POWER GENERATION FROM OCEAN WAVES

19B81A0386, 19B81A0393, 19B81A0397

Team Projects Lab report on

POWER GENERATION FROM OCEAN WAVES

Submitted By,

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Department of Mechanical Engineering

CVR COLLEGE OF ENGINEERING

(UGC Autonomous Institution)

Affiliated to JNTU Hyderabad
Vastunagar, Mangalpalli (V), Ibrahimpatnam (M),
Ranga Reddy (Dist.), Hyderabad – 501510, Telangana State

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CERTIFICATE

This is to certify that the bonafide record of work done by Mr/Ms.V. Pavan Kalyan (19B81A0386), P. Sagar(19B81A0393 and M.Sai ram(19B81A0397) of B.Tech III Year II - Semester, Mechanical Engineering Branch, during the academic year 2021-2022 in the Team Projects Lab.

Project Coordinator **Head of the Department**

ACKNOWLEDGEMENT

We are greatly indebted to **Mr. Sarat Kumar Sahoo**, (Asst. Professor) my revered guide for his valuable affectionate guidance in the preparation of this project work. He has been a source of great inspiration and encouragement to us. He has been kind enough to devote considerable amount of his valuable time in guiding us at every stage. This is our debut, but we are sure that we will be able to do many more such studies, purely because of his lasting inspiration and guidance. We are highly grateful to him for helping us with necessary information and material. He has not only guided but also endowed us with capacity to guide us in future.

We would like to express heart full thanks to **Dr. M. Venkata Ramana,** Professor and Head of the Department of Mechanical Engineering, who have always been grateful for us to complete our project.

We would like to express heart full thanks to **Dr. Ramamohan Reddy Kasa,** Principal, who have always been grateful for us to complete our project "**Power generation from ocean waves**"

We also thank all the teaching and non – teaching staff members of Department of Mechanical Engineering who have helped us directly or indirectly during the project.

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ABSTRACT

Ocean waves are a huge, largely untapped energy resource and the potential for extracting energy from waves is considerable. The high load factors resulting from the fluid properties and the predictable resource characteristics make ocean waves particularly attractive for power generation and advantageous when compared to other renewable energies. This report is about harnessing the Wave power by converting wave energy into electrical energy. The buoy or float which is in contact with surface of water moves up and down due to the wave motion. This up and down motion is converted to rotary motion by crank and lever mechanism. With the help of this rotary motion , generator shaft rotates which in turn produces electricity. Power of 500kw to 2mw is produced according to systems size and using in series or parallel.

PROJECT

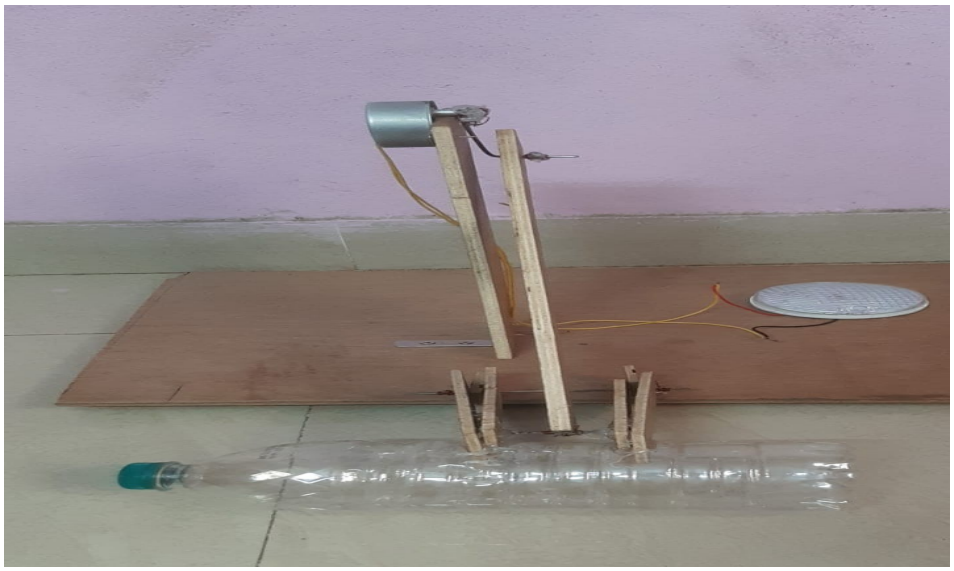

Figure 1 power generation from ocean waves

Cost of the project: Rs.930

TEAM MEMBERS

SL No.	Reg no.	Name of the student	Signature
1	19B81A0386	V.Pavan Kalyan	
2	19B81A0393	P.Sagar	
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1.INTRODUCTION

