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Electricity Generation from a Fuelless Engine in an Isolated Power Generation System

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ABSTRACT: The use of non-conventional energy sources has become evident due to fast depletion of conventional energy sources. The recent trend to tap solar, wind and tidal energy is becoming popular amongst the renewable energy sources. At present, to decentralize the power generation system, attempts have been made in the direction of generating small power and distributing it locally. This paper focuses on emergence of fuel less engine as a possible alternative for isolated power generation from renewable energy sources because of its low cost, low maintenance cost and rugged construction. The estimated energy cost is comparable and competitive with the other renewable energy sources. For both the commercial power companies and technology suppliers fuel less engine represents an attractive new business potential.

KEYWORDS -- Renewable source, fuel less engine, low maintenance cost

I. INTRODUCTION

In order to find other ways of producing energy, a number of alternatives has arisen from non-conventional energy sources that are renewable. One of these alternatives is the generation of electricity from a fuel less engine in an isolated power generation system with low maintenance cost. A fuel less engine is an engine that produces electricity 24/7 without fuel (petrol, diesel, oil, grease, gas, sun, wind energy). The driving mechanism is the DC motor, which is driven by a battery (12V or more). The battery drives the DC motor, which in turn spins the alternator to produce electricity and at the same time, with the help of the diode, it recharges back the battery. It requires a suitable controller to regulate the voltage due to variation of consumer loads. There are several different types of engine and all have different uses on the road, in the air, on the water, under the ground, in the hospitals and behind the data centres. Fuel less engine can replace any of these engine types. Fuel less engine has very little impact on the environment, noiseless, pollution free, self-dependent.

II. BACKGROUND

The global consumption of energy is growing and there is need for new renewable energy sources. Among the following energy sources that could be free from carbon dioxide are wind, wave and tidal of photovoltaic and osmotic power. But fuelless engine is still most dependable low maintenance cost energy source that provides new renewable solutions. The use of low cost, conventional energy such as fossil fuels will continue to be major source of energy until next decades, despite their adverse effect on environment. The pressure on the environment by human activities compounded with carbon dioxide emissions calls for thorough research on the alternatives.

III. FUELLESS ENGINE PROCESS

Below is the description of fuel less engine. The DC motor, which is an electric motor that runs on direct current is coupled to the alternator with the belts. The channel, which is a base, is constructed with metals by a welder and it houses the DC motor and the alternator.

Four tyres are fixed to the bottom of the channels to make the fuel less engine movable. Two 12V, 100AH or 200AH deep cycle batteries are connected with 4mm insulated copper wires in series (to give 24V) to a switch that is



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off and from the switch to the DC motor. The insulated wires are used to connect the alternator AC output to both the load and 24V, 60A charger. The charger provides constant recharging of the batteries as the DC motor consumes energy from the batteries. The positive and negative terminals of the charger are connected to the positive and negative terminals of the batteries respectively with the switch on, the batteries turn the DC motor, the DC motor drives the alternator and the alternator produces electricity having voltage up to 240V and carries the load while charging the batteries at the same time with the help of the electricity also supplied to the charger. The voltage meter shows a constant



Fig. 1 Overview of Generator and Motor connection

value of 240V for as long as the switch is on. The alternator has diode that gives polarity (+ve and –ve) to the batteries and capacitor that stores electrical charges smoothens the electricity supplied by the alternator.

IV. Exploitation Possibilities

There are many possible ways to exploit the energy from fuel less engine when fully operated. With each of the possibilities, it seems the fuel less engine will be very useful and dependable. Below are brief descriptions of some of the possible approaches:

A. On Road

The fuel less engine can replace the diesel engines used in the vast majority of modern heavy road vehicles such as trucks, buses, long distance trains, large scale portable power engines and most farm and mining vehicles.

B. On air

Both the petrol and diesel engines used in air planes can be replaced with fuel less engines.

C. On Water

Fuel less engines can replace the high speed engines that are used to power yachts, ships and lines along the high seas.

D. Under Ground

Fuel less engines can also replace diesel powered engines that are used by mining and mineral extraction sector worldwide to harness natural resources such as aggregate precious metals, iron ore, coal and oil gas.

E. In Hospitals:

Fuel less engines can replace emergency backup generators that must be made available for any major medical health care facilities due to critical nature of work

F. Behind Data Centres:

Fuel less engines can be used to power computers, the heart of today's industry. When servers and systems go down, communication can be lost, business stops, data is lost, workers sit idle and just about everything comes to a halt.

V. D.C Motor Development

The output capacity of the fuel less engine is determined mainly by output capacity of the dc motor. The dc motor capacity must exceed that of the alternator coupled to the dc motor in order to produce maximum alternator output capacity. Many dc motors of different output capacities are on sale throughout the world markets from 2hp



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(1.5kwatts) to 500hp (373kwatts).The development of the dc motor has been on for more than a century since these dc motors of smaller capacities are used in cars, tape recorders, pump machines, fans, winders, etc. The ultimate focus is to couple dc motor whose output capacity is more than that of alternator in order to drive the alternator maximally.

