Review of Multifarious Methods of Generating Electricity by Using Stirling Engine

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Abstract: In the energy deficient world, it is strongly felt that the use of solar energy as a possible source is not being fully utilized. In an attempted to use a novel concept of "solar powered stirling engine" is introduced. Also the electricity generation by renewable energy based system have optimistic technology that is list-off in economic and social evolution for various countries solar and wind. Mean while the biomass fuel piston Stirling engine generator has studied by uses a biomass this biomass used a wood pellets as the heat source to produces maximum output.

IndexTerms **– Component, modeling, Stirling engine, Solar parabolic dish**

I.INTRODUCTION

Interest in generation energy from renewable resources is still growing to meet the large energy demand in near future and protect environment. Solar energy is considered the most attractive renewable energy sources due to their high availability in most regions. Solar powered Stirling engine generators are considered the most efficient system in converting solar energy among all other solar power systems.

Solar Dish Stirling engines have great potential in countries with huge amount of solar radiation. Furthermore, Stirling dish systems are anticipated to outperform parabolic troughs by producing power at more economical rates and higher efficiencies. However, Stirling dish systems have not received attention as other solar technologies. Due to the fact that parabolic dish concentrates only the direct radiation, two-axes tracking are required to continuously orient the dish towards the Sun.

Parametric study is conducted to investigate the effect of key parameters (receiver aperture diameter, engine heater head operating temperature, and pump operating speed) on system performance, parameters depending upon location includes the ambient temperature, direct normal insulation, wind speed, and the angle of sun elevation. A case study for SDS under Jordan climatic conditions is considered. Hence,the analysis present here provides a modern theoretical guidance dish collectors for designing and operating the Stirling engine system. A Stirling engine is basically a heat engine be in effect of cyclic inclusion and enlargement and the working fluid, at different temperature levels such that there is a conversion of heat to mechanical energy. The solar powered stirling engine is coupled with a generator to produce electricity.

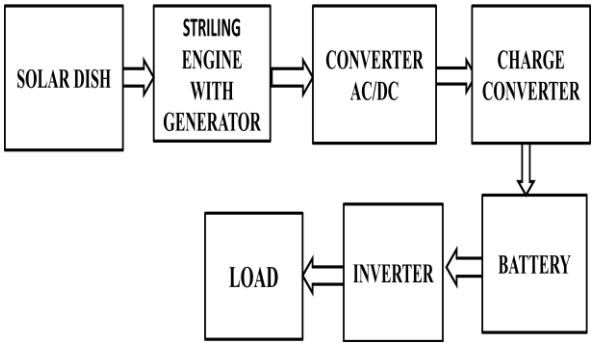

Fig1.General block diagram

The generator is usually a synchronous alternator which helps in reducing the number of moving parts and linkages that are required in a conventional generator arrangement. Moreover, for eliminating the need of maintenance the gas bearings provide a non-contact frictionless surface for the piston. The Stirling engine is noted for its maximum efficiency above 40% quiet operation, no pollution and easy to implement.

II.RELATED WORK

In [1] design the method of solar power stirling engine by using self generate electricity. The new power plants will typically burn natural gas which would be much morewell-organized for generating electricity at our own. The

discovery could change the world because of insufficient delivery of electricity. It would be much more well-made method for generating power at our home with the help of renewable sources. Other resources like diesel and nuclear power are very costly also the coal is available only for another 155 years. Keeping this in mind, the resources should be renewable sources. The use of renewable sources ensures to ecofriendly.

In [2] The procedure of deriving a model of a stirling engine that renewable energy based generating system can be a lever in economic and social development for different countries. We studied a grid connected hybrid generation system with interconnected solar dish stirling engine and wind turbine. The mechanical ,electrical and aerodynamics of the wind turbine where taken into account in the modern stimulated by software MATLAB also we were studied the modeling of the dish stirling system by considering solar thermal, mechanical and electrical energies of different system executed in MATLAB. This systems has evaluated in different conditions.

In [3] Stirling engine has been used to generate heat energy because their maximum efficiency. In this extension it introduced free piston stirling engine electric generator which used biomass and solar photovoltaic system. This paper we studied the controlled output voltage by stirling engine of free piston. In this long time and short time range constant of burning system of electrical circuit stirling engine's temperature gains between upper limit and lower limit .This system has offered maximum output composed solar photovoltaic and free piston stirling engine used as biomass, wood pellet as the heat source this wood pellet could generate maximum power.

In [4] The design and the implementation of stirling engine the electrical power is developed from the waste heat .Different processes that use energy and machines that do work do not have perfect efficiency. So in this process energy is wasted in the form of heat. The major source of wasted heat has been produced from various industrial processes, rice mills, brick fields and other sources. In this research amount of wasted heat from significant sources has been made to harvest electrical power using a displacer type stirling engine. The set up discussed as a personal power plant and it has great efficiency to generate 80 watt electrical power at 115rpm engine frequency.

CONCLUSION

This study provides a new solar electricity generation system that claim as the most efficient and likely cost-prohibitive in the world. This system is likely most advantageous over other solar systems. The stirling engine described in this points towards the potential for a distributed system that can efficiently and reliably generate renewable electricity combined with heat. The application space for stirling system is large, from residential generation in the modern grid setting to micro grids in the areas lacking a reliable grid. The combined benefits of electricity generation, energy storage, and heat energy are attractive combination. The potential for this technology to play a role in decarbonizing humanity's energy portfolio is compelling.

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