

A Mystery Car Without Fuel and Battery

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ABSTRACT

Nowadays in every aspect around the whole world it's been the bull's eye to reduce the usage of any kind of biofuel especially which evokes pollutant and such else, causing global warming effect; keeping the further upcoming generations-their need of fuel in mind. But, the rapidity of modern civilization is increasing the uses of biofuels day by day. Development of a nation being dependent on the communication and transport system, that's why everyday increase in number of vehicles is causing a huge consumption of biofuel as a result the ecosystem is facing a drop in its vintage of purity that's why to reduce the uses of biofuel, hydrogen is directly used but it is very much costly though a team of researchers is working over hydrogen fuel, their cheap transportation and many other ; that once hydrogen can efficiently take the place . One measures that can be taken is uses of electricity which is done successively by charging and discharging of battery which does not consist long life hence , concerning the Indian market electrodynamic can be used along with production of electricity with a new approach converting into mechanical energy through cylinder Piston system more effectively This paper contains the history of eco-friendly engines and heat engines, its modification, introduction of hydrogen gas as well as it's gradual dilution, electrochemical cells in vehicles and a new approach of using electricity along with its simultaneous production , probability of its application and situation in India , penetration of the approach in Indian market ,measures that can be taken by India's circumstances, relative analysis of the devised out method with the fuel engines and acceptance of these in Indian market as well as developing countries of the third world. On the other hand, noticeably the electric car models (still running) bear a higher cost but with the new approach it is highly expected to get the price reduced to 8.5 lacs rather an affordable amount.

1. Introduction

In this era of Applied Physics a main flow of attention is paid towards the conservation of ecosystem besides any modernization, here on a bit of concern physicist took some initiative and around 1837 a Scotland physicist Robert Davidson of Aberdeen grew interest to rejuvenate and electric model of vehicles that is of evoking pollutions and crisis alike by hydrocarbon engines ,this trend continued paving through the first Galvanic cell engines to the modern Tesla Supercar of high powered electric engines, although the first ever electric car was a 6 passenger Wagon capable to reach 23 kilometer per hour developed in 1890- 91 by William Morrison. At the beginning of 21st century the interest in the electric car took an unexpected growth which declined a few days later but the stream was again jerked out by Tesla multinational company. This way the electric engines are taking its place. A report says that since 2010 combined sales of the electric cars and vans passed 1 million , around the end of the 2018 financial year it has passed 5 million in Indian market it is quite very common seeing the electric vehicles ordinary but the cars are still quite abundant due to its enough high value to be afforded . Indian statistics reveals that the total number of the vehicle that roll down is to 29 million .Among them passenger vehicles are 4.0 1 million ,four wheeler 2.17 million, and three wheelers 1.02 million, commercial vehicles 0.66 million two wheelers are 23.1 million luxury vehicles are 40000 million has been estimated around the financial year 2017 to 18 .Annually the gross

Selling rate is increasing exponentially just the year behind we could have an estimation of sales as follows

TYPESALES

Passenger car	21203000
SUV	762000
VAN	182000
SEDAN	4200000

Total car still been used is estimated to be 230 million till 2016 financial year does thus such an increasing rate of car must seeks electric engines .Hence a new way must be taken to make it more ordinary and open handy to the common people as the number of electric cars is comparatively very poor that is 12000 units only in the financial year 2018. Although many multinational companies are introducing many electric cars in modern style. A small out view can be provided such as

Mahindra	EV model e-verito (Sedan)
SUV	is going to be launched on 2020
Tata	Tiger hatchback(normal)
BMW	BMW i3 (4 sitter)
Honda	Honda Accord
Toyota	Toyota Camry
Hyundai	SUV Kona

but they are all of quite enough high value to be afforded for common people. That's why this paper presents a common measure that can be taken for making more effective electric engine keeping the cylinder Piston system unaltered and

introducing all modern features by sensor system which can more or less cover Indian market and its needs very efficiently.