Various factors such as growing of global energy consumption, demand for low carbon economy, combat against world climate change, depletion of fossil fuel and geopolitics of oil economy have escalated the interests in finding alternative energy sources for power generation [1, 2]. On this note, renewable energy sources(RESs), which are vastly available in the world, have proven to be a promising solution to the global energy demand crisis. In this case, wind and solar renewable energy sources have been intensively researched as a consequence numerous commercial power plants have already been put in full-scale operation [3–5].According to the renewable 2016 global status report, only wind and solar energy sources account for 77% of the annual increase in global power generation capacity [6]. Then, it recapitulates that these RESs have matured and have been extensively studied to maximise their potential in the energy market. Moreover, it iterates the growing interest and high expected sustainability of the RESs for electric power generation. However, some challenges exist such as difficulties in the weather forecast, sustainable continuous operation and complex system development along with the rapid increase in global population and urbanisation that could enormously raise energy demand [7–9]. The World energy outlook 2016 projects a 30%increase of the global energy demand in 2040. Furthermore, a 60%projection of the power generation in 2040 is estimated to originate from the RESs to meet the current global constraints such as weather climate change mitigations [10, 11]. It is apparent that the available energy sources including fossil fuels, in particular, cannot guarantee to supply the energy demand by at least 2040 [12, 13].Therefore, finding alternative and reliable energy sources to close this gap has been an ongoing process in the global energy context. On the other hand, the ocean wave energy which has been less harnessed to date, is one of the most reliable .

Time Plan

TASK	STARTING DATE	COMPLETION DATE
PRELIMINARY DESIGN	28/03/2022	04/04/2022
BUILD PROTOTYPE	11/01/2022	23/05/2022
TEST PROTOTYPE	30/05/2022	30/05/2022
FINAL DESIGN	06/06/2022	06/06/2022

PROCEDURE

1. First prepare the Rectangular carboard with 34 x 50 cm dimensions.

2. Prepare the two base pillars with carboards of dimension 3 x 3.5 cm are cut and a hole is drilled in centre ,then fixed them on the base with glue gun.

3. Four cardboard sheets of size 4 x 15 cm are to be cut and a hole is drilled according to design.

4. Assemble these cardboard sheets to the pillars by inserting rod.

5. Connecting link of dimensions 37 x 4.5 cm is cut and drilled according to the design. Fix the connecting link to the float links by inserting rod .

6. Generator pillar of dimensions 7.5 x 32 cm is cut and holes are drilled according to design and it is clamped on base.

7. Generator is fixed on generator base with screws

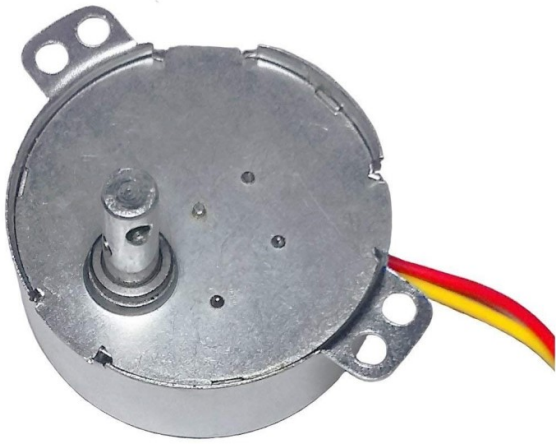
8. Crank link is fixed to generator in shaft with glue gun and then connected to connecting link.

9. Bottle is cut and fixed to float links according to design

10. Generator wires are connected to the led bulb, when connecting link in to and fro mation generator rotates and led light will glow.

