INTRODUCTION
As there is a rapid growth of population and the amount of using electricity in industrial development, the supply of energy is no longer enough to support the demand. Scientists and engineers have worked very hard to investigate and apply renewable energy, like solar energy, wind energy and vibration energy to generate electricity instead of using non-renewable energy. An application of solar energy and wind energy to infrastructure has been very successful in many countries.

In our project, we will design a new, convenient and environmental friendly device to charge up a cell phone. At the same time, a business plan of the device is written. These kinds of environmental friendly products will be a new trend for the global market which provides a large amount of potential customers to our product.

OBJECTIVE
To study the mechanism of energy harvesting device and design electronic systems which get energy from the environment instead of getting electricity from primary or secondary energy source.

An environmental electronic device was innovated to give less impact on energy crisis.

METHODOLOGY
- Tested the characteristic of the generator, such as internal resistance and the range of voltage generated
- Calculated the maximum motor power
- Designed the system block diagram
- Search the suitable electronic components in Internet
- Made Printed Circuit Board (PCB) layouts and put all the electronic components into the PCB
- Tested the whole system part by part and controlled the system by programming

SYSTEM BLOCK DIAGRAM

LOGIC FLOW OF THE PROGRAM

HARDWARE OF THE WHOLE SYSTEM

CONCLUSION
In our project, a new, convenient and environmentally friendly device was designed to charge up a cell phone. Energy harvesting technology was used to obtain energy from the environment, and then transform it into electrical power instead of using primary or secondary energy sources such as a battery or a wall power plug. The device is designed to be implant in luggage wheels.

The concept of our project can be widely used in any object with wheels, such as baby pushchairs and office chairs. Also, energy harvesting technologies, such as piezoelectric materials and solar panels, could be applied to our device as well.

In conclusion, our project has a large potential for development. We believe that this environmentally friendly product will be used widely and will be a success in the future.