

# Wave energy: Boats on waves can be a source of clean energy.

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**Abstract**— The energy of ocean waves across a large part of the earth is inexhaustible. The whole world will benefit if this endless energy can be used in an easy way. The coastal countries will easily be able to meet their own energy needs. The purpose of this article is to use the infinite energy of the ocean wave in a simple way, i.e., a method of efficient use of wave energy. The paper starts by discussing specifically about pitch motion of a boat caused by waves. Afterward with a graphical presentation, discussed about the method of using the force from pitch movement of the boat. Finally, the conclusion states the possibilities, disadvantages and advantages

**Keywords**—electricity, floating object, pump, ship city, swing weight, wave energy

## I. INTRODUCTION

The force which is comes from Boat's pitch motion, is very suitable for water pumping. By placing a swing weight on the boat it is possible to get that force. Yes, we can pump water by using the forces from boat's pitch motion caused by the wave energy. This is the easiest technique to harness energy from ocean (/ river) waves. This nonstop pump can provide sufficient water for irrigation and for hydro power-station. There is also no problem for the conversion of big and or small size of waves. That is, smaller waves will pump less water and larger waves will pump more water.

The pitch movements of the ships those are shows in figure-1 can be very reliable to use.



Figure-1: Useful energy that is out of our sight.

## II. DESCRIPTION

Golden values Blue force which is comes from Boat's pitch motion, is suitable to water pumping. By placing a swing weight on the boat it is possible to get that force. A graphical presentation of the motion of the swing weight, at four different positions of the boat in the pitch movement are as shows in figures 2 to 5.

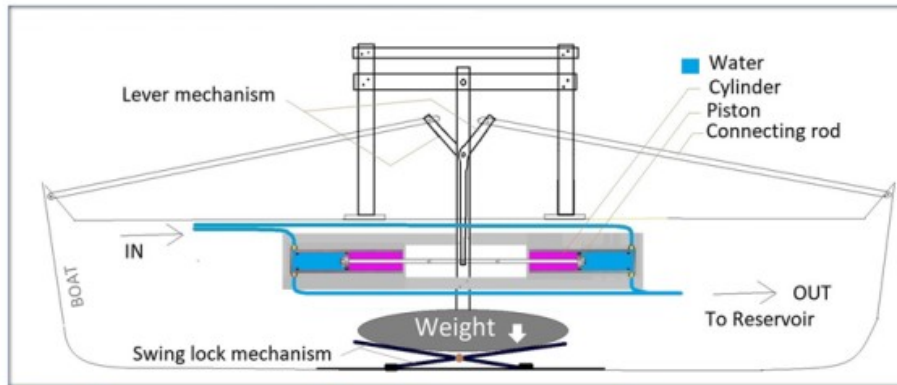


Figure-2: Pump is ready to work by unlocking the swing weight.

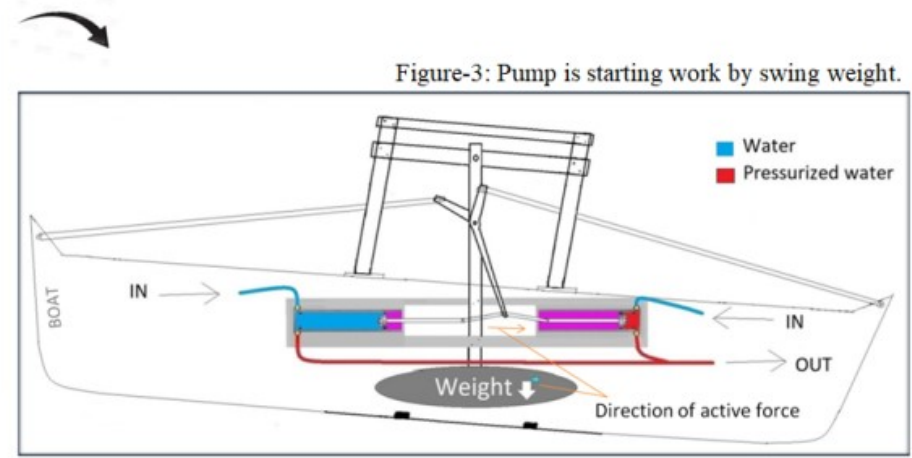


Figure-3: Pump is starting work by swing weight.

