U-MILES

Summary

Team members:

Loris Liverani, Jessica Messina, Erica Solino

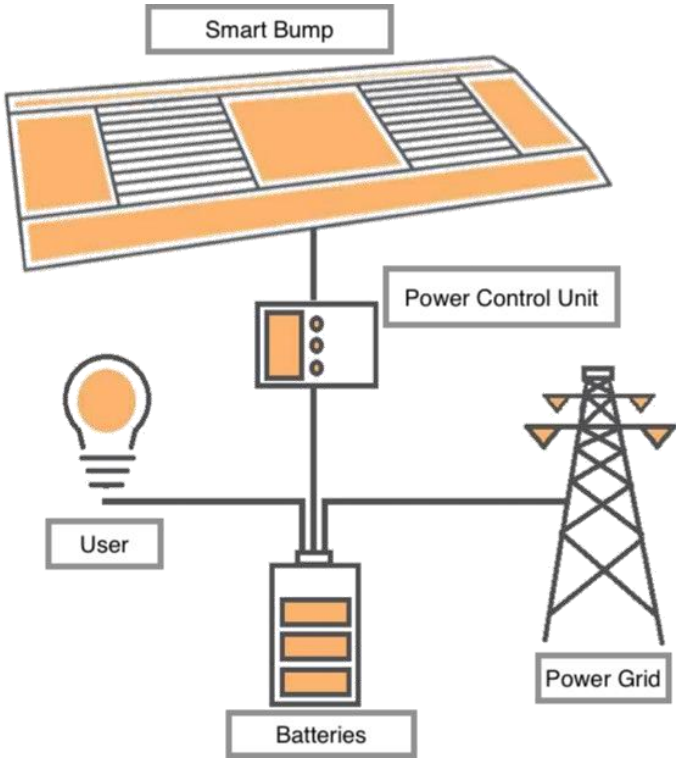
1. BUSINESS IDEA

U-miles is a project born from the initiative of four graduate students from the University of Bergamo, with the aim of entering the energy harvesting market. In this context, they developed a process through which an amount of energy of motion is transformed into power and stored for later usage.
The business idea consists of a “smart bump” able to retrieve the kinetic energy from the car passage, that would otherwise be lost, and to retrieve green power from it.
Normally, the device can be installed in already existing bumps, as a requalification of them. Alternatively, it can be installed as a flat platform following some excavations.
This is an innovative solution to obtain renewable energy, taking advantage of the high traffic density of certain roads. For instance, urban roads, shopping centers parking lots, service stations, as well as highway exits.
Usually, drivers have to slow down when passing through an urban road or when leaving a highway, so they need to use the car’s brakes. The concept behind this placement is that, thanks to the “smart bump” they, not only will be able to reduce the brakes’ usage, but also they will be producing green power by crossing it. For this reason, it can be stated that U-miles is concretely giving a contribution to the development of the CleanTech & Energy sector.

1.1 How Does It Work?

The standard smart bump is a modular technology that is composed by several mobile units, which are in direct contact with the road. They lower when the vehicle passes over them, and, through a system of guided springs, they return to the original position when the vehicle has finished to run on the device.

There are ten dependent modules and each one of them is 10-centimetre long, which is the measure of the footprint of tyre of the car, and it is 70-centimetre wide. This is due to the necessity of catching as much vehicles as possible, even those that do not cross exactly in the middle of the road. Each module is composed by a mechanical system that transmits the kinetic energy to a generator.



This linear generator uses the electromagnetic induction principle to transform the movement into power. The power produced is carried out into a circuit where the voltage is leveled, steadied and regulated.
Subsequently, the energy is ready to be stored in some battery packs, and after that it can be used according to the users’ purpose.