2. Objectives

On behalf of the modern developing situation of Indian market this new approach is to be introduced which certainly bear some intension which are as follows:

- introducing electric car manages the saving of biofuels rather brilliantly for the future.
- the new approach is an eco-friendly device reduced to any gaseous pollutants.
- above all the price of the cars can be merged up to 8-9 lacs that is affordable by mass people.

3. Methodology and description

AC current is the backbone of our human Civilization which also can be used as the life of cars as well as any vehicles. Production of ac current bear two ways that are firstly by change in magnetic flux under some magnetic field and secondly with the help of LC circuit AC current can be produced from DC source both these two ways of producing AC current production is introduced in the system which in turn runs the cylinder Piston system to make the vehicle motile. Here the device and its functions are described as below;

3.1 At the beginning and here is a system of 220 volt (AC) 50 Hz AC current ejects air w with a certain velocity. As the cars run forward the air with respect to the car runs backwards with the same velocity. The ejected air is then passed through a fluid propagating pipe of various cross sections at the two different ends. The mechanism is to increase the velocity of the air entering the pipe followed by the equation of continuity.
(Fig:3)

3.2 The propagated air then strikes a coil consisting of many turns and the change in momentum provides force as well as torque over the coil to rotate it vigorously about a certain Axis then two permanent magnet of high strength is placed inside the rotating coil that's why the massive and periodical change in magnetic flux induce an electromotive force of rather high values that is carried out by a conducting wire through a shunt resistance such that the amount of current can be found in some higher order .

3.3 The EMF induced is an AC voltage thus the produced AC current is then forwarded to the cylinder Piston system. A wire is bifurcated into segments carrying the same current, one of which is going to be connected spirally on the cylinder's frontal part- made up of some ferromagnetic substance. Since the wire is wrapped over spirally in many turns, the cylinder behaves like a solenoid of intense magnetic field, except the frontal portion. Rest of the cylinder is made up of such element which can reduce the friction as possible. Lubricant can also be used.

Here using Kirchhoff voltage law, we can have –

$$E - L \frac{di}{dt} = \frac{q(t)}{C}$$

$$\therefore -L \frac{di}{dt} = \frac{q(t)}{C}$$

$$\therefore \frac{di}{dt} = -\frac{1}{LC} q(t)$$

$$\therefore \frac{d}{dt} \left(\frac{dq(t)}{dt} \right) = -\frac{1}{LC} q(t)$$

$$\therefore \frac{d^2 q(t)}{dt^2} = -\frac{1}{LC} q(t)$$

Therefore the current here executes SHM $\omega = \sqrt{\frac{1}{LC}}$

provides the frequency of the current that can be controlled as per requirement. (here E=0 as the dc source is now disconnected)

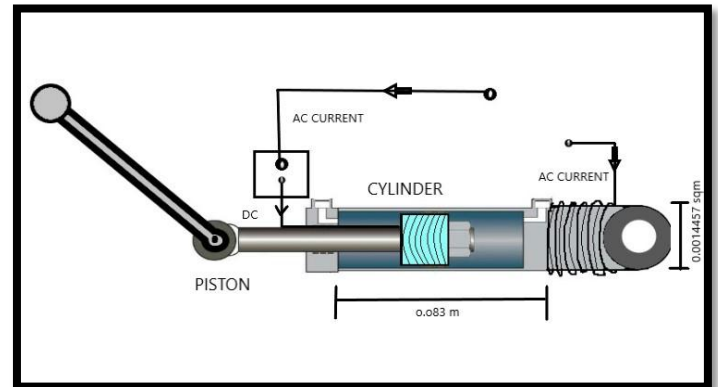


Fig (1): cylinder piston system

3.4 Now the second arm of the current carrying wire is passed through AC to DC Converter, then the wire is rounded on the Piston system which also behaves as an Electromagnet of same intensity.

