

Experimental and Study on Power Generation from Shkeout Power Plant

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Abstract:- The solidified metal component is then removed from its mold. Where the mold is sand based, this can be done by shaking or tumbling. A vibration motor is the main source used in this project.

Motor is connected to the vibrating plate through the link which is connected from cam. When the motor rotates then the rotary motion of cam is converted into linear motion through link.

Due to this up and down motion vibration is achieved. Here we fix the piezoelectric plates in vibrating plate; it produces voltage when the plate gets vibration.

I. INTRODUCTION

We waste so much energy. As much as 60 percent of energy is wasted as heat. Our laptops, nuclear power plants, chemical factories and cars all contribute to this waste heat.

Researchers at Purdue University are working with General Motors to create thermoelectric dynamos (TEGs) to turn waste heat directly into electrical energy for cars. The idea is to use the heat from the car engine's exhaust to generate electricity.

The prototype - which is a small metal chip - will basically hook up to the exhaust system and tap into heat coming from the gases. The technology used today can't hold up against the high temperatures inside catalytic converters.

But the material the researchers want to use is called skutterudite, which is a mix of minerals. Then other rare metals are added to it to make sure it's a poor conductor. That way, the current is generated when the material is hot on one side and cold on the other.

Ideally, it would reduce the amount of fuel used by five percent. It does this as it generates electricity to help power the car's electrical system and charge its battery.

The applications of the technology go beyond car exhaust. It could generate electricity in homes and power plants from waste streams. Waste byproducts could supply 19 percent of U.S. power, the heat sure gets lost easily. The promise is there, but the technical hurdles remain.

A Purdue University team, in collaboration with General Motors, is setting out to develop a new type of thermoelectric dynamo that can convert heat from a car's exhaust into electricity, according to Physorg.com. The first prototype of the energy-saving technology could

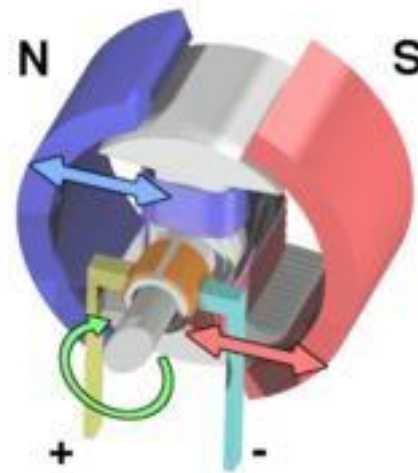
reduce fuel consumption by 5 to 10 percent. The idea is to place a device built from thermoelectric materials (materials that can generate an electrical current from temperature differences) in the exhaust system behind the catalytic converter, where heat from gasses can reach temperatures nearing 1,000 degrees Celsius.

That heat could then be converted into electricity by the thermoelectric materials. "The material is hot on the side facing the exhaust gases and cool on the other side, and this difference must be maintained to continually generate a current," said Xianfan Xu, a Purdue professor working on the project.

II. DESCRIPTION OF EQUIPMENTS

2.1 DC MOTOR

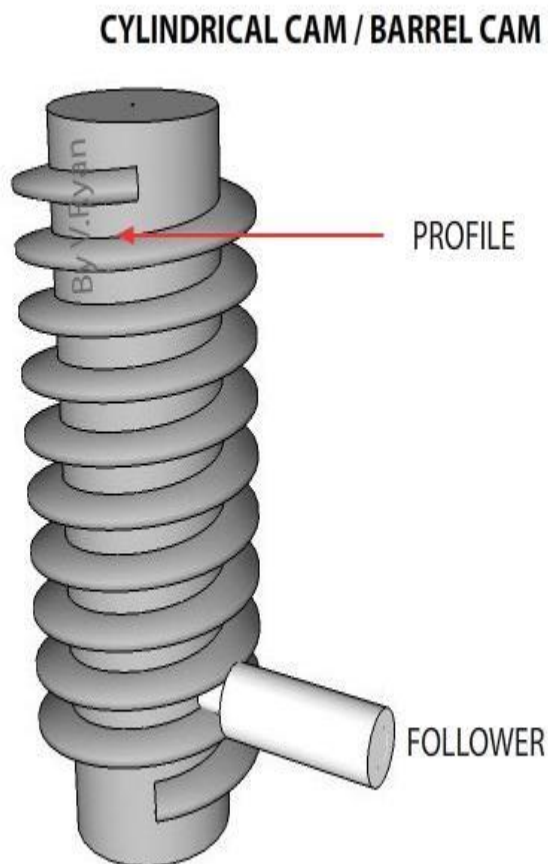
A coil of wire with a current running through it generates an electromagnetic field aligned with the center of the coil. The direction and magnitude of the magnetic field produced by the coil can be changed with the direction and magnitude of the current flowing through it. simple DC motor has a stationary set of magnets in the [stator](#) and an armature with one or more windings of insulated wire wrapped around a soft iron core that concentrates the magnetic field. The windings usually have multiple turns around the core, and in large motors there can be several parallel current paths.



2.2 CAM

A **cylindrical cam** or **barrel cam** is a cam in which the follower rides on the surface of a cylinder. In the most common type, the follower rides in a groove cut into the surface of a cylinder. These cams are principally used to convert rotational motion to linear motion parallel to the rotational axis of the cylinder. A cylinder may have several grooves cut into the surface and drive several followers.