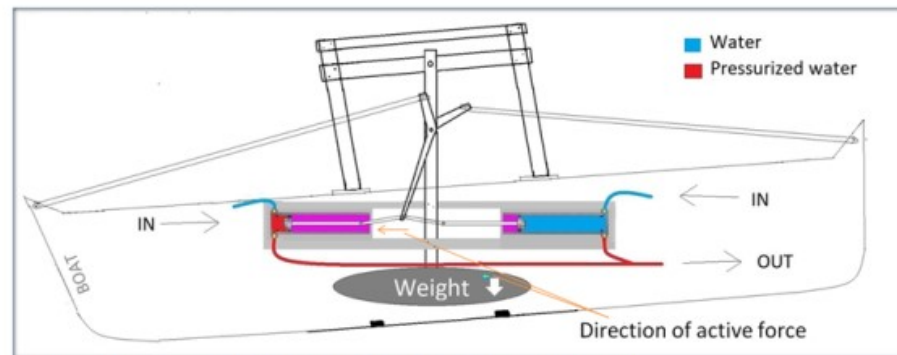


Figure-5: Pumping by swing weight due to the pitch motion.

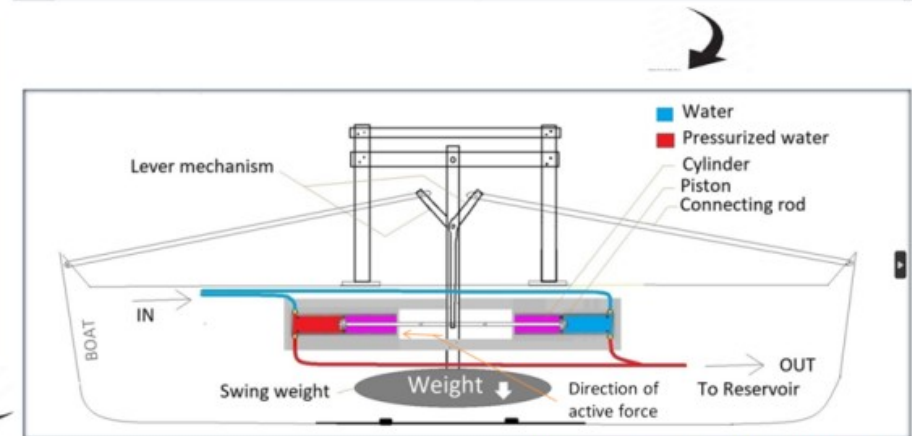


Figure-4: Pumping by pitch motion.

By installing pumps and swing weight inside the boat, using the bidirectional force from swing weight due to pitch motion of the boat on waves, continuously sufficient water pumping is possible for hydropower station and or desalination/irrigation, as shown in figures 6 and 7..