It is noticeable that the cylinder being attached to AC current the polarity of the Electromagnet is altered in a certain periodicity; this frequency can be changed accordingly to the time period of the Piston's oscillations which bears a constant magnetic polarity. As the magnetic field is introduced both the cylinder piston periodically offers repulsive and attractive force on each other that's why, it oscillates accordingly which in turn rotates the bearing shaft. That is again connected to wheels and other accessories to run the car along.

The accelerator is also modified a bit. Accelerating system is connected to a varying resistor of equation,

$$R(x) = R_0 + e^{-ff(x)}$$

3.5 Practically when the accelerator is pressed a torque is generated on the regulator of continuous variance which according to the time of action of torque is decreased to a certain value that the air ejaculation system attains a maximum value that is its ejection capacity becomes maximum which in turn maximize the force provided in the cylinder piston system and gradually the speed increases with the variable acceleration. Simultaneously the accelerator is also mechanically connected to the bearing shaft in contact of a diaphragm which is placed as an obstacle in front of the

ejaculating end. The diaphragm shifts of upward as the accelerator is pressed and the flow of air is in its peak value. (Fig:3)

3.6 A conducting wires apart from the wires attached to the cylinder piston is connected with the ejaculating system having 220-volt 50 HZ AC current. The variable resistance is connected in series with that wire. Separately the wire is drawn through an inverter up to a DC source which to be charged by the current and LC circuit present in it drags AC current from that DC source to be supplied. The charge drawn from dc source also is stored in the capacitor which in form of AC current is activated when the air propelling is quite lesser or in the starting time of the car.

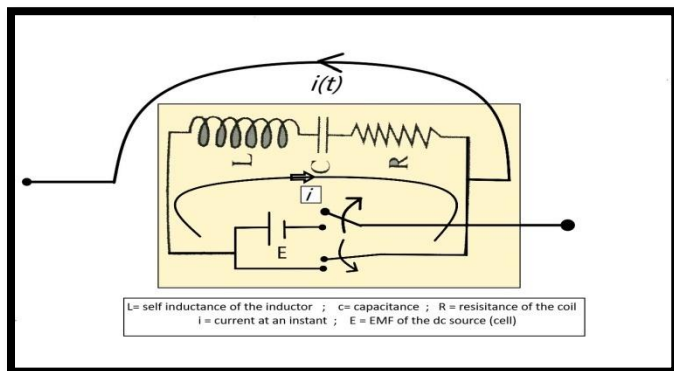


Fig (2): LC circuit (instantaneous current is shown)

3.7 The modernized features and the periodicity of the cylinder system is manipulated by the sensor system. They are again connected to the DC source placed in the inverter. Rest of the mechanics and electrodynamics are as usual followed alike the other cars. This way the whole system function according to the illustration drawn out and out as before whose diagrammatic view and the total circuit is provided.

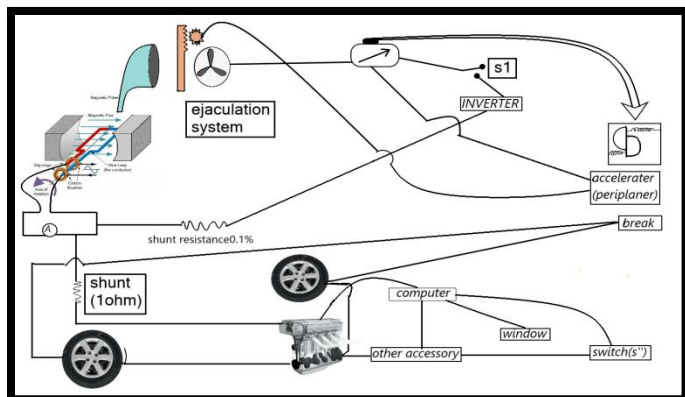


Fig (3): circuit of the device

3.8 In this model very high intensive powered permanent magnet is being used that's why it may effect badly on other external ferro magnetic substances , hence a corrective measure has been taken such as a coating of mu metals and nickel alloy can be used as a covering over the whole engine for magnetic shielding, other measures can also be used.