VI. POTENTIALS OF FUELLESS ENGINE

The application of fuelless engine to generate electricity is restricted to capacity of both the D.C. motor and the alternator. This implies that the availability of DC motor and alternator of large capacity gives the fuelless engine its potentials.Research has shown that the potential for fuelless engine globally is more than five times the potential of wind and solar for the fact that it works 24/7 on daily basis in any part of the world. Several D.C motor manufacturers throughout the World.

VII. EARLY IMPLEMENTATION

First envisioned by Nikola Tesla in the early years of the 20thcentury, the fuelless engine is a device that is understood to function without the need for a wired power source. Even so, the concept of a mass produced fuelless engine has remained an interesting proposition to engineers today. Many papers have been written on the feasibility of building such an engine based on the work of Tesla. At conferences and trade shows, it is not unusual to find engineers who speak in support of the idea of Tesla's fuelless engine from time to time, small scale models were constructed. However, there does not appear to be at this a working prototype that can be produced for use in industry or by the general populace.

VIII. THE INNOVATION

The newest and most promising renewable energy technology competing with self- charging competingwith self charging inverters is the fuelless engine though costlier than the latter.The self- charging inverters could be in modules of 5000watts while fuelless engine could be designed and constructed to the two-thirds of the 500hp (373kw) capacity of the DC motor that drives the alternator thereby producing 333hp (248.7kw) outputIt was observed that the output remains constant irrespective of the number of the batteries used starting from 1 or 2 batteries in series to produce 24v that drives the dc motor although using 2 number of 200AH deep cycle batteries drives the DC motor faster than using 2 number of 100AH deep cycle batteries.Once the rate of discharging the batteries is equal to the rate of charging the batteries then the output voltage remains constant and the fuelless engine could operate 365 days without any interruption. This is an ideal renewable energy source. The source of energy comes from within the realm of physics but there is an opposing challenge to the 1stlaw of thermodynamics which is generally referred to as principle or law of conservation of energy.The technique to generate electricity out of this fuelless engine has been tested and proved reliable and steady.

IX. FUTURE PROSPECTS

When D.C motors of higher capacity than 500hp are coupled to the alternator whose capacities are lower than that of the D.C motors, then maximal output capacity of the alternator could be obtained. Fuelless engines can be incorporated into automobiles in order to have fuelless automobiles that would run without fuel

X. ADVANTAGES

1. The energy produced is clean and non-polluting
2. It is a renewable energy that will help reduce our reliance on the burning of fossil fuels.
3. The electricity supply is constant, efficient and occupies small area depending on its size
4. Deep cycle batteries last for 5 year and. Uses rechargeable batteries to drive the D.C motor
5. Isolated energy generation
6. Possesses no threats to life and properties.

XI. DISADVANTAGES

1. costlier than self-charging inverters that can produce similar power
2. Occupies wider area than self-charging inverters.



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XII. CONCLUSION

The need for new energy sources had led to a number of alternatives with their attendant teething high cost problems. However, in the future, if the technology is further developed and embraced the costs will reduce to compete reasonably with those of generators. Fuel less engine is a renewable energy source with insignificant CO₂ emissions when sparking occur at the batteries terminals as a result of partial contact when wiring. Mostly, the fuel less engine potentials can be utilized by merely replacing all the generating sets electric or fuel powered motors, with dc motors and adequate chargers.

REFERENCES

- [1] American Institute of Physics 2013 Power Spintronics: Producing AC Voltages by Manipulating Magnetic Fields AIP's Newsroom.
- [2] Barkle J. E. and Ferguson R.W. 1954, "Induction Generator Theory And Application," AIEE Trans., pt. III A, vol. 73, pp. 12-19.
- [3] Bhim Singh, Murthy S. S. and Sushma Gupta 2006, "Analysis and Design of Electronic Load Controller for Self-Excited Induction Generators" IEEE Transactions on Energy Conversion, Vol. 21, No. 1, pp 285 – 293.
- [4] Bhim Singh, S. S. Murthy and Sushma Gupta 2003, "An Improved Electronic Load Controller for Self-Excited Induction Generator in Micro-Hydel Applications", IEE proceeding, pp 2741 -2746.
- [5] Bonert R. and Hoops G. 1989, "Stand Alone Induction Generator with Terminal Impedance Controller And No Turbine Controls", The IEEE Energy Development and Power Generation Committee of the IEEE Power Engineering Society for presentation at the IEEE/PES 1989 Summer Meeting, Long Beach, California, pp28 -32.
- [6] Bonert R. and Rajakaruna S. 1998, "Self-Excited Induction Generator with Excellent Voltage and Frequency Control", IEE Proceeding - Generation, Transmission & Distribution, Vol. 145, No. I, pp 31 -39.
- [7] Chatterjee J.K., Doshi B.M. and Ray K.K. 1989, "A New method for thyristor phase controlled Var compensator", IEEE/PES winter meeting 89.WM 133 – OPWRS, New York.
- [8] Floyd, T 1996 Electronics Devices, fourth edition, Prentice Hall International, Inc.
- [9] Hadi Saada 1999 Power System Analysis Tada McGraw-Hill Publishing Company Ltd.
- [10] Hubert, C 1991 Theory Operations, Maintenance of Electrical Machine. Third edition, Prentice Hall, Inc.