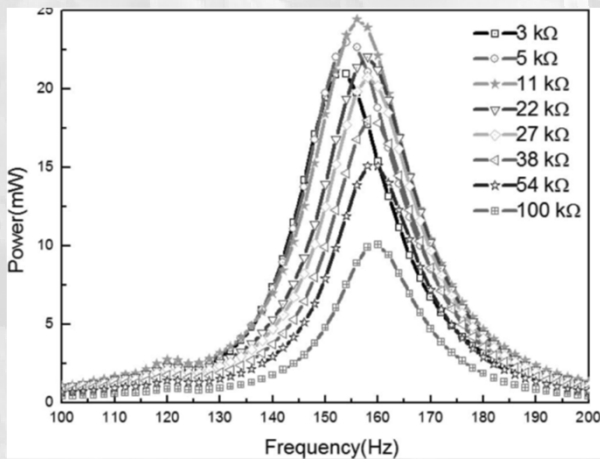


## INTRODUCTION

The invention consists on development and construction of a low voltage generator using the simple piezoelectric effect. For this purpose, piezoelectric transducers will be used, which will generate current under the influence of deformation. The final shape of the structure, the electrical system, the type of piezoelectrics and the type of deformations to which they will be subjected depends on the efficiency of the entire system. The generator will contribute to expanding knowledge in the field of renewable Energy as an alternative source and advanced applications of piezoelectric materials.

## PROTOTYPE

Literature review: Wei Wang and T Q Yang, Vibration Energy Harvesting Using a Piezoelectric Circular Diaphragm Array, published in IEEE transactions on ultrasonics, ferroelectrics, and frequency control similar frequency is designed in the prototype.

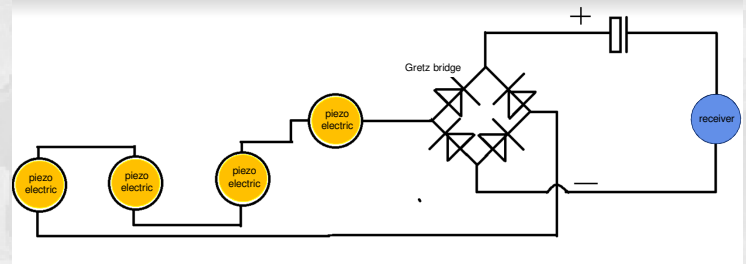


Output voltage and power of a piezoelectric diaphragm array in parallel connection through a single rectifier circuit.

The prototype creation is divided into five stages:

- development of an electrical scheme in which piezoelectrics could work. Taking into account the receiver and the Gretz bridge as a rectifying system
- design study taking into account, among others variable number of piezoelectrics by torque, motion that deforms the piezoelectrics, modeling of individual elements, including three-dimensional modeling and 3D printing
- evaluation of the impact of design solutions on work efficiency.

- measurements of the generated current to verify the possibility of stabilizing the system, including verification whether a capacitor will be required in the system to store energy
- evaluation of wear of construction elements due to work, checking the lifetime of the generator after a certain period of operation.



Output voltage and power of a piezoelectric diaphragm array in parallel connection through a single rectifier circuit.

