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New Source of Electricity Using Speed Arresters

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Abstract: In the present day scenario, power is a major need for human life. There is a need to develop non- conventional sources for power generation due to the reason that our conventional sources of power are getting scarcer by the day. This paper gives the detail about vehicle pressure depends on the weight of the vehicle that passes on the highways. The pressure here is mechanical energy. Hence we convert this mechanical energy into electrical energy. This generated power can be used for general purpose applications like streetlights, traffic signals. In addition, we could also have solar panels, which would satisfy our power needs, when there is no vehicular movement. This project is to generate electricity through speed breakers. For obtaining the electricity through the speed breaker mechanism a prototype model is developed and studied. Findings from this research work are discussed below. The generator used here is permanent magnet D.C. generator. The generator voltage is 12 Volt D.C. This D.C. voltage is stored to the lead 12-volt battery. The battery is in turn connected to the inverter. The inverter is used to convert 12 volt D.C. to the 230 volt. A.C voltage is used to activate the light fan etc. By increasing the capacity of the battery and the inverter circuit, the power rating is increased gradually. In the present scenario there is a huge lack of electricity. In this project electricity is generated through speed breakers present on roads. As vehicles on roads are increasing day by day, this project helps to generate electricity as these vehicles pass through the speed breakers. This electricity generated can be used for different purpose such as lighting of signals and streetlights on road etc.

Index Terms: Microcontroller, Spring, Pressure Sensor, Inverter Board, Load, Transformer.

INTRODUCTION

This paper is all about generating electricity when people walk on the Floor. Think about the forces you exert which is wasted when a person walks. The idea is to convert the weight energy to electrical energy The Power Generating floor intends to translate the kinetic energy to the electrical power. Energy Crisis is the main issue of world these days. The motto of this research work is to face this crisis somehow. Though it won't meet the requirement of electricity but as a matter of fact if we are able to design a power generating floor that can produce 100W on just 12 steps, then for 120 steps we can produce 1000 Watt and if we install such type of 100 floors with this system then it can produce 1MegaWatt. Which itself is an achievement to make it significant.

This manuscript describes about generating the electrical energy by using the weight energy, one can simply shocks by knowing how much energy a person can have by simply walking on the floor with a normal speed. As people's steps (thousands upon thousands a day) utilize and channel kinetic energy too

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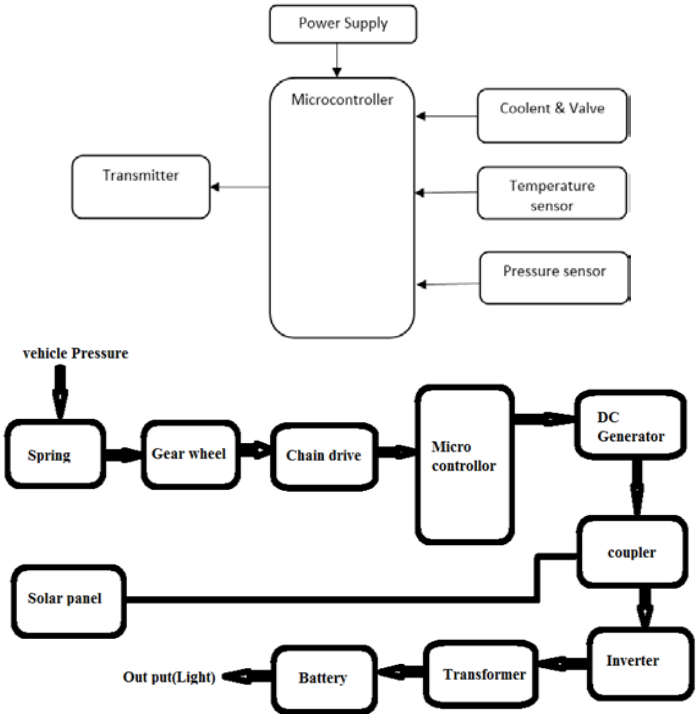
[1]. Whenever a person walks, manages to lose energy towards the floor by means of influence, vibration, and audio and so on, a result of the move of excess weight to the floor. That energy may be used and converted into electrical energy. The actual electro-kinetic floor is really an approach to making electrical energy by using the kinetic energy of the person who walks on the floor.

