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Fuel-less Move able Portable Power Generator with Remote

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Abstract: ***Certain people belongs to geological survey department spent their most of time in jungles, deserts and see shores for surveying Surface mapping, ores and minerals exploration, costal environment survey, etc. they are assigned with countless jobs, in this regard they are away from their homes for weeks together and roaming in out doors.While surveying near to their temporary camps, they can carry this system for lighting purpose or for some other reason. They need not carry the system in their hands, since the system is having motorized wheels, and with the help of a remote. Since all electrical appliances like fans, drill motors, lights, etc are designed to operate at 220v ac at 50Hz same source is generated through inverter designed with PWM chip. PWM IC is used to generate 50Hz ac pulses and its output is used to drive the step up transformer through power mosfets. The drive stage is configured in push-pull mode of operation such that power losses can be minimized and inverter efficiency can be increased. Remote control unit is designed with RF modules and it is operated using encoder and decoder chips.The idea is to generate conventional energy using non-conventional sources of energy.***
Keywords: Inverter, PWM Chip, RF modules, Transformers, non conventional source of energy

I. INTRODUCTION

This power generating circuit designed here can be administered via a small remote control unit made of RF modules. It is especially beneficial in remote lands where main power is absent. It is very easy to use because it is intended as a remote controlled moving mechanism. The moving mechanism is built with motorised wheels, thus no human effort is necessary to transport the power generator. One significant advantage of adopting this system is that it may be utilised in jungles and deserts to assist the people of specific departments such as forest and survey. Solar energy is used to charge the battery in the power system, which generates 230V AC from a 12V battery source. Even though it is a base module, the device built here can generate a low power of 20 to 30 watts, but for real-time applications, the system can provide the required power output. The remote control unit is built with RF modules.

II. LITERATURE SURVEY

The The ambiguity of fossil fuels leads us to discover a need to identify of other substances which can be used as energy sources.. Of the numerous possible sources, solar energy is abundant and bountiful , making it the most viable source of all known types of energy.It is pure, healthy, and inexpensive, does not cause environmental pollution, and will thus be an extremely viable long term prospect. The method of utilising solar energy is to generate convert sunlight directly into electricity through photovoltaic conversion. Therefore photovoltaic modules nowadays are abundantly available nationwide. Solar energy have been acknowledged as an efficient fuel source, but we understood little about how to use it to our advantage. Human's have made unprecedented progress in the field of science and technology has resulted in innovations such as the solar cell. Solar panels are made up of a number of these P V Cells. The Solar Panel's output is somewhat proportional or equivalent to the intensity of incident ray radiation from the natural light source . The power generated is also dependent on incident ray radiation and as the intensity of the radiation fluctuates with time and season at a given site, efficiency of the system is far too low to be profitably exploited. PV Panels must always be maintained or positioned normal to the incident radiation for best power generation. As a result, this technology, known as solar tracking, is critical for better performance and efficiency.

Despite the rise in system cost, the additional boost in efficiency is significant enough to make tracking a most preferable as well as efficient option. The device which is created as a prototype module, the panel is set to be at a fixed angle and therefore it will not shift in response to the Sun's position.Solar energy is rapidly being used for a wide range of purposes these days; in this light, this project work is being explored, with the goal of designing a subsided-cost solar power system for household uses.

Because this prototype work primarily focuses on solar energy, it is critical to understand the effects of sun's rays the and photovoltaic (PV) systems.Solar energy, has almost boundless capability and unconstrained supply. It is a non-polluting, infinite or inexhaustible energy source that can be created to considerably address humanity's greatest energy demands. The expensive expense are rapidly depleting fossil fuels, as well as popular concern about environmentally responsible power generation, have fueled a rise of interest in the use of natural light energy. To assess the energy potential of a certain location, precise information of it is required. There seem to be statistics on solar radiation intensity, spectra, incidence angle, and cloudiness as a function of time.The cost of solar panels is gradually decreasing, the use of solar energy is expanding. In 2005, the cost of a solar panel was Rs: 200/- per watt; however, the same panel is now available for Rs: 60/-; this cost may further decrease in time as more manufacturers enter this industry. However, even now, energy given by photovoltaic panels is at a premium rate than energy provided by traditional energy sources, thus it is critical to improve production while decreasing panel costs. One major disadvantage is inefficiency; the output of the panel is quite low when compared to input, so increasing the efficiency of the PV cells is critical.The initial investment is higher, a long shelf life is predicted to recover the system's cost in both financial and energy expenditure. Currently, panel fabricator guarantee their panels for 15 years; a few claim that their panels can last up to 20 years. As a result, panel validation is critical through comparison of various technologies. Panels must be thoroughly tested before installation; therefore, proper testing equipment and methodologies are required for a variety of reasons. One major reason is to assess operating power under various settings. Solar panel testing should take place near the working conditions.