A special case of this cam is **constant lead**, where the position of the follower is linear with rotation, as in a lead screw. The purpose and detail of implementation influence whether this application is called a cam or a screw thread, but in some cases, the nomenclature may be ambiguous



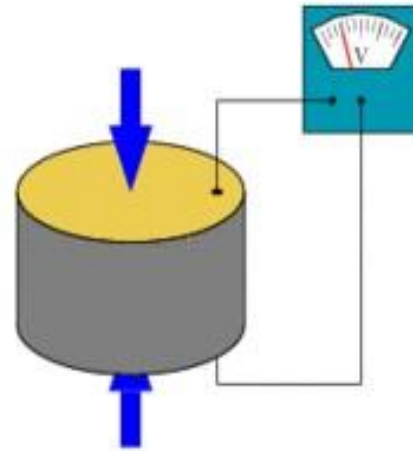
2.3 PIEZOELECTRIC

Piezoelectric sensors are versatile tools for the measurement of various processes. They are used for quality assurance, process control, and for research and development in many industries.

Pierre Curie discovered the piezoelectric effect in 1880, but only in the 1950s did manufacturers begin to use the piezoelectric effect in industrial sensing applications. Since then, this measuring principle has been increasingly used, and has become a mature technology with excellent inherent reliability.

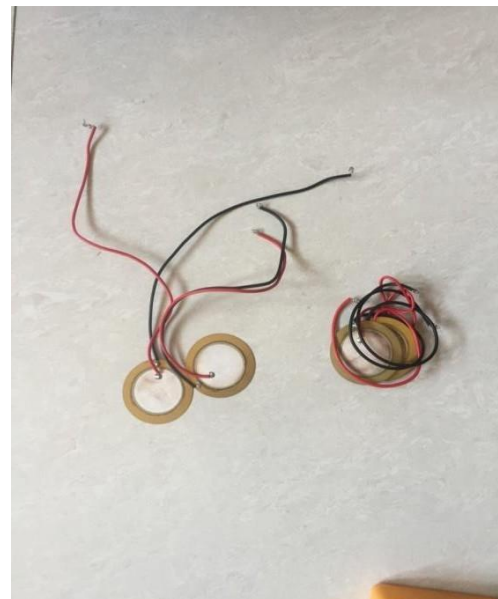
They have been successfully used in various applications,

Such as in medical, aerospace, nuclear instrumentation, and as a tilt sensor in consumer electronics^[1] or a pressure sensor in the touch pads of mobile phones.



This gives piezoelectric sensors ruggedness, an extremely high natural frequency and an excellent linearity over a wide amplitude range.

Additionally, piezoelectric technology is insensitive to electromagnetic fields and radiation, enabling measurements under harsh conditions.

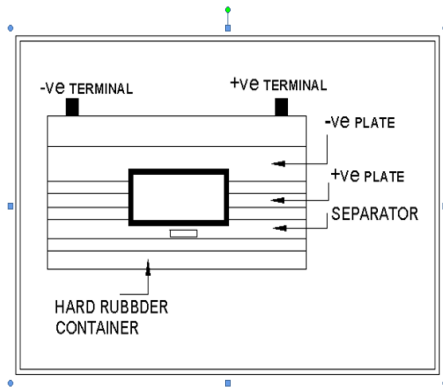


2.4 BATTERY:

In our project we are using secondary type battery. It is rechargeable type. A battery is one or more electrochemical cells, which store chemical energy and make it available as electric current.

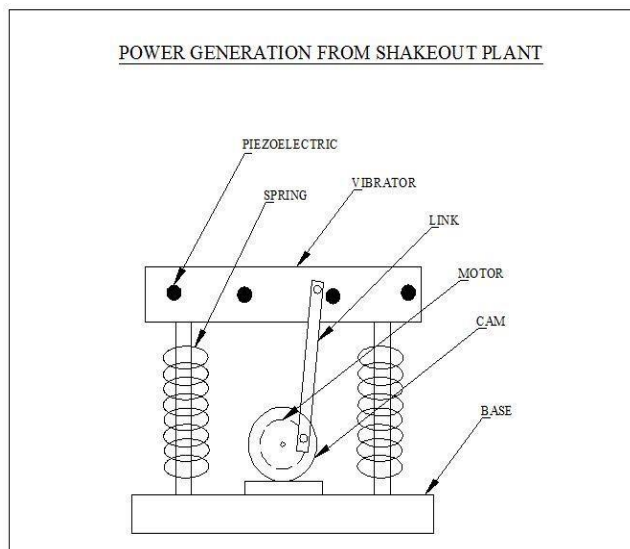
There are two types of batteries, primary (disposable) and secondary (rechargeable), both of which convert chemical energy to electrical energy. Primary batteries can only be used once because they use up their chemicals in an irreversible reaction.

Secondary batteries can be recharged because the chemical reactions they use are reversible; they are recharged by running a charging current through the battery, but in the opposite direction of the discharge current. Secondary, also called rechargeable batteries can be charged and discharged many times before wearing out. After wearing out some batteries can be recycled.



III. DRAWING

The project consists of the following components to full fill the requirements of complete operation of the machine



V. MERITS AND DEMERITS

4.3 MERITS

- Reliability
- Easy implementation
- Easy installation

- Reduces Electricity Bills
- Diverse Applications
- Occupying very little space

Low Maintenance Costs

- Technology Development.

4.2 DEMERITS

Machinery has not provide to be an unmixed, whereas it has undoubtedly conferred untold benefits on mankind, it is also associated with certain evils.

IV. CONCLUSION

The project carried out by us made an impressing task in the field of electricity department. It is used for to produce the current in vehicle exhaust unit.

This project has also reduced the cost involved in the concern. Project has been designed to perform the entire requirement task which has also been provided.

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