The power floor is not like traditional floor. The energy produced by this floor will be environment friendly without having smog. Producing this type of energy will be cost effective also. The power floor does not need any fuel or perhaps any sort of energy resource, simply making use of kinetic energy. Based upon your excess weight from a person moving on the floor.

HARDWARE SETUP

The hardware setup plays a vital role in the designing process of this robot vehicle. The following are the building blocks of the vehicle. They are:

- ARUDINO Microcontroller.
- Spring.
- Inverter Board.
- PRESSURE Sensor.
- Transformer.
- Battery.



BLOCK DIAGRAM DESCRIPTION

Arduino Microcontroller

Arduino is an open-source computer hardware and software company, project and user community that designs and manufactures kits for building digital devices and interactive objects that can sense and control the physical world. Arduino boards may be purchased preassembled, or as do-it-yourself kits; at the same time, the hardware design information is available for those who would like to assemble an Arduino from scratch.

Figure: Arduino UNO

The system is based on a family of microcontroller board, using various 8-bit Atmel AVR microcontrollers or 32-bit Atmel ARM processors. These systems provide sets of digital and analog I/O pins that can be interfaced to various extension boards and other circuits. The boards feature serial communications interfaces, including USB on some models, for loading programs from personal computers. For programming the microcontrollers, the Arduino platform provides an integrated development environment (IDE) based on the Processing project, which includes support for C and C++ programming languages.

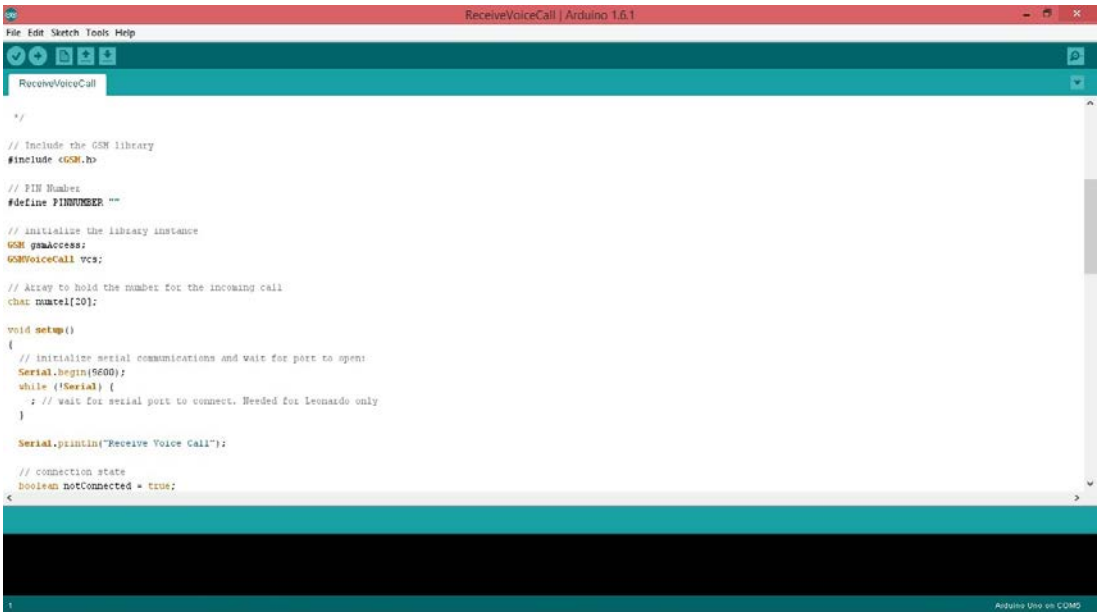
Arduino Specification

NAME	SPECIFICATION
Microcontroller	ATmega328
Operating Voltage	5V
Input Voltage (recommended)	7-12V
Input Voltage (limits)	6-20V
Digital I/O Pins	14 (of which 6 provide PWM output)
Analogue Input Pins	6
DC Current per I/O Pin	40 Ma
DC Current for 3.3V Pin	50 Ma
Flash Memory	32 KB (ATmega328) of which 0.5 KB used by boot loader
SRAM	2 KB (ATmega328)
EEPROM	1 KB (ATmega328)
Clock Speed	16 MHz
Length	68.6 mm
Width	53.4 mm
Weight	25 g

