

Regeneration to Run a Mini-Electric Vehicle

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Abstract:- The Mini-vehicle is a four wheeled, like a mini car model. In this vehicle electric motors, alternator and some of the materials are used for extending the running duration of the vehicle. An Electric vehicle is which the electric motors are replacing the I.C engines and electric power is acting as a fuel. It is easy to manufacture and easily innovations can be applied in it at low cost. As now-a-days our society and Growing mechanical engineers also thinking about remedial from these pollution making vehicles and one of the good solution of it is electric vehicles, which are emits less pollution, less noise emitting and also eco-friendly.

In this Mini-vehicle our aim is to extend the working time, where to run the vehicle beyond its certain limit and it is a replacement for Engine, Battery and Fuel. For example: If the vehicle is in the active state for a period of 6 hrs then our aim is to extend the working period of the vehicle to run it for 6 or 7 hours. Each and every day the prices of petrol and diesel keeps on fluctuating. They increase with higher rate but rarely falls down.

Keywords: - Phase-1 Primary Motor Operation Process, Phase-2 Secondary Motor Operation Process, Phase-1 And Phase-2 Operation.

I. PHASE-1 PRIMARY MOTOR OPERATION PROCESS :

In this Phase-1 process, the power is being supplied from the Electricity Board to the primary single phase 1HP motor. By pressing the Push Button on the control panel, the motor is allowed to run for 10 minutes for a continuous production of Electricity at a rate of 240Voltage. While Pushing the push button, the Contactor is not connected and there is a continuous supply of power from the Electricity Board to the Primary Single phase 1HP motor. The Alternator is connected to the Phase-1 Primary motor through a pulley, which is revolving in the clock-wise direction. Till the amount of Electricity of 240Voltage produced in the Alternator, the Primary single phase motor will be on process and on working. The Amount of Electricity produced in the alternator will be showed in the voltage indicator.

1.1 Primary Single Phase AC Motor :

An AC motor is an electric motor driven by an alternating power (AC). The AC motor commonly consists of two basic parts, an outside stator having coils supplied with alternating power to produce a rotating magnetic field, and an inside rotor attached to the output shaft producing a second rotating magnetic field. The rotor magnetic field may be produced by permanent magnets, reluctance saliency, or DC or AC electrical windings. A single phase induction motor consists of a single phase winding on the stator and a cage winding on the rotor. When a 1 phase supply is connected to the stator winding, a pulsating magnetic field is produced. In the pulsating field, the rotor does not rotate due to inertia. An electrical motor is an electromechanical device which converts electrical energy into mechanical energy.

1.2 Alternator :

An alternator is an electrical generator that converts mechanical energy to electrical energy in the form of alternating power. For reasons of cost and simplicity, most alternators use a rotating magnetic field with a stationary armature. Occasionally, a linear alternator or a rotating armature with a stationary magnetic field is used. In principle, any AC electrical generator can be called an alternator. An alternator that uses a permanent magnet for its magnetic field is called a magneto. Alternators in power stations driven by steam turbines are called turbo-alternators. A conductor moving relative to a magnetic field develops an electromotive force.

II. PHASE-2 SECONDARY MOTOR OPERATION PROCESS :

In this Phase-2 section, the amount of 240voltage electricity produced in the Alternator will be able to run the ideal Phase-2 Secondary single phase induction motor. In between the Alternator and the Phase Primary motor there will be the control panel box for the Regeneration of the power to run the ideal Phase-2 Secondary motor. The Alternator and the Phase-2 Secondary motor will be connected through a pulley and it revolves in the clock-wise direction. When the amount of power produced in the phase-1 section, there will be a cut-off made by using the contactor and the phase-2 motor is begin to work for the regeneration process. The phase-1 Primary motor becomes ideal. Since the Phase-2 section becomes the Regeneration process of power, there will be a continuous production of Electricity.