III. METHODOLOGY

Despite Basic AC pulses are created to drive the power system using an oscillator circuit configured with a PWM IC. This power system is developed with power Mosfets and operates in a push-pull mode to reduce losses while increasing efficiency. Because this is a prototype module, the solar panel and battery utilised here are insufficient to power the appliances continually. To power the gadgets continuously, large rating panels and batteries are required. The prototype module includes all necessary electronics, such as a 10W panel and a 2.5AH battery, to make the system operational.

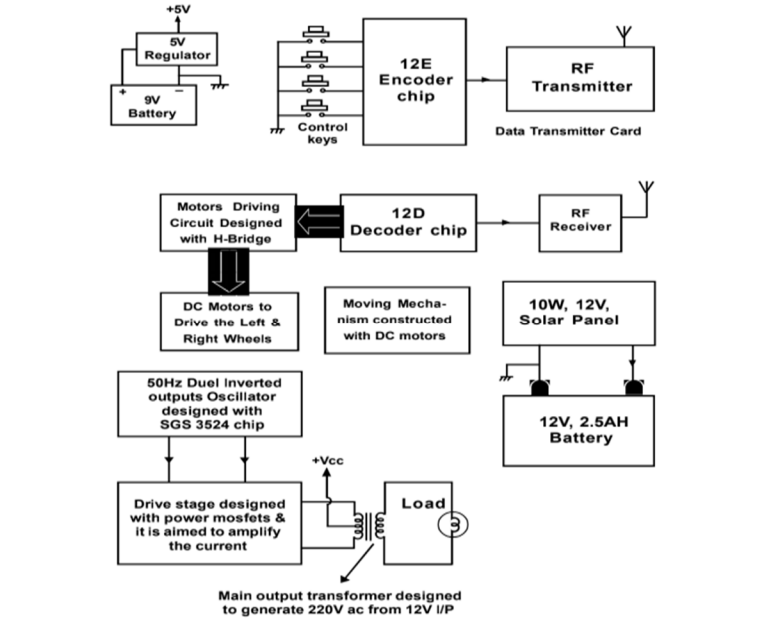

Fig. 1 Block Diagram

Under bright sunlight, the solar panel is utilised which can deliver a maximal current of one amp, and this energy is used to charge the battery. The energy system is designed to deliver 220V ac from a 12V DC source provided by the battery. A maximal-power rechargeable battery is employed as a auxiliary backup for this reason, allowing the system to supply power the load when it is required. The aim was to create traditional fuel from non-traditional sources.

An IC 3524-based (pulse width modulator) circuit is devised for this purpose, which may operate on a 12V sealed maintenance-free battery and so provide an uninterruptible power supply.

The energy system built here may generate less power, the major role of this power system is to give power to low-power home appliances. During the day, the battery charges, and the appliance is turned on as needed.

Initially, the inverter chip generates alternating current pulses at 50Hz in the form of square waves; this device produces dual inverted outputs. The oscillator output is amplified in terms of voltage and current, and the drive circuit is built with power mosfets and a main output transformer, and it is configured as a push-pull amplifier. The output voltage can be regulated linearly using a duty cycle control circuit interfaced with the 3524 chip. The solar panel utilised in this project work produces unregulated output, which cannot be used to charge the battery. This panel produces a maximum voltage of 19V under bright sunlight, and if the battery is charged with this voltage, it may spoil due to overcharging. Two dc motors power the mechanical transmission component. These motors, in conjunction with the chassis arrangement, may propel the vehicle in any direction. The complete moving system, which includes all needed parts as well as the solar panel, is designed to move freely in all directions by remote. The vehicle goes forward and reverse using four control keys interfaced with a micro controller in the remote control unit. Additionally, because the vehicle lacks a steering mechanism, it takes either left or right turns using free wheels known as caster iron balls. When it comes to the remote control unit, wireless operated robots traditionally use RF circuits, which have a restricted operating range, frequency range, features, and control possibilities.