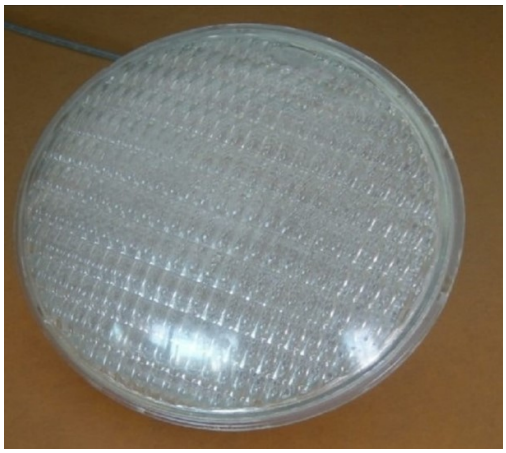
COMPONENTS

1.ELECTRIC MOTOR:



2. CARBOARDS:

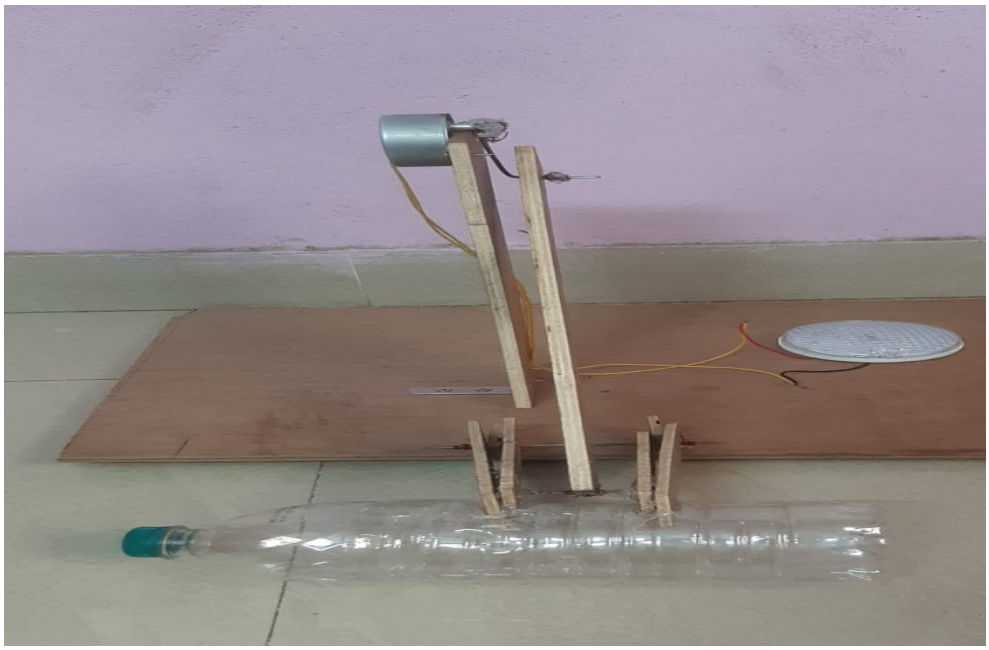
3.LED LIGHT:



4.GLUE GUN:

4.THIN ROD METAL:

ASSEMBLED PHOTO:



RESULT

When the float moves up and down due to wave motion the connecting link acquires linear to and fro motion which results in crank rotary movement.

As crank rotates the generator shaft is rotated and the bulb connected to the generator glowed up. Therefore electricity is generated from ocean wave motion

ADVANTAGES

1 .zero emissions during generation

2. renewable form of energy

3. high energy potential and reliable source of energy

4. causes no damage to land

5 .Decreases dependency on fossil fuels.

COST

Sl No.	Part Name	Qty	Rs.
1.	Electric motor	1	300
2.	Glue gun	1	350
3.	Glue sticks	6	60
4.	Bottle	1	20
5.	Copper wire	1	30
6.	Light	1	50
7.	Clamp and screw	1 & 6	80
8.	Rods	2	40
TOTAL			930

CONCLUSION

From our prototype we can conclude that we can generate power from wave energy .

Increasing demand of energy, the alternative way can be useful in future. With design at large scale to fulfil the power demand of domestic as well commercial. The dependency on Non renewable resources will be overcomes and reducing emissions of green house gases. In future, this method can be developed more and area of establishment are using it in series of system.

FUTURE SCOPE

For many ocean-bordering countries, wave energy could be a great addition to the renewable energy mix.

Waves would provide 24/7 energy that could be harnessed for clean electricity generation. Because wave energy is still in its early stages, it remains expensive to install and the potential environmental disadvantages are not yet fully known.

The bottom line is that wave power has enormous global potential. However, the industry needs more funding and research to finalize the technology involved so that countries and utilities can begin adding wave energy to their renewable energy arsenal..

REFERENCES

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