



# RAIDEN BAKUHATSU

By the susTRAINables



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PROBLEM

# PROBLEM

THE PROBLEM WHICH WE'RE TRYING TO SOLVE IS THE INCREASING AMOUNTS OF CARBON EMISSIONS SHIPS EXHAUST INTO THE OCEAN. APPROXIMATELY 40,000 UK CITIZENS DIE AT THE PORTS DUE TO THE POLLUTION CAUSED BY SHIPS. IT CAUSES A LOT OF RESPIRATORY PROBLEMS IN PEOPLE. ACCORDING TO SCIENCEDAILY POLLUTION FROM THESE SHIPS CAUSE 60,000 CARDIO AND LUNG CANCER DEATHS MAINLY IN THE EASTERN LONGITUDE AND THE NORTH EASTERN LONGITUDE (EUROPE AND ASIA).



# PLACES MOST AFFECTED



## REGIONS

REGIONS WHERE  
MOST PEOPLE DIE  
DUE TO SHIP  
TOXICANTS  
EMISSIONS



IN BRIEF



# 90 Second Summary



## Problem summary

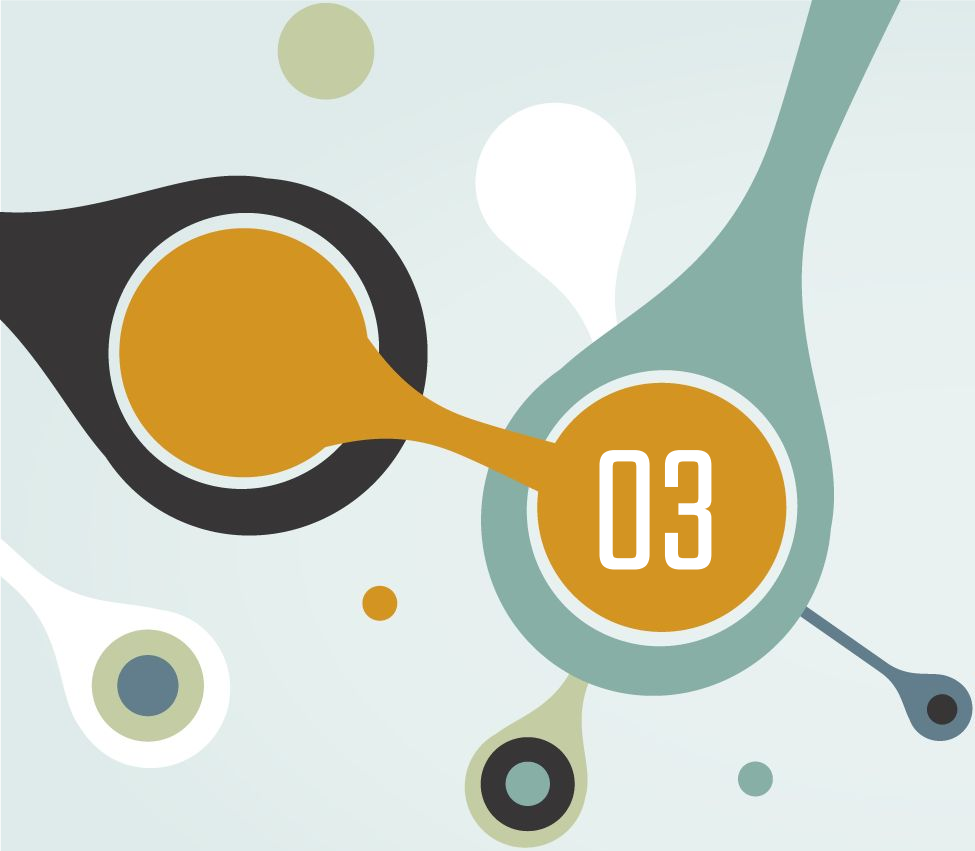
- Target user: Companies which employ ships like cruisers, liners and cargo ships.
- Problem: These ships produce a lot of harmful gases and pollute the atmosphere and hydrosphere.

## Solution

- We aim to manufacture and distribute eco-friendly engines and energy sources.
- This will help reduce air and water pollution.

## Pilot planned

- We will approach companies for their overview and feedback on our product
- We also talked to experts in Chemistry and STEM mentors in our school to help us meet our realistic needs
- The pilot will help us realize what our solution lacks and improve upon it.



# HYPOTHESIS



# HYPOTHESIS

## OUR IDEA FOR HYPOTHESIS

WE THINK THAT WE CAN MANUFACTURE AND MARKET A SHIP DESIGN WHICH IS ECO-FRIENDLY USING THE THEORIES OF HYDROGEN COMBUSTION (ELECTROLYSIS), MECHANISM OF CAM STRUCTURES AND MAINLY SOLAR POWERED PLATES.