Arduino Software

The Arduino integrated development environment (IDE) is a cross-platform application written in Java, and derives from the IDE for the Processing programming language and the Wiring projects. It is designed to introduce programming to artists and other newcomers unfamiliar with software development. It includes a code editor with features such as syntax highlighting, brace matching, and automatic indentation, and is also capable of compiling and uploading programs to the board with a single click. A program or code written for Arduino is called a sketch. Arduino programs are written in C or C++. The Arduino IDE comes with a software library called "Wiring" from the original Wiring project, which makes many common input/output operations much easier. Users only need define two functions to make a runnablecyclic executive program.

The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. It runs on Windows, Mac OS X, and Linux. The environment is written in Java and based on Processing and other open-source software. This software can be used with any Arduino board.



Spring

It is defined as an elastic body whose function is to distort when loaded and to recover its original shape when the load is removed. It cushions, absorbs or controls energy either due to shocks or due to vibrations.

Gear Wheel

The rack and pinion used to convert between rotary and translator motion. The rack is the flat toothed part, while the pinion is the gear. Rack and pinion can convert rotary to linear of from linear to rotary motion. The primary function of flywheel is to act as an energy accumulator. It reduces the fluctuations in speed [9]. It absorbs the energy when demand is less and releases the same when it is required.

Chain Drive

Chain drive is a way of transmitting mechanical power from one place to another. It is often used to convey power to the wheels of a vehicle, particularly bicycles and motorcycles. It is also used in a wide variety of machines besides vehicles. Most often, the power is conveyed by a roller chain, known as the drive chain or transmission chain passing over a sprocket gear, with the teeth of the gear meshing with the holes in the links of the chain.

DC Generator

It is a device, which converts mechanical energy into electrical energy. The generator uses rotating coils of wire and magnetic fields to convert mechanical rotation into a pulsing direct electric current through "Faraday"s law of electromagnetic induction". In electricity generation, a generator is a device that converts mechanical energy to electrical energy for use in an external circuit. The source of mechanical energy may vary widely from a hand crank to an internal combustion engine. Generators provide nearly all of the power for electric power grids. The reverse conversion of electrical energy into mechanical energy is done by an electric motor, and motors and generators have many similarities. Many motors can be mechanically driven to generate electricity and frequently make acceptable generators.

Inverter

A power inverter, or inverter, is an electronic device or circuitry that changes direct current (DC) to alternating current (AC). The input voltage, output voltage and frequency, and overall power handling depend on the design of the specific device or circuitry. The inverter does not produce any power; the power is provided by the DC source. A power inverter can be entirely electronic or may be a combination of mechanical effects (such as a rotary apparatus) and electronic circuitry. **Static inverters** do not use moving parts in the conversion process.

Pressure Sensor

A piezoelectric sensor or pressure sensor is a device that uses the piezoelectric effect to measure pressure, acceleration, strain or force by converting them to an electrical charge. Piezo buzzer exploits the piezoelectric property of the piezo electric crystals.

Figure: Pressure Sensor

The piezoelectric effect may be direct piezoelectric effect in which the electric charge develops as a result of the mechanical stressor reverse or indirect piezoelectric effect (Converse piezoelectric effect) in which a mechanical force such as pressure develops due to the application of an electric field.

CONCLUSION

In coming days, this will prove a great boon to the world, since it will save a lot of electricity of power plants that gets wasted in illuminating the street lights. As the conventional sources are depleting very fast, then it's time to think of alternatives. We got to save the power gained from the conventional sources for efficient use. So this idea not only provides alternative but also adds to the economy of the country.

Now, vehicular traffic in big cities is more, causing a problem to human being. But this vehicular traffic can be utilized for power generation by means of new technique called “power hump”. It has advantage that it does not utilize any external source. Now the time has come to put forte these types of innovative ideas, and researches should be done to upgrade their implication.

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