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Auto start diesel runs with free of cost with help of Electrical motor and Power Electronic Drives

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Abstract—
This auto rickshaw documentation is analyzed to explaining facing the problems in auto driver and its owners is not constant for number of passengers same time number of passengers maximum, same other times very few members such as or 2 members in this time the diesel consumption normal with passengers time and without passengers time due to this problem the auto owners facing the problems. The auto rickshaw pollution is more as compared to to another vehicle this documentation finded the solution for this problems. And we are introducing the new idea for reducing the diesel cost of auto rickshaws. The auto rickshaw start with diesel run with free of cost with help of electrical motor and power electronic drives.
Key words*—diesel run auto rickshaws , electrical motor , bettery bank, solar auto rickshaws, and*

I. Introduction

Now a days the fuel consumption vehicles more such as Auto rickshaws, buses, cars, lorry' such type of mechanical vehicles produced tl pollution the most pollution is produced au rickshaws. This project is implemented to reducir maintenece cost of autorickshaw and mount (pollution and fuel consumption. This is why w implementing this idea for saving the non renewab source for our futures, this project we was consid the different country's auto rickshaws and i Archistructure, working principles

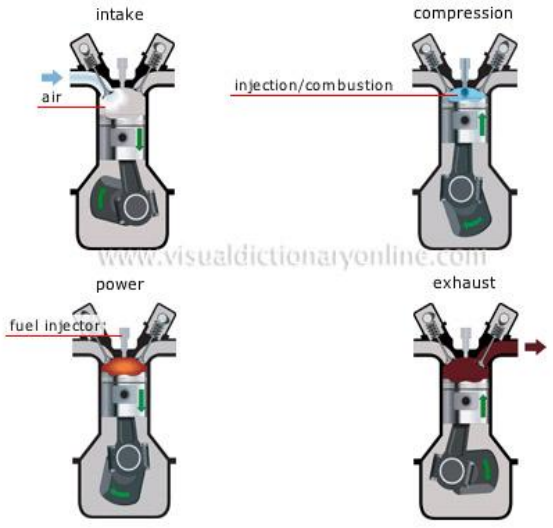
Mainly two types of Auto rickshaws a existing in different country's such as

- ❖ Diesel run auto rickshaws.
- ❖ Solar run auto rickshaws.
- ❖ Hybridge auto rickshaws

II. Diesel run auto rickshaws

Diesel engine:

The diesel engine is an internal combustion engine or precisely it can be called as a compression ignition engine, in which the fuel is ignited by the high temperature and high pressure gas, rather than a separate source of energy like spark plug.



This four stock engine have types of operation such as follows

1. Suction stroke(intake): Pure air gets sucked in by the piston sliding downward.

2. Compression stroke: The piston compresses the air above and uses therby work, performed by the crankshaft.

3. Power stroke: In the upper dead-center, the air is max. compressed: Pressure and Temperature are very high. Now the black injection pump injects heavy fuel in the hot air. By the high temperature the fuel gets ignited immediately (autoignition). The piston gets pressed downward and performes work to the crankshaft.

4. *Expulsion stroke:* The burned exhaust gases are ejected out of the cylinder through a second valve by the piston sliding upward again.

2.1 Working of diesel engine

Mechanically, 4 stroke diesel engines work identically to four-stroke petrol engines in terms of piston movement and crank rotation. It's in the combustion cycle where the differences come through. First, during the intake cycle, the engine only sucks air into the combustion chamber through the intake valve - not a fuel/air mix.Second, there is no spark plug.At the top of the compression stroke, the air is highly compressed (over 500psi), and very hot (around 700 °C - 1292°F). The fuel is injected directly into that environment and because of the heat and pressure, it spontaneously combusts (this system is known as direct-injection). This gives the characteristic knocking sound that diesel engines make, and is also why pre-igniting petrol engines are sometimes refered to as 'dieseling'.

