

# Wind-up system for a Lever Operated Pivoting Float-Buoy

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## INTRODUCTION

The project that this abstract revolves around is being prepared in connection with the course Project Work (41801) and focuses on the construction of a wind-up system for a Lever Operated Pivoting Float-buoy (LOPF) in cooperation with Resen Waves. The purpose of the buoy is to transform energy from waves in the ocean to electrical energy. The system is put in place to allow for the buoy to move with the waves in the best possible manner, and allow it to be dragged under water in case of a storm. Optimizing how the buoy follows the waves is essential, as it allows for the buoy to create a larger amount of energy. It is the wired connection to the bottom (Figure 1), with the movement of the waves that makes the shaft rotate.

## PROJECT

The objective of the project is to develop a system able to draw the buoy closer to the bottom of the ocean, if the water level is low or a storm is coming. This means shortening the wire on Figure 1. The first part of the project focused on the general design of the system and its mechanical properties. A lengthy calculation process was needed to dimension the system to the buoy, because it was important that it fit the requirements. These were: 1. Able to pull the buoy underwater during a storm and 2. Not using too much power. For the system to be able to live up to these requirements, extensive calculations on the gears of the system were needed, and the right motor had to be found. The solution was then graphically rendered in SolidWorks, as work drawings of the systems different parts were needed for fabrication. After the parts have been fabricated, the system is to be tested in a dry environment as well as in the ocean, to see if it lives up to the expectations.

## CONCLUSION

The system consists of a motor with a worm gear, driving a planetary gear. The outer shell of the planetary gear is used as the wind-up area for the bottom-connected wire. The conclusion of the project should hopefully be a fully functioning buoy with this wind-up system, which makes it more efficient and keeps it safe during a storm. If it all works, this may become a supplement to the other sustainable energy sources such as wind and solar power.

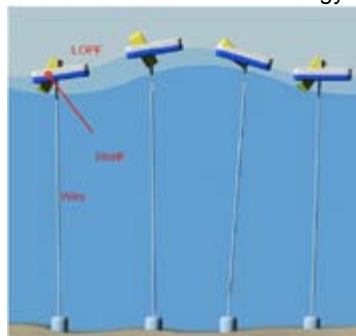


Figure 1. The movements of the LOPF in the waves