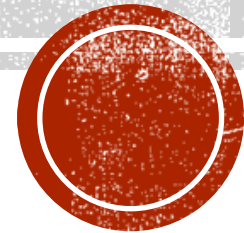


# RUTHAMPARA

Subsea / Ocean engineering research , development and training center.

Unit of Nireekshan Engineering services Pvt.Ltd



Presentation on Wave Powered Energy generation and navigational buoy

**NIREEKSHAN ENGINEERING SERVICES PVT LTD**

***PRESENTING***

**Wave Powered Navigational Buoy  
(WPNB)**



***A product of***

**NATIONAL INSTITUTE OF OCEAN TECHNOLOGY  
(MINISTRY OF EARTH SCIENCES, GOVT. OF INDIA)**

# INTRODUCTION

- Wave Energy is one of the promising emerging resources in the renewable energy sector
- The vertical motion of surface ocean waves contains a lot of kinetic (motion) energy that can be captured by wave energy technologies for generating electricity
- OWC (Oscillating Water Column ) principle utilizes pressurization and depressurization of entrapped air column inside a wave energy device which causes the turbine coupled to an electrical generator to rotate thereby generating the electrical power.
- Wave powered navigational buoy is a prototype technology for same



# CONCEPT OF RESEARCH AND DEVELOPMENT

- Any research and development project will have the following process to arrive the result
  - Conceiving a concept
  - Fixing a Goal / Result
  - To select appropriate technology
  - Design and development
  - Manifesting a working prototype
  - Simulation of the prototype
  - Analyzing the results from the simulation
  - Improvement / improvisation / Alteration of design  
to achieve the desired result
  - Manufacturing of Actual size product
  - Analyzing and arriving the expected result using actual product
  - Improvements using updated technologies – Continues process



## Cars For The Masses

By the beginning of the 20th century, the automobile was changing the landscape of cities and cultures around the world. With their Oldsmobile and Model T machines, Ransom Olds and Henry Ford made the car a ubiquitous part of American life.



## A Car is Born

Karl Benz is considered to have built and patented the first proper automobile, in 1886--the aptly named, three-wheeled Patent-Motorwagen.

Through the end of the century, inventors would experiment with vehicles powered by other means: diesel, electric, even steam.



## More Cars For The Masses

As the world pulled out of the post-war era, cars flourished with fantastic Jet Age designs that gave way to a new generation of compact cars heavily influenced by the VW Beetle, Germany's "people's car." The Beetle made small cars relevant in America--and without it, there would be no Corolla, no Civic, no Focus.



## Musclecar Mania

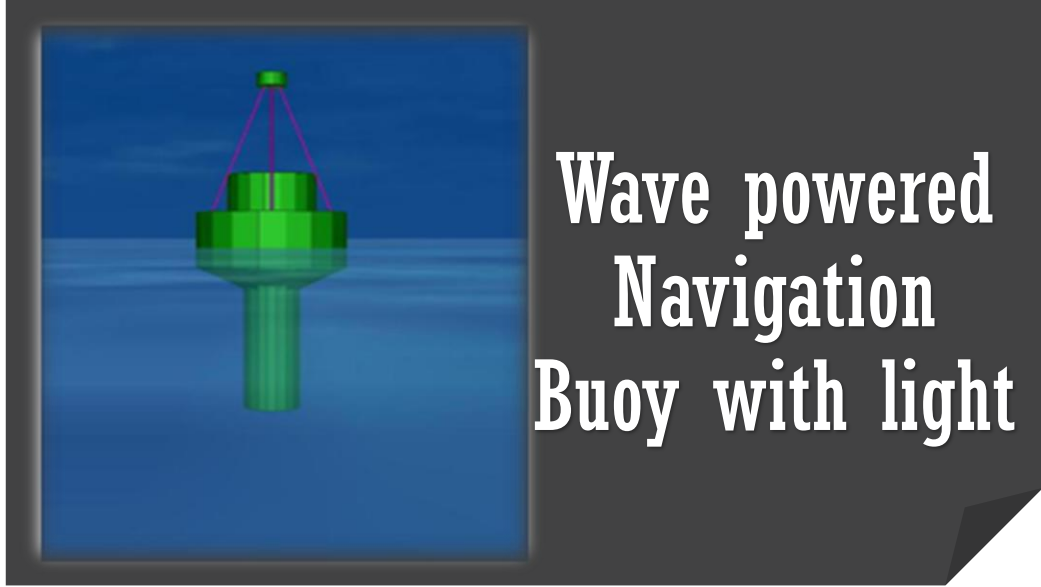
The prosperity of the Sixties brought with it ever more powerful cars with one mission in mind: go faster. The modern sportscar era may be best known for the best-selling Ford Mustang personal-luxury car, but the other indelible names of the era were even faster, even better: Camaro, Barracuda, E-Type, 911.



