THE CARBON-FREE ENERGY FOR SUSTAINABLE ECONOMIC GROWTH IN NIGERIA: A PROPOSED

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Abstract

The persistence increase of power failure in Nigeria has become a factor that affect every part of economics activities in Nigeria. Most of the small and large industries in Nigeria have collapsed due to daily power outrage. These problems of daily power failure emancipate the increase use of combustion generator sets in almost all the small, large industries and the household in Nigeria. The daily used of combustion generator sets is harmful to our health, society and the ozone layer. This research is focus on the new innovation which can reduce the high level of emission of poisonous gas to the environment. The free energy is a new concept which can supply free energy to the house hold, large and small industries with zero carbon oxide and noiseless and free from oil lubrications. The methodology which would be applied in the design is the application 2.5 kva alternator, 5 hp DC Motor, car generator and battery of 100Ah, these are main components. The 5 hp DC motor rotates the alternator at the required rpm speed which would galvanized from the starting point, which would generate energy at the output capacity of 220V. Similarly, this free energy has the capacity of generating DC energy for those appliances that required DC energy. The finding from research good to substitute the conventional diesel and petrol generators sets, this design would cheaper less cost effective and less maintenance the conventional generators set which required constant oil lubricants and is pollution free.

Keywords: Carbon-free, pollution free, prototype , design

1. Introduction

The World Bank report in (2020) rank Nigeria in number 171 out of 190 Nations in the World, in having steady electricity which is a major constrain for the sustainable growth. Steady power is the major components for economic development, Nigerian power system is known as blackout system were the system was portraying sequence of power outrage which are either intentional, technical, mechanical or nature (Ibekwe, 2020). These persistence power failure is a result of substandard equipment, high inflow of people which result to overload which are above the existing power supply. But in the first quarter of 2022 the power supply has tremendously increase with a marginal as against of 86,760.88MWh which recorded a slight improvement to 87,768.75MWh in major cities (TCN, 2022). But this improvement if compare the total population in Nigeria then it shows an insignificant. The daily power failure and outrage it's what cause the proliferation of conventional generating sets which in return affect the cost of product and running a business and equally, polluted the environment with carbon monoxide (CO) and carbon dioxide (CO2) which causes different health issues such as asthma, difficulties respiratory, symptoms such as coughing, premature death, tough or sore breathing, lingering bronchitis, declined The World Bank report in (2020) rank Nigeria in number 171 out of 190 Nations in the World, in having steady electricity which is a major constrain for the sustainable growth. Steady power is the major components for economic development, Nigerian power system is known as blackout system were the system was portraying sequence of power outrage which are either intentional, technical, mechanical or nature (Ibekwe, 2020). These persistence power failure is a result of substandard equipment, high inflow of people which result to overload which are above the existing power supply. But in the first quarter of 2022 the power supply has tremendously increase with a marginal as against of

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This research is aim at Designing and construction of a free energy for sustainable economic growth. This renewable energy possesses some qualities not being clean and low cost but it also can be use in all environment without fear of noise and air pollution (Hassan and Mohammed, 2011).

2. Problem statement

Nigeria is among the countries that has a high population in the world and Nigeria got its independent since 1960 but up-till now Nigeria experience low power generation which affect the growth and development of both the small and the large industries. Nigeria developed its first power plant in 1986 in Lagos and later individual power plant were established in Kano, Ibadan and Warri Sule (2010). Similarly, the act of parliament in 1951 established Electricity Corporation of Nigeria (ECN) in order to monitor the activities of all the power plants units (Uwaifo 1994). Later there is a need for additional other source for power generation, then hydro-electric power where also come to be which let the creation of Niger Dam Authority (NDA) in 1962. Subsequently, in 1962 the ECN and NDA were combine together to form a new National Electric Power authority (NEPA.), which is own and control by the federal government of Nigeria which is saddle with the responsibility for power generation, transmission until in the year 2004 when it was separated into six generations. The federal government of Nigeria have spent a lot of money to stabilized the power generation and address the electricity power failure but with little success. The power failure has made so many industries both National and international to fold-up or rather to relocate to the country were the they have stability of power. The power crises in Nigeria is an interest area worth researching and find an alternative way of power generation. Various existing literature have carryout an investigation of the cause of power failure in Nigeria their finding has shown different factors which affect the power generation in Nigeria (Emovon et al., 2018). Various finding has shown that, there is quite numerous diseases which are linked with air contamination in Nigeria, this as a result of numerous usage of generators with emissions as a source of power, which also bring about climatic change and environmental squalors, this has been observed that burning of fossil fuel and gas widening are the major causes of different health issues in Nigeria (Esom & Aneke, 2020). In this research is aimed at providing an alternative way of power generation in Nigeria particularly in Bauchi state, if this concept is achieved it is a good step to address this lingering issue. Finally, this free power generation would eliminate the use of fuel and gas and also bring a free polluted environment, and it would also provide steady light in which it would improve the economic activities both in the house hold and industries.

3. Review of Literature

The origins of electricity were unknown, but thanks to different studies, it was revealed that it is made up of microscopic negative charges known as electrons (Ibekwe, 2020). Static electricity occurs when electrons are not compelled to move, whereas active electricity occurs when they are forced to move (Halliday, 1974). The key economic issues encountered by a nation's economic development that effect industrialization include electricity generation, transmission, and distribution (Thammasat, 2010). It was revealed estimated that the country's electricity supply is unpredictable, costing $1 billion each year Ebewele (2011). Power, according to empirical definitions, is the degree to which one can accomplish labor, and the nation's economic progress and productivity have been dependent on the availability of consistent power at all times. The majority of Nigeria's difficulties may be traced back to irregular power supply, which has crippled numerous operations owing to the constant power outages (Thammasat, 2010). According to estimates, Nigeria loses over N220 billion per year owing to the country's inconsistent power supply Ebewele (2011).