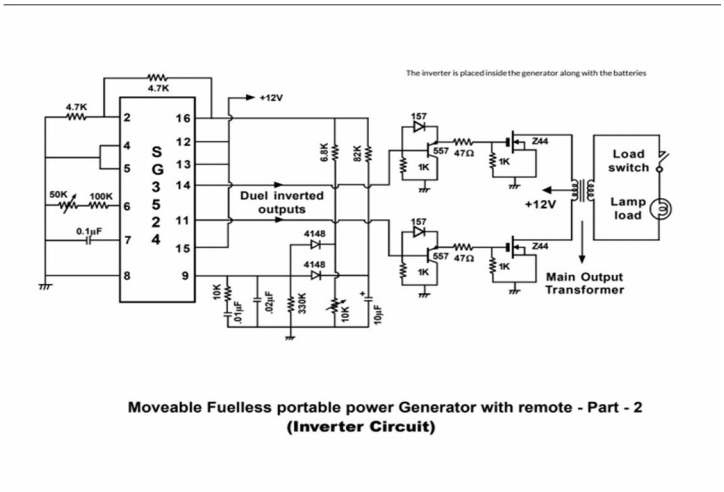

Fig. 2 Inverter Circuit

While working in real-world applications for specialised functions, the Encoder and Decoder chips utilised here can provide additional control possibilities in addition to simple vehicle control. It has the advantages of powerful control, an unlimited working range based on the wireless network's service region, no interference with other signals, and additional control possibilities.

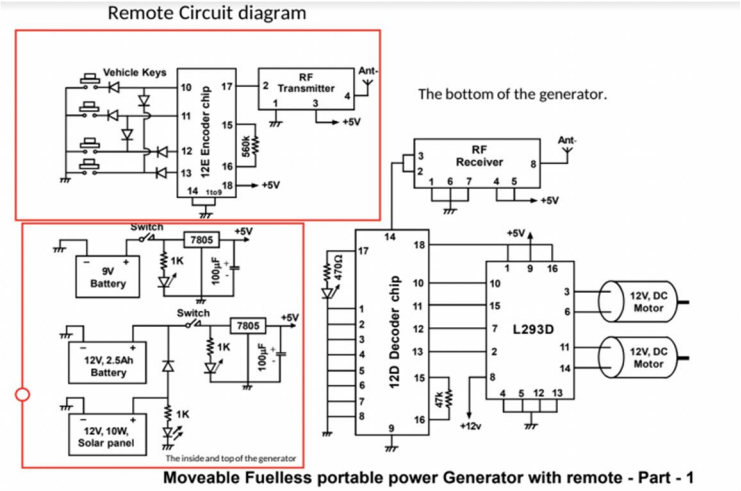

Fig. 3 Circuit Diagram

In broad sense, any simple communications network that implements a micro controller chip needs to send electronic data is in the form of 8 bit information, which can be altered by selecting the directional buttons to be powered up as an input signal to the micro controller; analogously, the Encoder chip 12E used for packet forwarding operates in the same way. In the case of a micro controller, the script must be written and written into the chip; however, in the scenario of an encoder chip, the same output may be created using pre-defined logic that is already existent in the device.
The chip contains 12 control options, but we only required four to move the remote.

IV. RESULT

The project work "Fuel less portable power generator with remote" has been successfully developed, tested, and a demonstration unit has been built. Because it is a demonstration item, a low power inverter capable of delivering a maximum current of 120 milliamps at 220V is developed. However, for practical purposes, a higher grade inverter can be created and utilized for many applications.

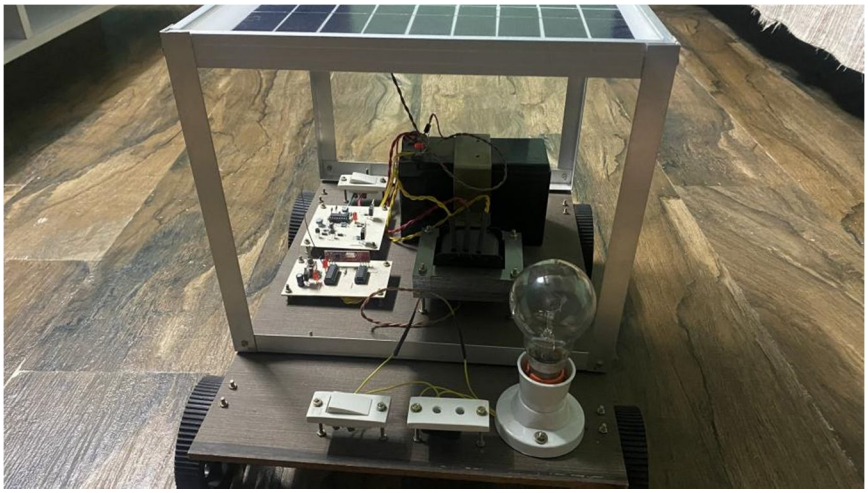

Fig. 4 Model Front View

The load which is applied to inverter will be tracked continually with aid of a load monitoring circuit, which is frequently constructed with CT; if the load exceeds the rated amount, the system will be turned down promptly.