4. Result and Discussion

4.1For a certain result we are to assume some definite values applicable for the system. At the beginning let us considered the air ejaculation system upon accelerating ejects the air at a rate of

$$V = 20 \text{ km/h}$$

$$= \frac{20 \times 1000}{3600} \text{ m/s} = 5.56 \text{ m/s}$$

now let's take that $V(Ax)d=1 \text{ m}^3$ air is to be circulated. Further we may have the radius $r=20 \text{ cm}$, therefore cross section of the mouth through which the air is to be circulated is $A = \pi r^2 = 400\pi \text{ cm}^2$

therefore, length of the air column is $d = \frac{V}{A}$

$$= \frac{1}{400\pi \times 10^{-4}}$$

$$= 7.95 \text{ m}$$

5.56 m long air column is circulated in 1 s

$$\therefore 7.95 \text{ m long air column is circulated in } \frac{7.95}{5.56} \text{ s}$$

$$= 1.43 \text{ s}$$

The ejected air then pass through the tube having entering end cross section $A_1 = 400\pi \text{ cm}^2$ where the air enters at a speed $V_1 = 5.56 \text{ meter/ second}$ and the leaving end cross section $A_2 = \pi \text{ cm}^2$ where the air leaves with speed V_2 .

now by the equation of continuity $A_1 V_1 = A_2 V_2$

$$\therefore V_2 = \frac{A_1}{A_2} V_1$$

$$= 400V_1$$

This air is segmented in eight parts i.e. $V_2' = 50V_1$, now this air strikes the coil of the AC dynamo therefore the change in momentum $\Delta P = 2m_1 V_2$ (taking, mass of $1 \text{ m}^3 \text{ air} = 1.29 \text{ kg}$.)

$$= 2 \times 1.29 \times 50V_1 \text{ N/ } 1.43 \text{ s}$$

$$= 717.24 \text{ N/ } 1.43 \text{ s}$$

$$= 501 \text{ N/ } 1 \text{ s}$$

This is the force applied on the coil. Now let us consider the dimensions of the coil as length $L = 10 \text{ cm}$ and breadth $b = 12 \text{ cm}$ therefore the moment of inertia about the axis A will be

$$I_A = I_0 / 2 = \frac{1/12(4b^2 + l^2)m}{2}$$

$$= \frac{1}{24} (4(0.012)^2 + 0.1^2)$$

$$= 1.408 \times 10^{-3} \text{ SI unit}$$

Now the torque about the axis A by the force is $\tau = r \times F$

$$= 30 \text{ Nm}$$

Hence, $I_A \alpha = 30 \text{ Nm}$

$$\therefore \alpha = 21306 \text{ rad/s}^2$$

$$\therefore \omega = \int \alpha dt$$

$$= 21306 \text{ rad/s}$$

The amplitude of rotation is $n = \frac{\omega}{2\pi}$
 $= 3306 \text{ rot}^n / \text{s}$

Now let's have the intensity of the permanent magnet as 1 tesla

$$\begin{aligned} \frac{d\phi}{dt} &= |NBA\omega \sin(\omega t)| \\ &= |10 \times 1 \times 0.012 \times \sin(21306)| \\ &= 709.945 \text{ V} \end{aligned}$$

we

have taken that the coil has been patched up in 10 rotation. Hence the change in flux induces emf of $E = 709.945 \text{ V}$.