4. The Free Energy Generator's Topographies

A DC battery, DC motor, alternator, connecting shaft, charging panel (transformer, diodes, and capacitor), and a frame Adewumi make up the free energy generator in itstopograph (2016). In order to provide mechanical power through the shaft, a 12V 100 Ah battery (power source) was attached to a 1hp, 12V DC motor, which rotated. The alternator is turned to full speed by the revolving DC motor (primary mover), which then releases the electrical energy. To keep the battery charged, a portion of the output power is recycled (feedback) to a battery charger. It is important to note that regardless of the quantity of batteries (power source) employed, the output of the fuelless generator stays constant. A two-number, 24V, 200AH deep cycle battery, for example, can only operate the DC motor quicker than two-number, 100AH deep cycle batteries (Adewumi, 2016). To withstand the output voltage: once the pace of draining the batteries equals the rate of charging the batteries, the output voltage remains constant, and the fuel-free engine can run continuously for a year (Ajar, 2014). This is an excellent source of renewable energy. The idea is to replace the fuel-dependent internal combustion engine of a traditional generator with an electromechanical device (motor/prime mover) that transforms electrical energy into mechanical energy. This mechanical energy will be utilized to drive the alternator, while the alternator's current will be recycled (response) by a battery charger to charge the battery and power the electromechanical device (DC motor), and the cycle will repeat again. Despite the fact that wind and solar energy are abundant sources of energy, it is important to remember that they are not continuous sources with a consistent supply. Renewable energy, despite its abundance, has two fundamental drawbacks: it is low-level energy and it is not always accessible. We can't expect a wind turbine to have the same capacity as a thermal plant since it's low-level energy. A thermal plant (steam and gas turbines) may produce 500 MW or more with just one or a few turbines, but an onshore wind farm would require at least 200 turbines. Furthermore, a 500 MW thermal power plant can often supply as much electricity on a continuous basis, but a wind turbine's production is dependent on the wind and varies depending on the time of day.

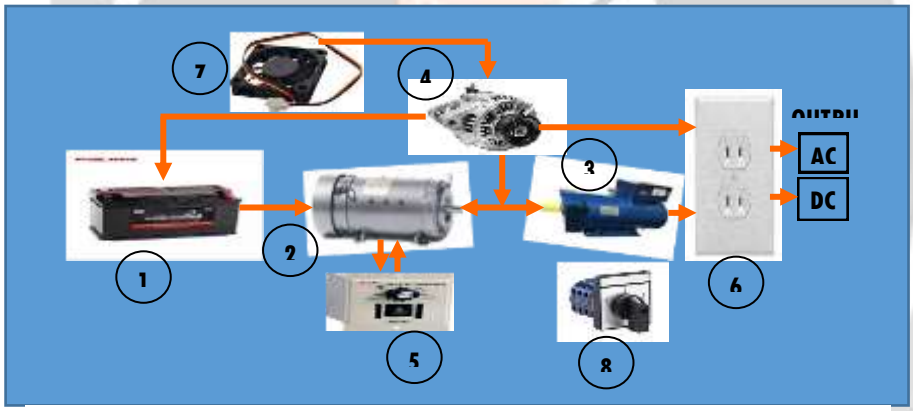

Fig. 1. Conceptual model of free energy

5. Design and construction materials

The methodology employed in this research is v-belt and indirect coupling design were local materials and fabrication would be made. The fuelless free generating set apparatuses unit from the empirical literature have observed that fuelless free generator comprises five key elements consisting of the following: 1. Conversion unit 2. The power supply unit 3. Control unit 4. Output unit 5. Charging unit (Adewumi, 2014). This design would add other components for more efficient and durability. Similarly, the design would improve on the existing design by adding the cooling fan, speed controller and dual output of AC and DC. The main construction materials for the design consists of 5 hp DC Motor RPM 3500, 2.5kva alternator RPM 1500, Car battery charger 12v, Speed controller 12V PWM13 KHz. 400W, Battery 100Ahs, DC Cooling Fan brushless 12V, Switch Control, Dual out of AC and DC plug. The application of DC motor is to replace the internal incineration engine of the conventional generator; this design has made easy in which it needs scarcer power than the alternator power production, additionally, the car alternator would charge the battery for about 24 to 48hrs. Thus, it can comfortably power appliance in the house such tv set, refrigerators, microwave and fans etc after recycling chunk of the output power in battery charging. The secret behind the development of free power generation it provides electric energy for both the AC and DC at the convenient of the user.

6. Conclusion and Recommendation

In Nigeria, there are a lot of significant health problems and difficulties brought on by air pollution, and appropriate measures should be done to reduce them. Numerous human illnesses are mostly brought on by air pollution, which includes climate change, environmental degradation, gas flaring, and the burning of fossil fuels. Air pollution results from automobiles and other mechanical outputs like generators. Asthma, an increase in respiratory symptoms like coughing, painful or difficult breathing, chronic bronchitis, impaired lung function, and early mortality are only a few of the human illnesses brought on by air pollution. In order to combat this undesirable trend, fuel-efficient generators and the like are good first measures. Once more, fuel-free generators are economical because they don't require any further expenditures for fuel or lubricants. The best way to address Nigeria's bad economic situation is through a steady electricity supply supplemented by fuel-free generators. When these generators are mass produced, jobs will be available for the wandering unemployed youngsters, and the crime wave in the nation will be reduced.

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