The temperature of gas rises when it is compressed. When the inlet valve opens air is sucked into the cylinder of a diesel engine due to vacuum created. The piston then moves upward and compresses air raising its pressure and temperature. As the piston moves up towards the end of compression stroke, injection of diesel fuel the combustion chamber that is cylinder takes place. There is high pressure inside cylinder so the fuel is injected through an atomizing nozzle at reasonably high pressure. The mixture of fuel and air then ignites and burns rapidly. The gas in the chamber expands. This forces the piston to move down and thereby producing power stroke. The connecting rod which is linked to crankshaft forces it to turn and delivers rotary power at the output end of the crankshaft. Scavenging of the engine is completed either by ports or valves.

Petrol engines typically run compression rations around 10:1, with lower end engines down as low as 8:1 and sportier engines up near 12:1. Diesel engines on the other hand typically run around 14:1 compression ratio and can go up as high as 25:1. Combined with the higher energy content of diesel fuel (around 147,000 BTU per gallon versus 125,000 BTU for a gallon of petrol), this means that the typical diesel engine is also a lot more efficient than your common or garden petrol engine, hence the much higher gas-mileage ratings.

III. SOLAR RUN AUTO RICKSHAW

Different models of auto rickshaw existing for different areas

Auto-rickshaws are the most polluting vehicles on Indian roads. They usually run on 2 stroke engines which are inherently more polluting than the regular 4 stroke engine.Auto-rickshaws run only at 15-20 km/hr speed thereby producing even more pollution since they are designed to run efficiently at 40-45 km/hr. The pollution is further compounded by the fact that they continuously have to run in stop/start mode.

The solar autorickshaw designed to run 60-80 km/charge and with speeds of 25-30 km/hr will be an excellent substitute for gasolene auto-rickshaws. A silent and non polluting electric rickshaw will be a boon to India.

Solar powered rickshaw will replace the millions of fossil and pedal rickshaws that operate throughout Asia. Each auto rickshaw replacement has the potential to save 10 tons of carbon dioxide emissions every year.

SunBotco will convert the Indian auto rickshaw to solar-electric by removing the petrol engine and putting 2 Lynch motors, connected in series, on the back wheels. Solar thin sheets are installed on the roof & Nano tech batteries are used. Research & Development is going on to make more efficient wheels and tyres so the breaking energy can also be stored for reuse.

3.1 electrical motor

For applications involving long periods of running without maintenance the normal running current should not exceed 60% of the "maximum continuous" figure for the relevant voltage. This also applies where full-load operation in both directions is needed, unless a device is fitted to move the brush holder to the optimum position in each direction

3.2 Advantages

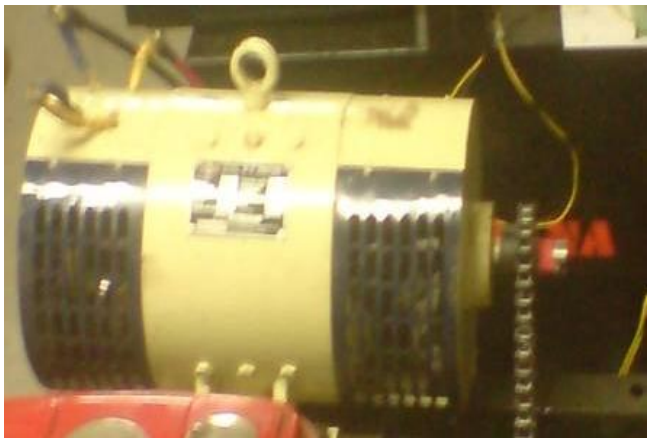
- High Efficiency (up to 93%)
- Lightweight design (11kg)
- Simple electronic control.

IV. HYBRIDGE AUTO RICKSHAWS

The hybridge auto rickshaw are constructing for both mechanical engine and electrical motor , this motor is does not working in starting of the autos it is works only after working of mechanical engine. The mechanical engine start with diesel it reaches the 30-60km/h in this running time the electrical engine is starts working and maintains the the constant speed of the vehical.

This electrical engine works for battery charging once the battery is charging 100km/charging. This bettery is connected to the solar penal this solar penal is placed on the top of the auto rickshaw. Why because the solar penal is not connected to the motor is the maximum rating of the solar penal is not sufficient for the electrical motor, due to that reason battery is connected to the motor directly. The battery is charging two way of supply such as solar penal+ regenerative breaking. In this two supplys auto runs a free of cost on the running time this type of implementation is very help full for auto vallas.