# HYPOTHESIS

## OUR GOAL

Our goal is to integrate various ways of sustainable transport into developing an efficient way of sailing ships, decreasing the amount of greenhouse gas emission and reducing the risk it has on animals, plants and humans. Our aim changed from day to day, starting at developing hydrogen fuel for all vehicles to focusing on ships as it is a vehicle of transport where hydrogen fueling hasn't started to develop yet. Outlining our progress, the conception was to use battery electricity to power the electrolysis process then after consulting with an expert in the field of Chemistry in our school, Mr.Uday, we came to a conclusion where we can use solar power to power the process making it more efficient and conservative



# METHODS

# FEEDBACK

We got feedback on our project from 2 teachers in our school, Mr. J S Uday Kumar and Mr. Prashanth Sistla.

Uday Sir is a science and he helped with our understanding of the engine. He posed difficult questions to us and helped us move in the right direction. He explained the process behind electrolysis in engines and its applications. On the other hand, Prasanth Sir is a STEM expert and gave us ideas on how to design and build the ship. In addition to this, he gave us the idea of using more than one source of energy for the system.

# DATA WE COLLECTED

## OUR GOAL

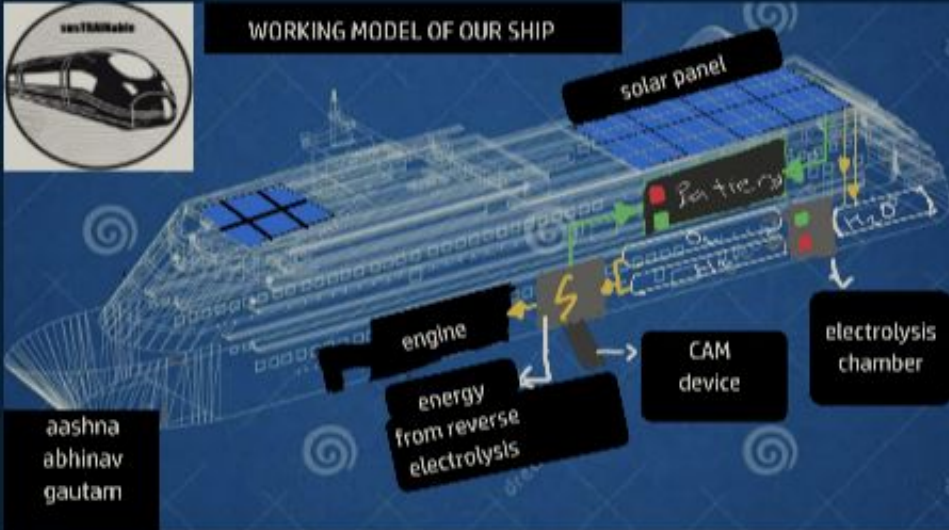
AS WE MENTIONED IN OUR DELIVERABLE 3 WE WOULD TRY AND MARKET OUR SHIP TO COMPANIES LIKE APM MAERSK, MSC – Mediterranean Shipping Company, COSCO – China Ocean Shipping Company, CMA-CGM, Hapag-Lloyd, ONE – Ocean Network Express, Evergreen Line. UNFORTUNATELY WE HAVEN'T YET RECEIVED A RESPONSE AND HOPEFULLY SOONER THEY WILL RESPOND TO OUR TRYING EFFORTS AND EMAILS TO ANSWER OUR SURVEY:

<https://forms.gle/5sJAFtsNixxRwCNYA>

TO IMPROVE THE QUALITY AND MARKETING SUSTENANCE OF OUR SHIP.



WORKING MODEL OF OUR SHIP



aashna  
abhinav  
gautam

solar panel

engine

energy  
from reverse  
electrolysis

CAM  
device

electrolysis  
chamber

Battery

H<sub>2</sub>O

O<sub>2</sub>

An abstract graphic design featuring a central orange circle with the number '05' in white. This circle is connected to a larger teal shape. To the left, a black shape with an orange interior is connected to the central orange circle by a thin orange line. The background is light blue with various organic shapes in teal, white, and orange, including a white teardrop shape at the top, a white shape with a blue and green center at the bottom left, and a small blue teardrop shape at the bottom right.

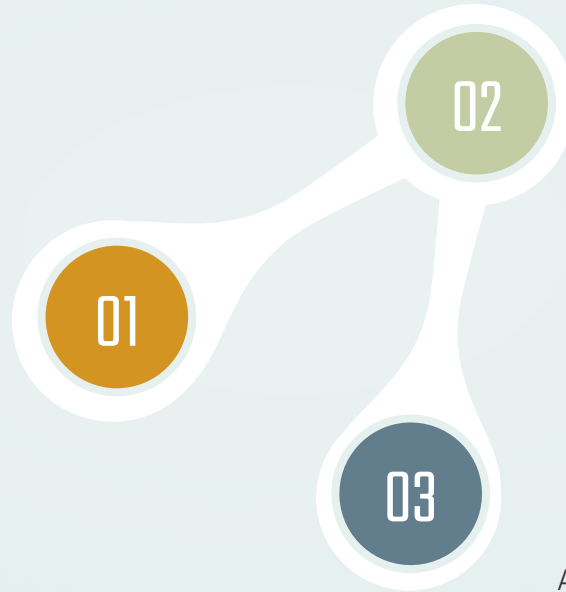
05

PROPOSED SOLUTION

# COMPONENTS OF OUR SHIP DESIGN

## SOLAR POWER

We have incorporated solar plates as our source of energy in the start. During the day solar plates absorb the heat energy and either directly give it to the motor or use it for separating hydrogen and oxygen for electrolysis. Excess energy will also be stored in spare batteries in case of any emergency or faulty engines.