In case of rotation of the coils the frictional force has been neglected but still there will be some frictional predicament that's why the rotation will be hindered a bit for that case we can reduce the amount of EMF induced as $E' = 672.445\text{V}$. In the case of single stranded engine 4 to 6 dynamos can be combined. Here in the previous discussion the ejected air have been segmented in eight parts but in practical it is not possible for the air to collide pure elastically with the coil that's why the air propagated through 2 knobs is being eradicated in the calculation of the AC current to compensate the loss during the partial plastic collision. Hence amongst the resultant AC current; 2 wires carrying a

$$\begin{aligned} \text{current of an amount } i &= \frac{E}{R} \\ &= 672.4445 \text{ A} \quad , \text{ considering } R = 1\Omega \end{aligned}$$

The magnetic force between the two solenoids (consisting cylinder and piston)

$$\begin{aligned} F_R &= \frac{(amp\text{-turn})^2 \mu_0 A d}{2d^3} \\ &= \frac{(672.445 \times 10)^2 \times 4\pi \times 10^{-7} \times 1200 \times 10^{-6}}{0.0833^3 \times 2} = 59.62 \text{ N / 1 s} \end{aligned}$$

..... Considering the dimension of the cylinder Piston as length, $(d) = 0.083 \text{ m}$; cross sectional Area $(A) = 144.57 \times 10^{-4} \text{ m}^2$ and the number of turns of the coils = 10 where the amp means current (Ampere) and $\mu_0 = 4\pi \times 10^{-7}$.

$d(t)$ is the distance between the cylinder and the Piston at an instant of time which varies as a linear function of time that's why the force deduced must be integrated to obtain the real value but since the time span is of very short duration averagely it can be taken viz calculation.

Baring the internal friction overall the mass of the load (m) is considered as 10 kg. \therefore Time taken for one rotation of

$$\text{Piston arm } t = 2 \times \sqrt{\frac{2d}{a}} \quad a \text{ is the acceleration, } a = \frac{F_R}{m} = 5.96 \text{ m/s}^2$$

$$\therefore t = 2 \times \sqrt{\frac{2 \times 0.083}{5.96}} = 0.332 \text{ s}$$

Hence In 1 second 3 rotation is completed by one Piston that means 4 Piston executes 12 rotations periodically at one second, which can be reduced accordingly. Therefore, acceleration raised; is $3.6 \text{ m/s}^2 = 14.4 \text{ km/h}$ at 1 second.

Since the air circulation is carried through out the whole process, one problem may arise while it's raining that is, water molecules along with air can enter in the dynamo which have a chance of either corona discharge or short circuit. To overcome the problem we will consider a short mechanics. Some quarter part of a metal sphere will be placed in the back of the gaps (remains in frontal part of the hood cover of engines) through which air is to enter; just up to the placement of the ejector system such that if the water molecules' strike the metal spheres' part it will slip down outside the cars' engine that's why the dynamo will be unaffected.

4.2 Taking into account all the merits and demerits of this electric car model after determining the required results a relative analysis of the main features of this model with the fuel cars on the basis of different aspects is shown in the below graph:

