# VISHWAKARMA INSTITUE OF TECHNOLOGY

DEPARTMENT OF ENGINEERING SCIENCES AND HUMANITIES

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| **EDI 1 PROJECT BATCH No: -2** | **EDI1 PROJECT GROUP No: -I6** | **ACADEMIC YEAR 2022-23** | | **SEMESTER-1** |
| TITLE OF PROJECT | Train Top Windmill | | | |
| DOMAIN | Renewable Energy | | | |
| TOOLS | Motor, Batteries, Soldering Gun, Tinker Cad | | | |
| TECHNOLOGY | Electromagnetic induction | | | |
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**SYNOPSIS**

The development of renewable energy is a much-required need for human resource development. Making use of inexhaustible and renewable energy sources such as wind and solar energy has been emphasized time and again as traditional energy sources are depleting.

A train traveling at high speed, in combination with wind flowing in opposite directions, results in wind energy. The wind’s kinetic energy can be used to produce electrical energy with the help of generators.

The wind turbine placed on the top of the train coaches receives wind pressure from the opposite direction in which the train is moving.

The whole model is to be placed on an empty place on the roof of the train. Sensors can be placed on the coaches which will enable them to sense obstacles on the way. When an obstacle is encountered the whole outer frame retracts into a box placed within the coach. A hydraulic system will bring the outer frame to its original position after the obstacle has passed.

The wind pressure rotates the rotor blades of the turbine, which are attached to the shaft of the gearbox. The gearbox then increases the shaft’s rotational speed and transmits the rotational motion to the generator. The generator converts this rotational motion into electrical energy. Every coach consists of a two-turbine generator setup on the roof. The battery will be placed in the last coach of the train.

The electrical energy generated will be passed on from each coach to the last coach and will be stored in the batteries there. Once the storage capacity of the batteries is to the maximum, further electrical energy can be used to run the various electrical appliances of the train. On reaching its final destination the fully charged batteries will be replaced with empty ones so that they can be used for storage on the train’s onward/return journey. The charged batteries can be put into use in various ways such as the charging of electric vehicles.

This model can be further modified in such a way that it can be used even in other vehicles such as two-wheelers, four-wheelers, etc.