

PRODUCTION OF ELECTRICITY BY USING SOAP STONE FROM THE BIPRODUCT OF INTERNAL COMBUSTION ENGINE

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ABSTARCT

Today with developing era of technology the era of fuels is getting over and a new era of clean energy or renewable energy has begun. The main idea behind this paper is to extract the best of the clean energy from the engine in the running condition. if we are taking out renewable energy from engine without disturbing the efficiency of engine . The main thing that matters in this is the output from the engine, it should be promising that can be applied to real life to get the output. Now if the thing is limited to some aspect or boundary then we have to extend out technology to a new level that is absolutely correct, clean. The temperature inside the cylinder and material used play a crucial role in this idea of hybrid engine , the below content will surely explain the idea in a much better manner . it will also discuss the feasibility of the idea along with the advantages and disadvantages.

Key word- clean energy, hybrid vehicle, soap stone

INTRODUCTION

A new hybrid variety of engine is now feasible to develop that can produce energy on normally working condition without any troubles. the electricity produced may b in small amount but this concept will surely mark the start of new era of production of energy from engine in working condition, since last decade there is this continuous research work going on how to produce energy from ic engine, but at last the solution came that was very feasible and promising in its own manner. This idea of mine is a about producing hybrid engines that are capable of producing electricity of their own. Mostly all the time we have seen that if any vehicle is running on battery motor assembly it requires constant source of replenishment or battery i.e. generator, this idea will help to much extent in removing that part of generator if taken to next level to more efficient production of energy. The idea is placing the magnets inside the cylinder or make cylinder totally of magnetic walls this will create a magnetic field , the reciprocation piston will help in making this thing possible and will produce energy . This will work like a normal system that produces energy at regular intervals and is more efficient because anyhow the remaining energy of the engine is going waste only. This idea of utilizing the energy of engine to much extent without disturbing the outcome from it will be of great help. So this idea has been great till my theoretical point of view. The idea behind this paper is that utilizing power of engine or to get the power in much more efficient manner from it. as we all know engine is used to run our cars only on fuels like petrol, diesel or maybe LPG, CNG.

WORKING SYSTEM

This idea behind this paper is taking out electrical energy from the engine in normal working condition. As said above placing permanent magnet set in place of cylinder, which produces strong magnetic field and is more efficient in driving out energy from the engine. till now we have seen engines producing energy at cost of fuel but their comes no electrical energy. This process as stated above will surely give out the energy in more efficient manner. It may give in fewer amounts but will be a good and efficient kind of asset that will take the vehicle to next era. This was clearly seen that at high heating temperatures loss of magnetic properties will not occur. Placing a paramagnetic magnet in align will be of great help in driving out energy, the strong magnetic field produced and reciprocation piston will be acting likely to proceed of electrical charges which can be taken out using strong or good quality of wires from it. Wires may have risk of getting burn at such high temperatures so, they can be placed in the engine body by making proper arrangements during manufacturing process. The kind of precision needed in this process is very much , it requires to set magnet in a proper condition such that I should withstand shocks and can be able to sustain the magnetic properties , it is actually very important for a magnet to sustain a be stable at high temperature. The position of magnet and kind of magnet used is very important. The magnet used should sustain its properties at high temperatures around 1000°C the most important part of the magnet is to produce a proper magnetic field in the engine and produce electricity at a proper interval , it is very important to see the critical situation where kind of magnet can lose its magnetic property. The magnet chosen should be such that its curie temperature should be at least 1000°C above the temperature of engine produced inside. This part where the output from the magnet is easily taken out, but the most amazing part of the magnet is that the energy produced should get store in the battery of less self-discharge rate. This will be so advantageous that the energy produced and stored in energy can be used to allow the vehicle to on motor also in rare situation of in worst situation. So in order to make this engine as hybrid engine a proper utilization of engine parts is been done. The idea is also very much useful as it does not add some extra weight to much extent but gives out a bit more amount of efficiency that is much needed. so this is how proper operation of this mechanism has occurred.