**THINGS  
WILL  
EVOLVE  
BASED  
ON  
CURRENT  
TECHNOLOGY  
AND  
CURRENT  
REQUIREMENT**



# FUTURE VISION

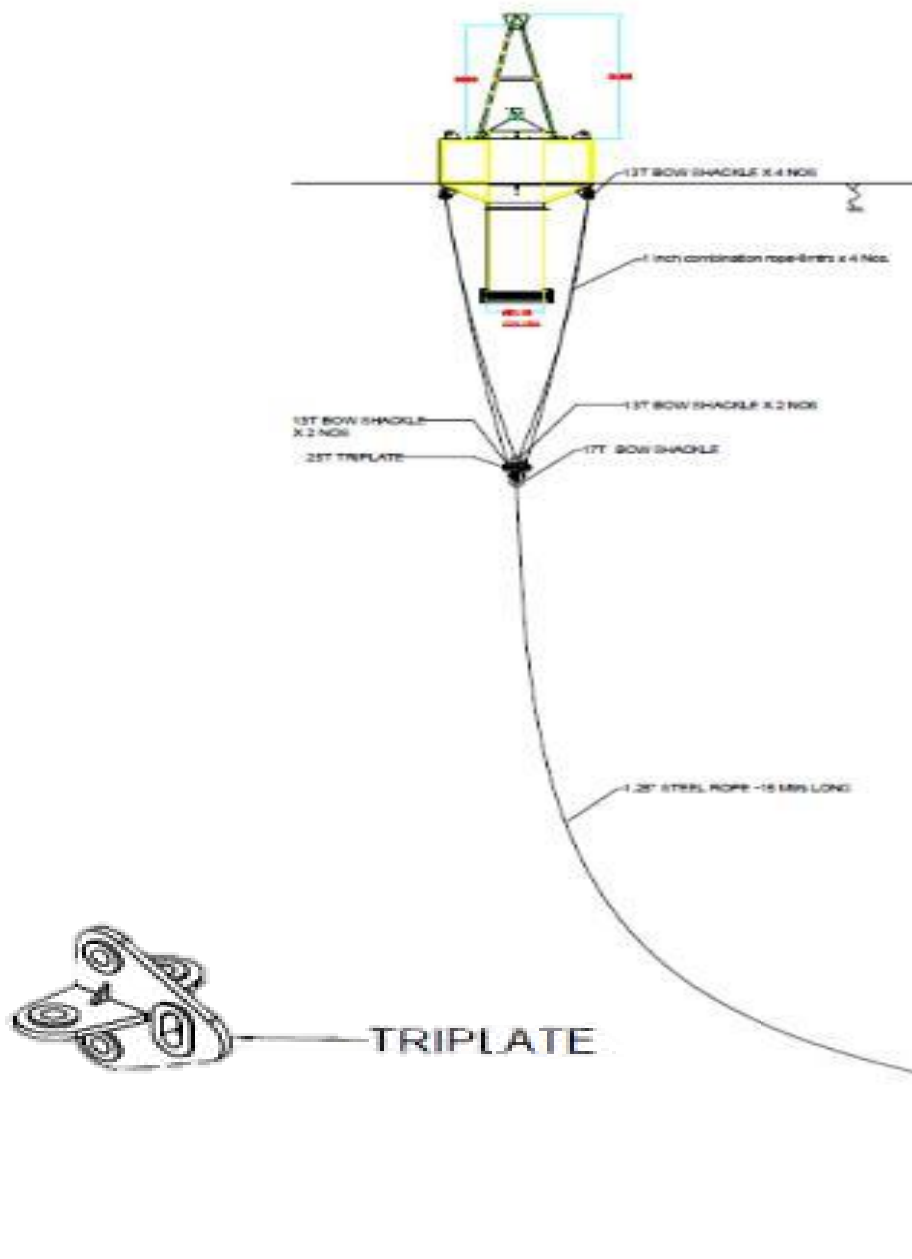


# TRADITIONAL BUOY

- A navigational buoy is commonly used in port/harbor to indicate ship movement channels, dangerous rocks and for a variety of other navigational purposes
- It houses a beacon lamp at top for guidance. Conventionally, the buoy lighting systems consist of a battery system, flasher and solar panel.

# WAVE POWERED NAVIGATIONAL BUOY

- In the present development by NIOT, wave powered Navigational Buoy utilizes wave energy using OWC principle for its working.
- Primary conversion of wave energy by an oscillating system.
- Wave powered navigational buoy is of similar size to that of solar powered navigational buoy. The charging of battery is done utilizing wave power.
- The buoy was designed to generate electricity even in low wave climate prevalent in Indian waters



Material List			
SI No.	Description	Qty	Availability
1	3 Ton Clump weight	1 No	Yes
2	13.5 T Bow shackle	16 Nos	-
3	25 T Oblang Ring	1 No	-
4	17 T Oblang Ring	2 Nos	-
5	25T Tri plate	1 No	-
6	1" Combination rope-8mtrs	4 Nos	Yes
7	1.25" Steel rope-15 Mtrs	1 No	Yes
8	1" Steel Chain-1mtr	4 Nos	Yes





# WHY NAVIGATION

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# ADVANTAGES OF WPNB

- Generate electricity even in low wave climate prevalent in Indian waters
- Wind Sensor
- Water Current Sensor
- SMS Communication to Port
- Sensors Add/ Removal as per Budget
- Reliable Lighting due to uninterrupted Power



# TAKE AWAY

- Introduction of new technology in existing design / technology
- Integrated / Multi functional 'Navigational buoy', vi2, traffic management, system / security came/ weather forecast / alert / waring message for small crafts
- Future development & benefits
- Standardization and uniformity
- Maintenance, spares and accessories can be standard and maintained
- Procrastinated process simplified
- India-our nation will be proud to be upfront this technology