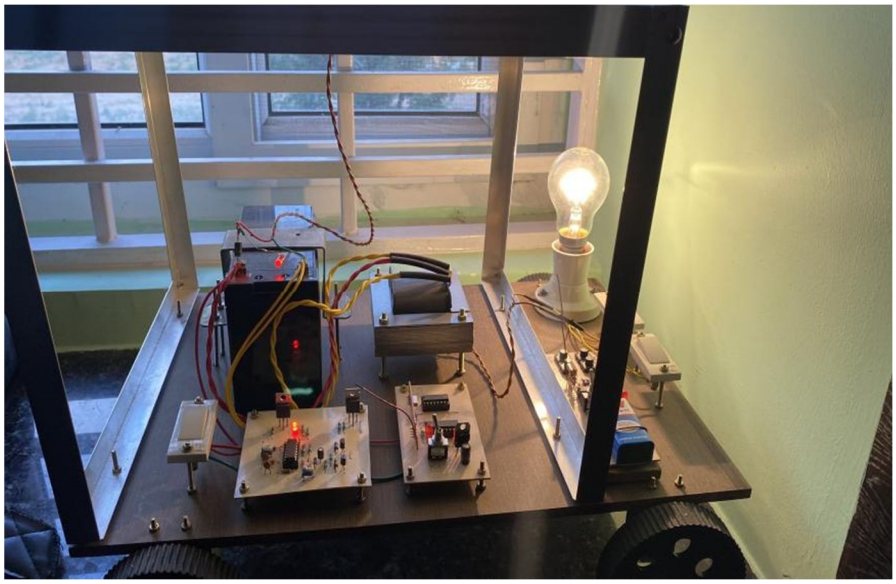

Fig. 5 Working model

Power will be restored after lowering the load and pressing the reset button. Similarly, a thermal protection system safeguards the power system from overheating and burning. These are the attributes we intend to include in our work.

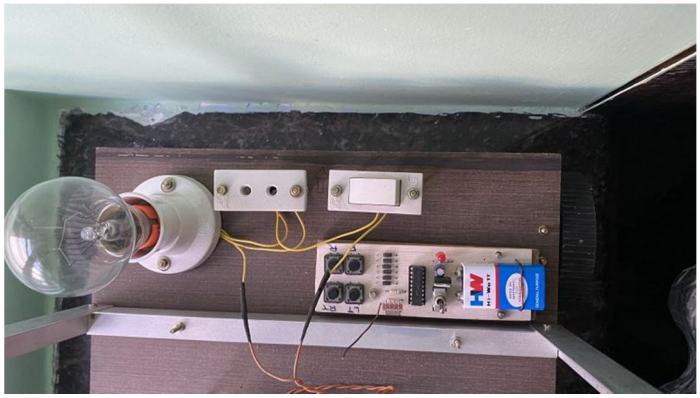

Fig. 6 Remote Control Unit

Protection circuits are not provided since the power system is made to supply low power. Thermal conservation over load switch off circuits are standard on higher grade inverters.