The motor is used for normal dc series motor for testing purpose ,



This motor is connected for directly chain link to the diesel engine in this documentation eliminating the dc generator connecting to the mechanical input of the Engine. In this project. The machine acting as a generator and motor. The machine act as a motoring when the auto rickshaw is running condition and auto come into rest position the machine act as a generator this is called regenerative breaking. This journal already discussed this regenerative supply feed back tio the battery when the battery is starts charging.

4.1 electrical motor

4.2 Motor ratings

Brush type permanent magnet dc motor
Serial no: ME0909

Power	**4.8 KW continuous 15KW for 30 seconds**
Voltage	**12 - 48 Volts**
Speed	**3,984 rpm at 48V Unloaded** **83 RPM per Volts**
HP	**4.6 hp to continuous 20hp.**
Amps	**100 to 300amps.**
Shaft size	**8" OD, 5.5" long (w/o shaft)**

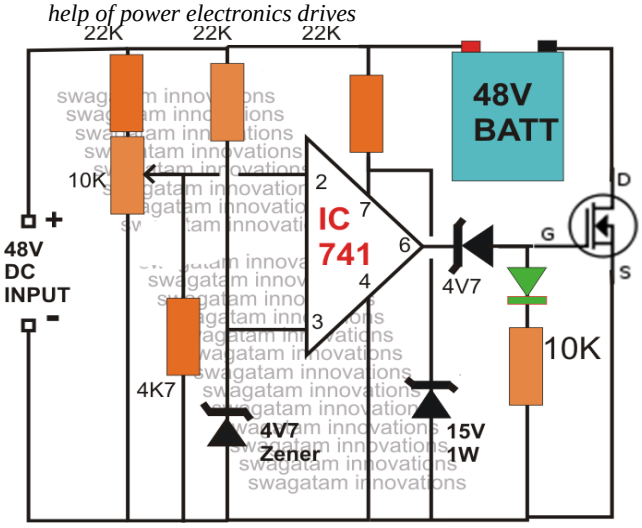
V. Calculation

1 kw=1.34102209 hp.

4.8kw*1.34102209 =4.6.hp
7kw*1.34102209 =9.38hp
15kw*1.34102209 =20hp.
4.3 Battery Rating
Voltage=48v
Watts=16kw
Amps=300Amps.

A battery is a source of electrical energy. It is consisted by two substances, and represented by two electro-chemically active electrodes of different composition, both of which are immersed in an electrolyte that provides a conductive medium between them.
Electro-chemical reactions form the basis of conversion of chemical energy into electrical energy in batteries. The anode undergoes what is known as an oxidation reaction: during discharge two or more ions from the electrolyte combine with the anode to form a compound and release one or more electrons. Simultaneously, the cathode undergoes a reduction reaction.

4.3 Make this 48V Automatic Battery Charger Circuit with help of power electronics drives



Circuit Description:
As shown in the figure, the main element in the circuit is the opamp IC 741, which has been arranged as a comparator.
Pin#3 which is the inverting input of the IC is referenced with a fixed voltage of 4.7V through the respective zener/resistor network. The other input is applied with the sensing voltage which is actually the voltage merged from the supply and the from the battery, in other words the charging voltage which is applied to the battery for charging.
The resistor network at pin#2 along with the preset forms a voltage divider network which is initially adjusted such that the voltage at this pin stays below the voltage level at pin3, which is the reference voltage set at 4.7v by the zener diode.
The preset is set in such a way that the voltage at pin#2 rises above the 4.7 mark as soon as the battery voltage rises above 50V or the fill charge threshold level of the battery.
The moment this happens, the output of the op amp goes low switching OFF the mosfet, and cutting off the voltage to the battery.
Initially as ling as the battery voltage and the over all voltage from the 48V supply remains below the full charge threshold level of the battery, the output of the opamp stays high and the mosfet us kept switched ON. This allows the voltage to the battery for charging, until the above explained threshold is reached which automatically inhibits the battery from further charging. The mosfet can be selected as per the AH rating of the battery.

VI. CONCLUSION

This journal is explained as to over come the problems due to minimum and maximum number of passengers because of it have no maintenances cost that is the reason for developing the this project .

VII. Acknowledgment

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