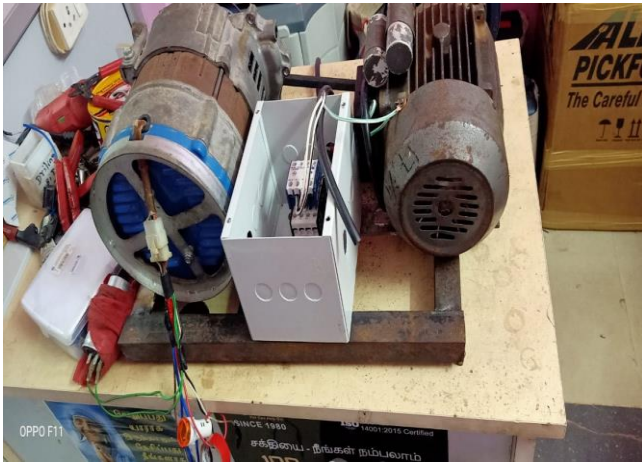


Fig -1: Single Phase Motor and Alternator

The Phase-1 and Phase-2 Motors are connected in series with the Alternator using Pulley system of 2:1 ratio, where the pulley of radius 4 is attached in Alternator and radius 8 is attached to the Primary motor . When the Primary motor revolves one rotation the Alternator takes it as a couple of rotation, as a result of this there will be a huge amount of electricity will be produced in the alternator. Both the Phase-1 and Phase-2 motor are connected in the Alternator they all revolves in the Clock-wise direction. When the Phase-2 Secondary motor is began to start the Regeneration process, The Phase-1 Primary motor becomes ideal and produce a amount of 240 voltage as a continuous process.



Fig -2: Pulley System

2.1 Single phase Electric Motor :

A single phase induction motor consists of a single phase winding on the stator and a cage winding on the rotor. When a 1 phase supply is connected to the stator winding, a pulsating magnetic field is produced. In the pulsating field, the rotor does not rotate due to inertia. Therefore a single phase induction motor is not self-starting and requires some particular starting means. An electrical motor is an electromechanical device which converts electrical energy into mechanical energy.

2.2 Contactor :

A contactor is an electrically-controlled switch used for switching an electrical power circuit. A contactor is typically controlled by a circuit which has a much lower power level than the switched circuit, such as a 24-volt coil electromagnet controlling a 230-volt motor switch. contactors are designed to be directly connected to high-power load devices. Relays tend to be of lower capacity and are usually designed for both normally closed and normally open applications. Devices switching more than 15 amperes or in circuits rated more than a few kilowatts are usually called contactors.

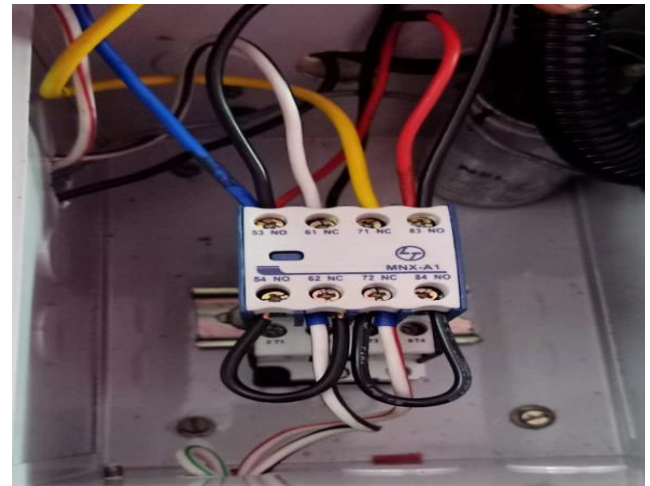


Fig -3: Contactor System Process

III. PHASE-1 AND PHASE-2 WORKING PROCESS :

The Phase-1 and Phase-2 Motors are connected in series with the Alternator using Pulley system of 2:1 ratio, where the pulley of radius 4 is attached in Alternator and radius 8 is attached to the Primary motor. When the Primary motor revolves one rotation the Alternator takes it as a couple of rotation, as a result of this there will be a huge amount of electricity will be produced in the alternator. Both the Phase-1 and Phase-2 motors are connected in the Alternator they all revolves in the Clock-wise direction.



Fig -4: Phase-1 and Phase-2 Working Process

3.1 Regeneration Process :

After the amount of electricity produced in the Alternator the phase-1 motor will become to neutral and the Phase-2 Secondary motor will be in the operation of Regenerating the power to run the Motor. When the Phase-2 primary motor is began to start the Regeneration process, The Phase-1 Primary motor becomes ideal and produce a amount of 240 voltage as a continuous process.



Fig -5: Regeneration Process

The Alternator is connected to a ideal Phase-2 Secondary motor, which is connected through a pulley in a ratio of 1:2 . When there is a amount of power produced in the phase-1 section(240V), with that power the ideal motor can able to run for a long time and produce a continuous production of 240 watts in the phase-2 section and phase-1 motor becomes ideal. The Amount of power produced in the Phase-2 primary motor is called as “the regeneration of the power”.

IV. CONCLUSIONS

Use of Electric Generated vehicles avoids pollution which is a great thread to man-kind. Pollution, Smoke spoils atmosphere and inhale of polluted air causes health problems to Humanity. Future depends on Electric Vehicle which to a great extent reduces dependability on Petrol, Diesel which has a direct impact on Foreign exchange. Our Project is Environmental friendly and saves fuel cost, easy to start with the help of electric power . It is a step towards manufacturing of Electric generated vehicles.

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