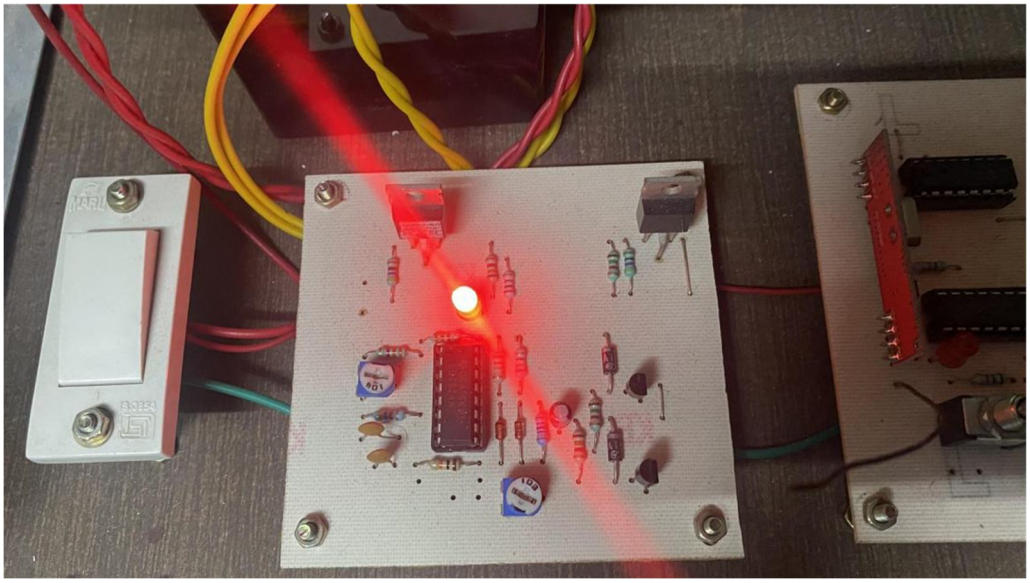

Fig. 7 Inverter Circuit Printed on the PCB

V. CONCLUSION

Solar energy is employed to charge the battery in this project job; this is one form of non-conventional way generating power. The sun is major source for energy; the sun's energy is of electromagnetic waves. Winds created by natural world are utilised for powering tiny generators known as windmills. These can be utilised to charge batteries. These systems are quite durable, therefore they should not cause any difficulties in the long term.

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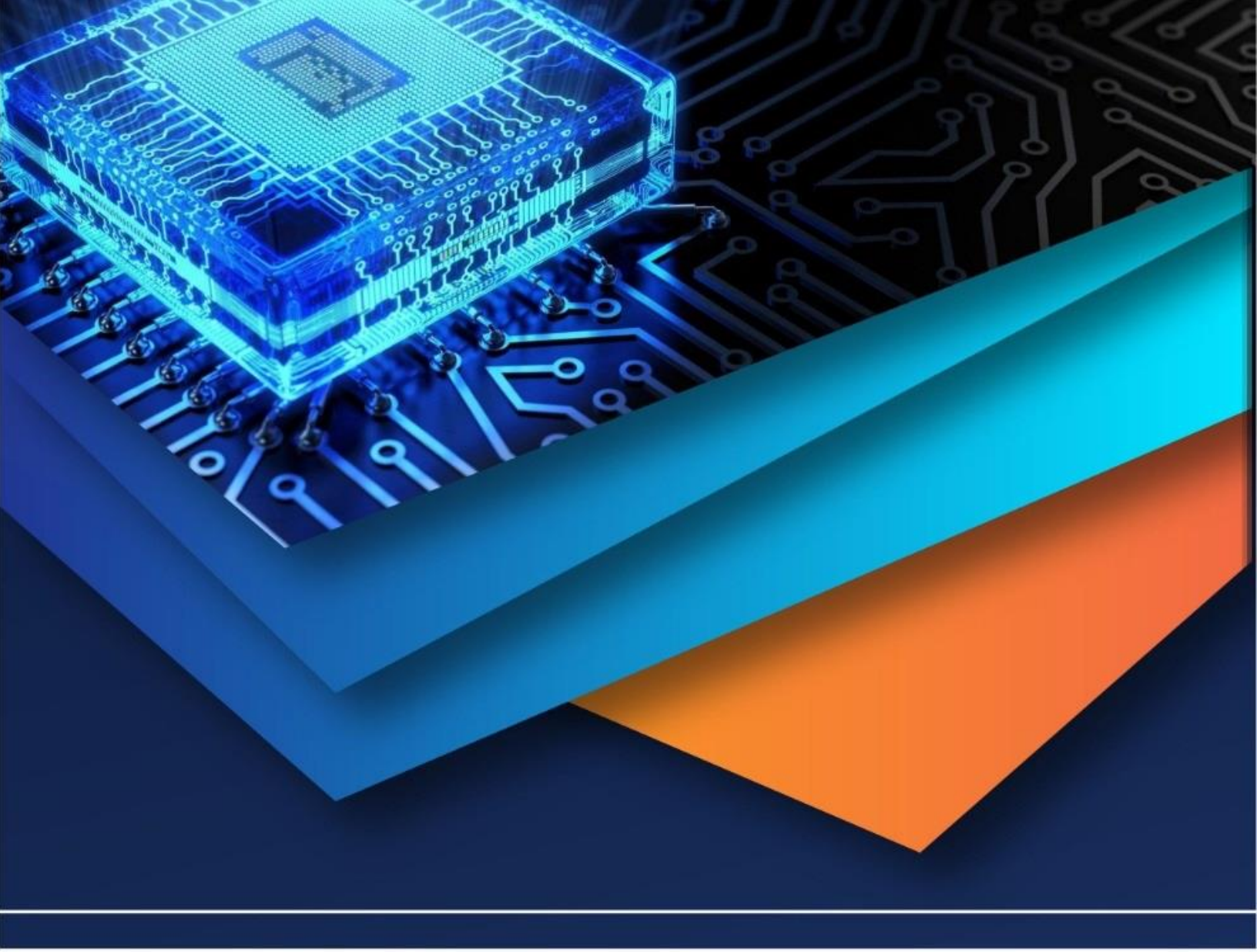

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