SMART INDIA HACKATHON 2022

Basic Details of the Team and Problem Statement

Ministry/Organization Name/Student Innovation:

SMART INDIA HACKATHON 2022

PS Code: **DA1065**

Problem Statement Title: **SOLAR PANEL WITH SOLAR TRACKING DEVICE WITHOUT POWER CONSUMPTION**

Team Name: **HELIOTROPICS**

Team Leader Name: **J SAI MALLIK YADAV**

Institute Code: **C-19793**

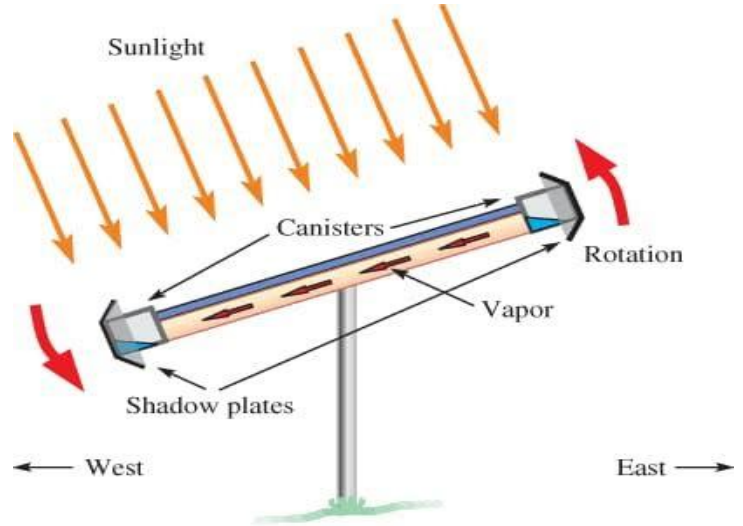
Institute Name: **MAHATMA GANDHI INSTITUTE OF TECHNOLOGY**

Theme Name: **RENEWABLE/SUSTAINABLE ENERGY**

Idea/Approach Details

Idea/Solution/Prototype :

- ★ Solar Energy is the best renewable energy source, which is widely being used.
- ★ So it is the need of the hour to improve the efficiency of solar power generation.
- ★ As we know that solar energy produced will be maximum when solar panel's surface is directly perpendicular to the incident sun rays.
- ★ Thus we need a tracking mechanism to make solar panels always face the sun to capture maximum power.
- ★ This action is called HELIOTROPISM.
- ★ **Here we use the principle of Differential Pressure Controlled system, to achieve Heliotropism.**



Technology stack :

- ❑ Here we use PASSIVE TRACKING technology to increase effectiveness of power generation.
- ❑ Components used :
  - Solar panels
  - Refrigerant: R-134a
  - Aluminium Canisters
  - Copper tube
  - Frame(stand)

Idea/Approach Details

Use Cases :

- This passive solar tracking technology is used to provide maximum power generation without consumption of electrical energy. And using of complex electronic components and circuitry.
- The design is robust, easy to construct, doesn't require a skilled person to construct & assemble.

Dependencies / Show stopper :

- The climate has to be sunny.
- Here the entire tracking system depends on the refrigerant fluid (r-134a) which is the working element.
- This element is used to create a tilting effect to track the sun.
- The panel tilts according to the direction of sunlight due to gravity.
- This mechanism enables maximum power generation.

Team Member Details

Team Leader Name: J SAI MALLIK YADAV

Branch (Btech/Mtech/PhD etc): Btech | Stream (ECE, CSE etc): ECE | Year (I,II,III,IV): III

Team Member 1 Name: G TEJASHWINI

Branch (Btech/Mtech/PhD etc): Btech | Stream (ECE, CSE etc): ECE | Year (I,II,III,IV): III

Team Member 2 Name: M VINAY

Branch (Btech/Mtech/PhD etc): Btech | Stream (ECE, CSE etc): ECE | Year (I,II,III,IV): III

Team Member 3 Name: G AMARNATH

Branch (Btech/Mtech/PhD etc): Btech | Stream (ECE, CSE etc): ECE | Year (I,II,III,IV): III

Team Member 4 Name: D TEJA VARDHAN REDDY

Branch (Btech/Mtech/PhD etc): Btech | Stream (ECE, CSE etc): ECE | Year (I,II,III,IV): III

Team Member 5 Name: V REEMA RANI

Branch (Btech/Mtech/PhD etc): Btech | Stream (ECE, CSE etc): ECE | Year (I,II,III,IV): III

Team Mentor 1 Name: K.BAPAYYA

Category (Academic/Industry): | Expertise (AI/ML/Blockchain etc): | Domain Experience (in years):

Team Mentor 2 Name:

Category (Academic/Industry): | Expertise (AI/ML/Blockchain etc): | Domain Experience (in years):