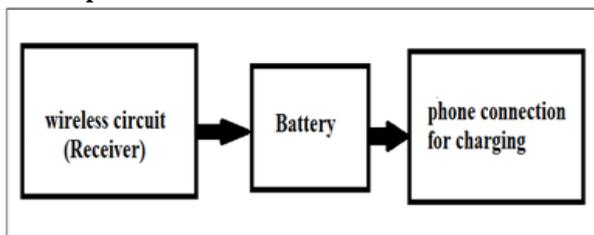


Figure 2: block diagram of receiver part

The framework comprises of two section one is transmitter part and recipient part. We have utilizing piezoelectric for stride power generation.the vitality of the individual from he/she stride is changed over to the power vitality. This gadget can be places where there is nonstop human traffic, for example, in city shopping center, railroad station stages, city trails and different spots, the power produced from these gadgets can be utilized for lighting. For change, connect rectifier is utilized. The change procedure of AC to DC gives swells in yield. For evacuating swells, a channel circuit is required which comprise of capacitor and resistor. After this smooth DC is acquired which is provided to oscillator circuit comprise of inductor and capacitor. Oscillators convert a DC input (the supply voltage) into an AC yield (the waveform), which can have a wide scope of

various wave shapes and frequencies that can be either confounded in nature or basic sine waves relying on the application. At that point this sign is given to transmitter which transmits the sign. At that point it is get by collector. The cell phones are not charged at AC so we have to change over it again in DC yield. Which is of low esteem subsequently a present speaker is required for the circuit. Electric power is disseminated as substituting flow since AC voltage might be expanded or diminished with a transformer. This enables the power to be transmitted through power lines effectively at high voltage, which decreases the power lost as warmth because of opposition of the wire, and changed to a lower, more secure, voltage for use.

IV. HARDWARE COMPONENTS

Piezoelectric sensor: A sensor that uses the piezoelectric impact, to quantify changes in speeding up, strain, weight, and power by changing over them into electrical charge is called as a piezoelectric sensor. Piezo is a Greek word which signifies 'press' or 'crush'. Piezoelectric impact causes the event of electric dipole minutes in solids because of the weight connected to certain strong materials, for example, piezoelectric gems, earthenware production, bone, DNA, and a few proteins that creates electric charge. This created piezoelectricity is corresponding to the weight connected to the strong piezoelectric gem materials. In this article, we will talk about around a standout amongst the most as often as possible utilized piezoelectric sensor applications, that is, piezo sensor switch.

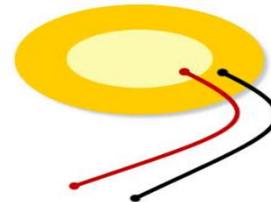


Figure 3: Piezoelectric Sensor

An electrical switch that works dependent on the guideline of piezoelectric impact is called as a piezo sensor switch. The Piezoelectric sensor switch can be turned on, by actuating the yield of semiconductor gadget, for example, a field impact transistor. This should be possible utilizing the charge produced by the weight connected to the piezoelectric sensor component. In the event that the field impact transistor is on, at that point current will move through the FET going about as a metal contact-based switch. In the event that the voltage beat in the entryway resistor is disseminated, at that point the FET transforms off or transforms into its ordinary high impedance state.

Lead–Acid Battery: As they are reasonable contrasted with more up to date advancements, lead–corrosive batteries are generally utilized notwithstanding when flood current isn't significant and different structures could give higher vitality densities. In 1999 lead–corrosive battery deals represented 40–45% of the incentive from batteries sold overall barring China and Russia, and an assembling business sector

estimation of about \$15 billion. Huge configuration lead–corrosive plans are broadly utilized for capacity in reinforcement power supplies in phone towers, high-accessibility settings like clinics, and remain solitary power frameworks. For these jobs, altered variants of the standard cell might be utilized to improve capacity times and decrease support prerequisites. Gel-cells and assimilated glass-tangle batteries are normal in these jobs, all things considered known as VRLA (valve-managed lead–corrosive) batteries.



Figure 4: Lead–Acid Battery

Resistors: A resistor is a segment of an electrical circuit that opposes the progression of electrical flow. A resistor has two terminals crosswise over which power must pass, and is intended to drop the voltage of the present as it streams starting with one terminal then onto the next. A resistor is principally used to make and keep up a known safe flow inside an electrical part. Obstruction is estimated in ohms, after Ohm's law. A resistor is covered with paint or polish, or canvassed in formed plastic to ensure it. Since resistors are frequently too little to be in any way composed on, an institutionalized shading coding framework is utilized to distinguish them. The initial three hues speak to ohm esteem, and a fourth shows the resilience, or how near to rate the resistor is to its ohm esteem. This is significant for two reasons: the nature of resistor development is loose, and whenever utilized over its most extreme current, the estimation of the resistor can adjust or the unit itself can consume.

Diode: A diode is a specific electronic segment with two terminals called the anode and the cathode. Most diodes are made with semiconductor materials, for example, silicon, germanium, or selenium. A few diodes are involved metal anodes in a chamber cleared or loaded up with an unadulterated essential gas at low weight. Diodes can be utilized as rectifiers, signal limiters, voltage controllers, switches, signal modulators, signal blenders, signal demodulators, and oscillators. The key property of a diode is its propensity to transmit electric flow in just a single course. At the point when the cathode is adversely charged (with respect to the anode at a voltage which is more noteworthy than a specific least esteem brought as forward break over voltage) at that point current courses through the

diode. In the event that the cathode is certain as for the anode, is at a similar voltage as the anode, or is negative by a sum not exactly the forward break over voltage, at that point the diode does not direct present.

Capacitor: A capacitor is an inactive two-terminal electrical segment used to store vitality in an electric field. The types of down to earth capacitors differ generally, however all contain at any rate two electrical conduits isolated by a dielectric. Capacitors are utilized as parts of electrical frameworks, for instance, and comprise of metal foils isolated by a layer of protecting film. At the point when there is a potential contrast over the conduits, a static electric field creates over the dielectric, making positive charge gather on one plate and negative charge on the other plate. Vitality is put away in the electrostatic field. A perfect capacitor is portrayed by a solitary consistent esteem, capacitance, estimated in farads. This is the proportion of the electric charge on every conduit to the potential contrast between them.

V. CONCLUSION

The undertaking is effectively tried which is the best efficient, moderate vitality answer for everyday citizens. This can be utilized for some applications in city territories where need more power and the producing power we can use to charging cell phones. Here we are utilizing wireless charging procedures. This framework can be place at homes, schools, universities, where the human move around the time. At the point when individuals stroll on the floor or that of tiles, electrical vitality is produced by utilizing individuals weight. The control component works piezoelectric gadget, this piezoelectric gadget changes over mechanical vitality into electrical vitality. At the point when there is some swaying, power apply by foot on floor or tiles. It tends to be utilized for charging gadgets for example workstation, versatile, and so forth.

VI. REFERENCES

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