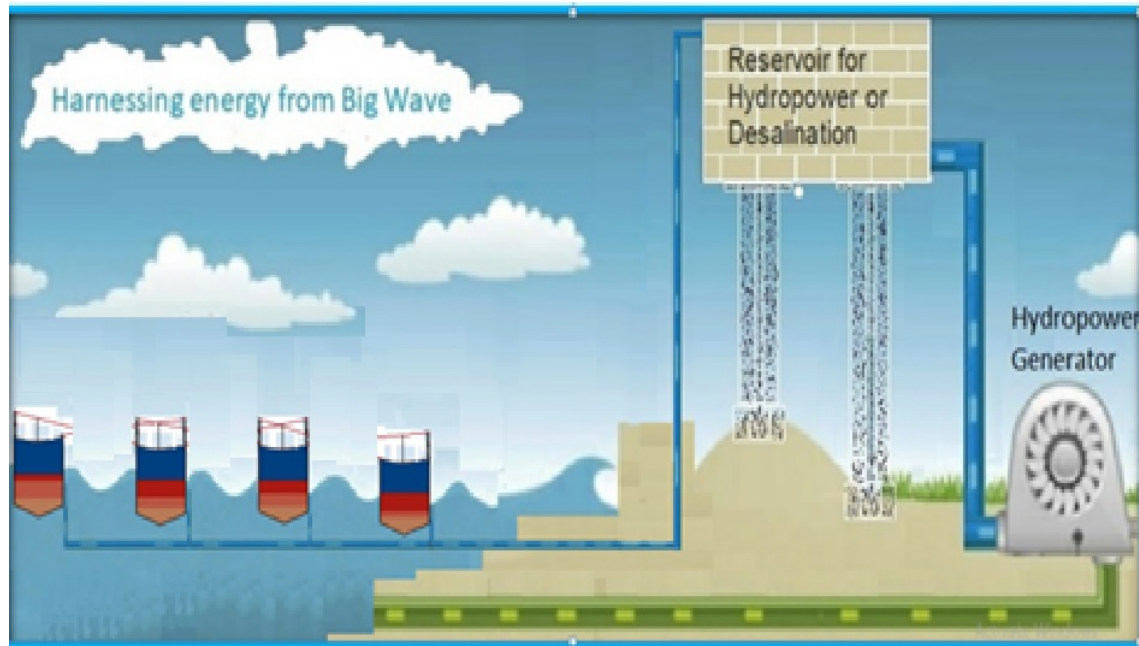


Figure. 6: The vertical force of tidal waves is pumping water to the reservoir.

Figure. 7: Some anchored big boat/ships can provide electricity and water demand for a big city.



### III. CONCLUSION

We don't have time for wait to switch clean energy economy, and we have unlimited source of energy [ocean wave], taking consideration those issues the paper shows huge potentiality.

Finally, from all the above we can conclude that by using pitch motion of a boat we can easily pump water contineously to the upstream resurvoir of hydro power station. We may get little amount of water from a pump but we can use many swing weight and pump in a big boat and we can use lots of boats. It is not calculated yet but I guase five big boat is enough to provide sufficient water to operate a hundred megawatt hydro power station.

The Earth is a watery place. About 71% of the Earth's surface is water-covered, and the oceans hold about 96.5% of all Earth's water. Considering the open space available in the ocean, we can easily install the required numbers of boats to the conversion of energy from the big waves to achieve 100% renewable energy.

#### **Disadvantages:**

- Peoples involved for the devices in the boat increases the chance of ocean pollution..
- Pumps operating in boats may disturbe the marine lives lots.

#### **Advantages:**

- Zero emission based wave energy harvesting idea.
- Here it is possible to be a zero pollution based wave energy harvesting.
- It can provide Low-cost renewable energy.
- Natural disestars are predictable so Very safe.
- Average invest and very low production cost makes it Economic.
- Easy technology based solution, any engineering firm can implement this.
- Very easy technology and available unlimited wave energy makes it Reliable.
- Waves are unlimited.
- No problem with the conversion of the unsymmetrical wave also. i.e. small waves pump less water, big waves pump more water.
- By using rejected ships it is possible to reduce the investment.
- Ships/boats can forms the ship/boat city.
- For this simple pumping operation it is easy to design pumps for waves of all sizes.
- The pump will work continuously as the waves are, so there is no need the large reservoirs for hydropower plants or for desalination.
- Sufficient surface water can avoid the lifting of underground water.

### IV. ACKNOWLEDGMENT:

I want to give my special thanks to Google for helping me find the information I needed. I am really grateful to marine energy/shipping companies because of my requirements, here I use their ships pictures.

### V. REFERENCES

Nil