Now there are several advantages of putting the magnetic in the various parts of engine, like in the above part I have mentioned that putting magnet as cylinder can produce electricity, similarly it is useful as a green source of energy, it reduced the pollution to much extent, neutralizing the various emissions to reduced forms. This Is the most new process that is helpful to much extent in reducing the risk of harmful emissions, this process is totally free from other parts like putting an engineer, catalytic converter at the exhaust, the reduction happens in engine only and if engineer or catalytic converter is kept at the end it will reduce emission to almost 70 to 80% theoretically. This is actually a concept that is based on the same permanent magnet used in the above part, if anyhow a strong magnetic field is setup inside the engine it will surely change the polarizing moment of the hydrocarbon atoms, further it also allows to have full combustion no waste of fuel occurs in this process, thus it is very much help full and is very feasible to apply in any engine regardless of ci or SI engine. The composition of alnico alloys is typically 8–12% Al, 15–26% Ni, 5–24% Co, up to 6% Cu, up to 1% Ti, and the balance is Fe.

Table.1.

Magnet	Curie Temp K
Alnico	973-1133
Cobalt magnets	993-1073
Strontium ferrite	723
Fe ₂ O ₃	958

PIEZOELECTRIC APPLICATION

Another form of modification that is applicable to much extent is the use of piezoelectric materials in the engine. Piezoelectric materials are the materials that can produce charges on the deformation to much extent. It is actually a much known material for working as a transducer and generator also. Here it is very obvious to think that how can a piezoelectric crystal can survive so much amount of heat inside the engine, it can be done while manufacturing the piezoelectric crystal, its curie temperature has to be increases to at least 1200-1500 degree Celsius in order to make the idea successful . Increasing the temperature of the piezoelectric crystal is a normal phenomenon during the, manufacturing process of p crystal, it should be manufactures in such a manner that its curie temp get too increase. It is actually based on taking of energy from the engine, it may be in small amount but if kept constant rate then proper and satisfactory results can be obtained. It is very tough to increase the temperature of piezoelectric crystal during the manufacturing process.



Figure.1.

The temperature restriction provided at the time of manufacturing process is very important in order to maintain its properties of crystal. The operation will be same only the place where the magnet was used in above page is just replaced by piezoelectric crystal, just the type and the assembly of it is not decided. It can be inclined; doom shaped, or else bends from end in top side. This creates the deformation during the up and down motion of piston. This is very important that the reciprocating piston produces deformations during its motion in the crystal this is how the output from the crystal can be obtained. Usually too much extent it is very easy specially the working mechanism that does not makes it complex but rather makes the engine more efficient. The only thing that differs is about the working that makes it the efficient one, its design of cylinder it can be narrow at the bottom, or vice versa. It may be hollow in middle and narrow from ends. It will be helpful, though it will precede less energy but will surely make the most of energy and will help in running motor to much extent

There may be some variation in output from the engine, but it will be rectified. a proper source of energy that is specially made to make vehicle run on both petrol and motor is now available , there may b some variations in that but will contribute to the another main source of energy.

SOAP STONE APPLICATION

After this topic there comes another application of heat transfer in engine. We all know that the engine suffers from the cold start in cold areas. Now this part of the paper discusses the application of soapstone in engine. This soapstone is a kind of very soft metamorphic rock available having excellent heat transfer properties. This idea of removing the problem can be solved using this soap stone. A small piece of soap stone has the property of radiating heat for some 1-2 days if heated to 500-800 degree Celsius. So inside the engine below the piston head there is a space where we can put this soapstone particle and solve our problem. It won't reduce the efficiency of engine it is a very light weight stone it won't add up to the extra load to the piston, as far as possible it is having the definite radiating properties that can actually save fuel. Various properties of this material are very useful but this heat radiating application will be the most dominating one.



Figure.2.

CONCLUSION

The idea of hybrid engine is a very practical idea based on the application of several materials discussed above. The only thing that matters is the output from engine. The clean energy from the engine is obtained by the above processes discussed. Now this idea is actually the practical one, and has the application usage of materials used in mechanical sciences and electrical sciences. This idea is actually the modern idea based on the modern ideology of taking out the clean energy from the energy going waste in the engine. Several attempts were made in the last decade and are continued in this decade but the solutions obtained were not that promising that can actually fit into a material.

REFERENCES

- <http://hyperphysics.phy-astr.gsu.edu/hbase/solids/magperm.html>
- <http://en.wikipedia.org/wiki/Magnet>
- <http://en.wikipedia.org/wiki/Piezoelectricity>
- <http://www.gsa.gov/portal/content/112582>