

# Energy harvesting from raindrops

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## INTRODUCTION

In this paper we will investigate which parameters are important for energy harvesting from raindrops through a piezo based sensor. We will make a chamber filled with fluid or gas and a membrane to cover the chamber. Then connect a piezo based pressure sensor to the chamber so we can register how much pressure/energy can be gained from a drop. Then we will investigate which parameters are important such as: the drop height, drop frequency, drop size and finally we will give an estimate on how much energy can be obtained from a drop.

## THE CONSTRUCTION

In figure 1 the construction can be seen. Here the chamber is in the middle and the air/water intake and the sensor holes are on each side.

It is then the intention that the membrane is strapped over the chamber so the momentum from the drop can be absorbed into the chamber and directed to the sensor.

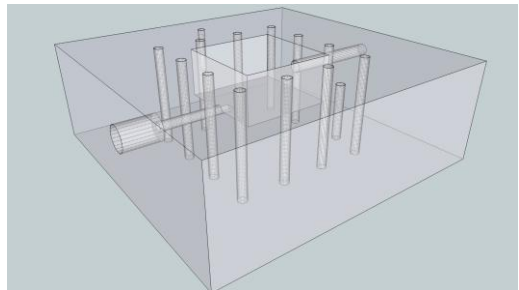


Figure 1: The construction used to harvest energy from raindrops. The construction is made in micro milled polycarbonate.

## SIGNAL PROCESSING

In figure 2 the signal registered from a single drop can be seen. It is interesting to note that it is just a single impact but the membrane start to oscillate. That can be very important since a piezo deliver most energy if you can get it to oscillate at a specific frequency.

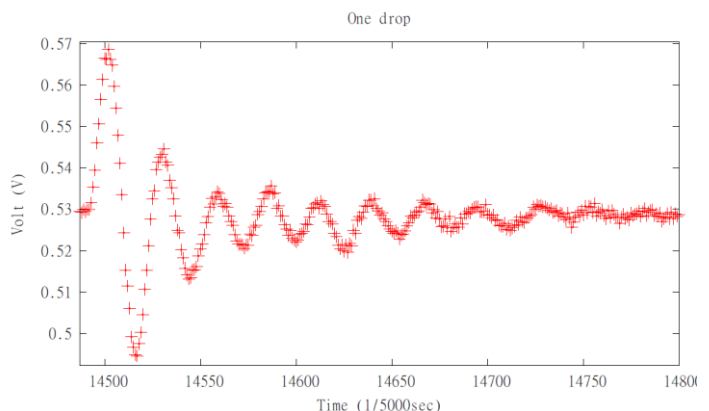


Figure 2: The Pressure oscillations registered by the piezo from a drop.