

Power from Vehicle Movement on Bridges

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BACKGROUND

The quest for non conventional sources of electricity is a continuous one and any idea that sounds feasible and can generate electricity without fossil fuel is always welcome. Further, if such electricity can be sourced without actual consumption of any materials and without any adverse effect on the environment, it is an additional bonus.

This note elaborates a source of electricity that is very unique and original.

GENERATION OF ELECTRICITY

The generation of electricity takes place when a loop of wire or disc of copper is made to rotate between the poles of a magnet. In this process, mechanical energy is converted into electrical energy. This is the most popular method of generating electricity.

CONCEPT OF POWER FROM VEHICLE MOVEMENT ON BRIDGES

Infrastructure development has been a major factor in India's growth story. An important aspect of this has been the construction of highways and other roads across several parts of the country. Considering the vastness of the country, such highways have also needed many bridges across rivers and low lying areas. The bridges along high ways as they are constructed in modern times consist of RCC / Pre-stressed concrete deck with joints on piers (Expansion Joints) to allow for thermal expansion. These gaps are filled with expandable materials to accommodate thermal expansion / contraction.

In the proposed system, this gap will be filled up by a special rubber that will have special elastic properties. Every time a vehicle moves on the bridge and passes over the rubber in the gap, the rubber strip is pushed downwards and comes up again due to this elasticity. This up-down movement of the rubber strip when converted to rotary motion can be used to generate electricity.

CONSTRUCTION OF BRIDGES

Bridges are constructed with columns and beams that support the slabs. These slabs could be concrete slabs or asphalt slabs. Depending upon the span of the bridges, certain numbers of slabs are used. While laying the slabs, certain gap is maintained between slabs. This gap allows for expansion / contraction and the gaps run across the width of the bridges. Generally, these gaps are filled with asphalt which moulds itself to the available gap.

BENEFITS OF THE PROPOSED SYSTEM

The proposed system for generating electricity has the following advantages: Eco friendly – There is no consumption of any natural resource and no generation of any harmful pollutants. These systems can support small communities around the source of electricity generation. Since highways criss-cross the country and pass through very remote areas, it is possible to provide electricity to remotely located communities where transmission could pose problems.