## ELECTROLYSIS

Energy from solar powered plates, as mentioned before, will be used to separate Hydrogen and Oxygen and then allowing themselves to combust producing a vast amount of energy to run the ship 50% more efficient than fuel powered ships

## GYM AND CAM STRUCTURE

As extra backup plans we have decided to generate the energy produce when use of gyms to fuel the kitchen, lights etc. and have a CAM like system machine as an add on precaution



## Key

Dark purple- Hydrogen

Black box- Engine

Red Box- Battery

Yellow - Energy used for the ships movement

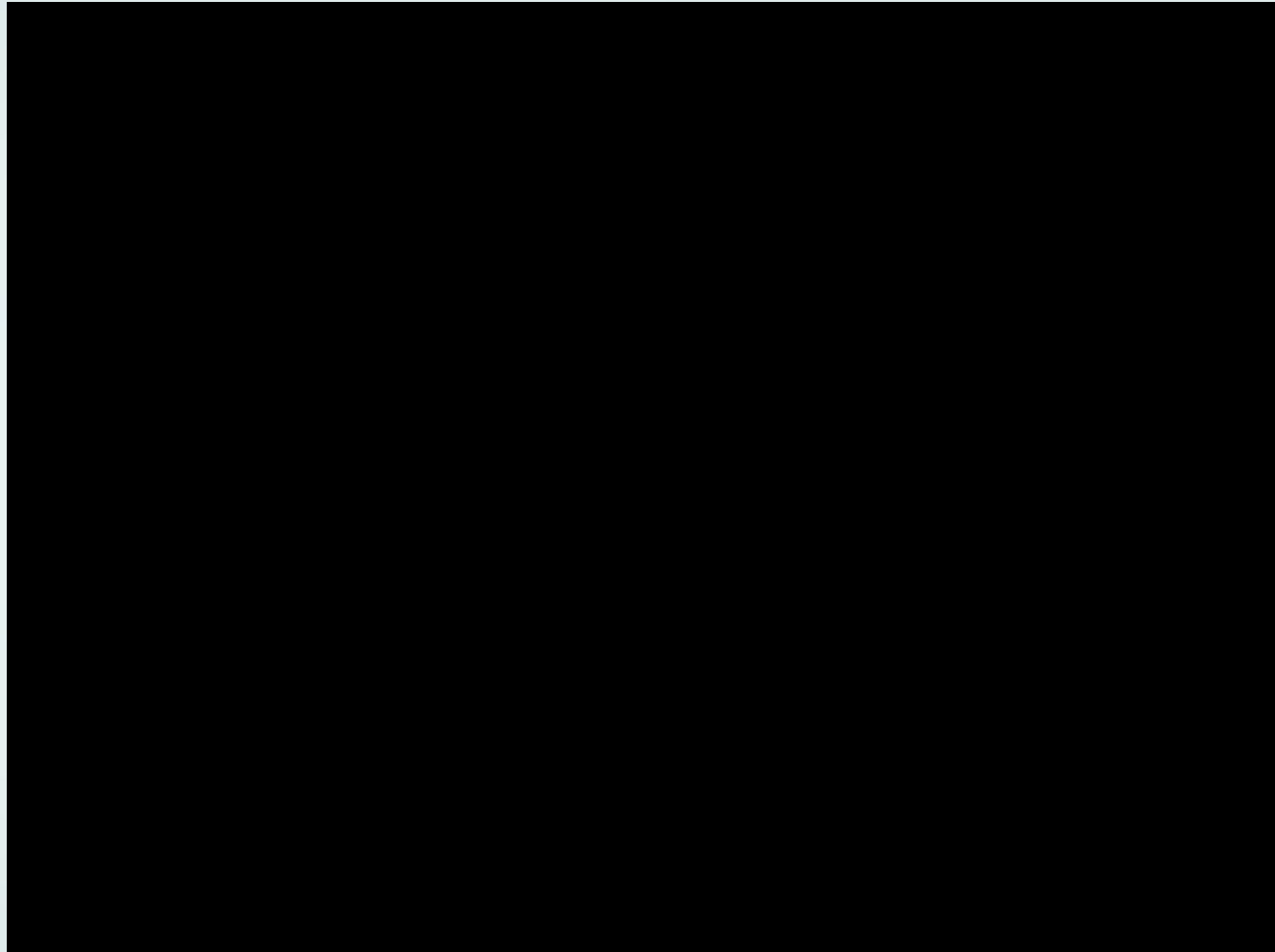
Green - Energy stored in battery

Teal - H<sub>2</sub>O chamber (in the back)

Orange- Electrolysis chamber

Light Pink- Oxygen

The solar panel is placed on top



# THE SUSTAINABLES



**AASHNA KUMAR**



**ABHINAV VALLUR**



**GAUTAM CHARI**

# THANKS

Do you have any questions?

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