15

Small scale energy harvesting from water sources

Henrik Teglborg
s082629
Physics and Nanotechnology

Supervisors: Docent Erik Vilain Thomsen - DTU Nanotech
Postdoc Thomas Glasdam Jensen - DTU Nanotech

INTRODUCTION

One of the reasons I joined Physics and Nanotechnology was due to my interest in energy – and more specific energy storage. Another fascination of mine is gravity – a still not fully understood force of nature. This made me think of ways to combine these interests to harvest energy from gravity. At first I thought of retrieving energy from falling raindrops but that proved ineffective due to the small mass of a raindrop. A realistic method to harvest more energy would require more water. Then I thought of downspouts for gutters or toilets. The water flow is bigger and therefore has more kinetic energy and potentially more energy to harvest. To realize this idea I set up a 3-week special course to manufacture a device to harvest the energy and look at the efficiency.

THE SETUP

I planned this course to be an experimental course rather than theoretical. I would like to see if a model could in fact make a lamp glow or charge a battery only by water and gravity. In theory it sounds plausible, but many unforeseen factors can appear to make the idea fail completely.
Originally I had two ideas - a turbine or a watermill structure. Due to the constant pressure around us, I will continue working on the watermill structure. I will start with a small scale version – and if there is time within the 3-week period, a full scale model.
If this works then such a machine could be attached to drains/urinals/waste pipes or other vertical fluid systems.