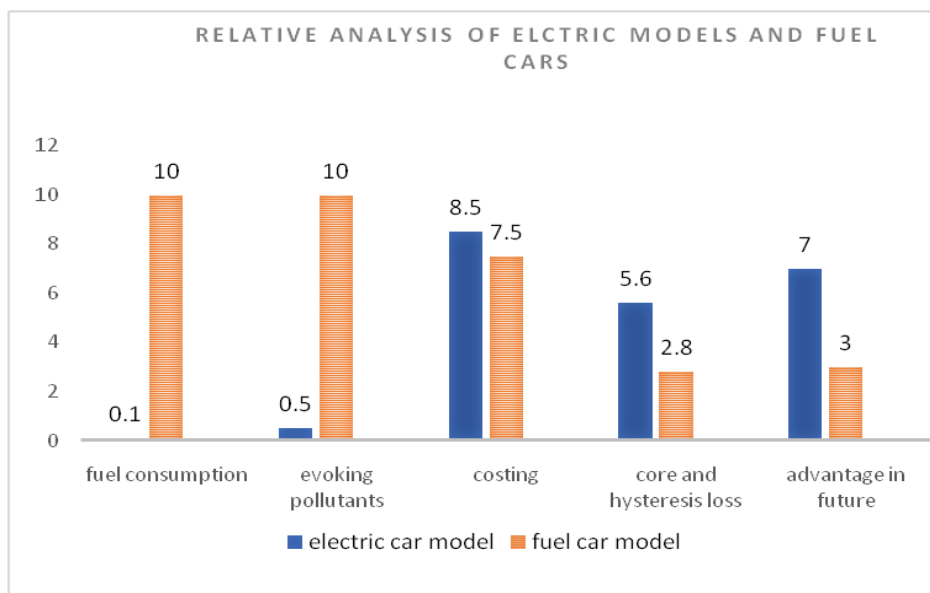


Fig (4): Graphical representation of "Relative analysis."

Thus, analytically it can assume to have lesser disadvantages in respect to the fuel car.

4.3 Here more or less a brief description of the prices of utterly all the parts that the car consists are consulted in the

attached pie chart given below, approximately the total price of the car can raise to 709700 (7 lacs 9 thousand 7 hundred) of which engine may cost up to 300000 or a bit higher. In the pie chart the percentage of the car parts' costing upon a gross of 10 has been shown in an approximation of 0.1% out of 10.



Fig (5): Pie chart of the prices of major car parts

The prices are here mathematically been inserted in a table.

TABLE (1): PRICES OF THE MAJOR CAR PARTS

Chassis	1,50,000
Glass and Fiber Body	10000
Metal Body and Wooden Frame	70000
Tires	3500
Shaft and Wheel Rotator	8000
Main whole Engine	300000
Computing and Sensor	35000
Extra facility for AGS navigation etc.	40000
AC	50000
Break Booster	4500
Bearing Shaft	1500
Muffler	14000

Fan	400
Jack	1500
Head lamp	4000
Alternator and Starter	5000
Cylinder Head	12000
Fastener	300

5. Conclusion and Significance

In conclusion to the paper, some points are to be explored that also signify the subject matter to get brought out

- Since this new site of introducing the electric car bears a low cost such that common people may easily afford, the project easily can mug up the pace of market that's why distribution of money as well can impact the Indian economical skeleton by proportional increase of the demand and production effecting lower making cost.
- Afterall, this model being conservative of nature prevents pollutions indirectly managing the mass health.
- All this marketing can give a solution to the unemployment problem as gradually it needs a huge number of workers under the project.
- Out of tradition this procedure seeks many new raw materials for its production of engines like permanent magnets and mu metals, some alloys of nickel, ferrous for magnetic shielding including coil and wires that's why internal marketing can also grow by other intra national or regional manifestation of the companies who are connected in producing such by products.
- Even if; as this model can efficiently reduce the usage and consumption of biofuel common people will be more interested in this view, also their daily life expenditure beyond petroleum will be shorted down greatly.

6. Future Planning and Recommendation of Policies

The main key feature of this new approach is to behave according to the nature means production of the electricity is based on simple physics of electrodynamics but this electric energy is produced from transformation of mechanical energy provided by kinetic condition of the air medium in which this car is to be run not opposing the motility of the air rather with its aid, hence this phenomenon can also be used in further means such that ;

- Maximum train is now run by electricity that's why this approach can also be there used in instantaneous production of electricity.
- Other motors that function under some mobile condition may also have this feature be applied.
- This paper mainly seeks a way out for using the nature's power, in case it will be an opening of others thinking to involve more eco-friendly way.

Now the recommendation of the policies for the models are:

- The electric vehicle uses of this view is to be increased.
- By products producing factories must be increased in number.
- Companies should ensure this type of eco-friendly projects.
- An attention must be created in mass people for buying them as a means of saving fuel as well as money.
- Government should pay attention on the model to maximize its practical efficiency.
- Other capable people must think over more new ways out.
- Activation of the project must be done as soon as possible retaining import of petroleum same as it will be a higher source of strong economy in future.
- Lastly, people must be concerned of its importance so that they can invest effortfully beyond this.

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