PANIMALAR ENGINEERING COLLEGE

An Autonomous Institution

[JAISAKTHI EDUCATIONAL TRUST]

Approved by AICTE | Affiliated to Anna University | Recognized by UGC

All Eligible UG Programs are Accredited by NBA

Bangalore Trunk Road,Varadharajapuram, Poonamallee, Chennai- 600 123

TECHDIVATHON

Empower, Innovate, Elevate: Code the Future Together

Domain: SOLAR ENERGY

Problem Statements:

S.No	Title	Problem Statement	Description
1	Dual-Axis Solar Tracking System	Fixed solar panels do not capture maximum energy due to changing sun angles.	A system that adjusts the angles of solar panels in two directions to maximize sunlight capture throughout the day.
2	Portable Foldable Solar Charger	Travelers lack convenient options to charge devices in remote areas.	A lightweight, foldable solar panel that charges small devices like phones and power banks on the go.
3	Solar-Powered Water Pump	Farmers in remote areas struggle with energy access for irrigation.	A solar-powered pump that draws water from wells or reservoirs for irrigation without relying on electricity.
4	Solar Cooking Stove	Rural households depend on non-renewable energy sources for cooking.	A stove that uses concentrated solar energy to cook food, reducing reliance on firewood or gas.
5	Transparent Solar Panels for Windows	Traditional solar panels limit aesthetic and functional use in urban areas.	Transparent panels integrated into windows that generate electricity while allowing sunlight to pass through.
6	Solar-Powered Lighting System	Rural areas lack reliable electricity for basic lighting needs.	A low-cost lighting solution powered by solar panels to provide illumination in off-grid areas.
7	Solar EV Charging Station	Charging electric vehicles (EVs) often relies on non-renewable energy sources.	A station that uses solar energy to charge EVs, promoting green transportation.
8	Smart Solar Backpack	Mobile devices often run out of charge during outdoor activities.	A backpack with embedded solar panels to charge devices while on the move.
9	Solar-Powered Air Cooler	Cooling systems require significant power, which is unavailable in many rural areas.	An air cooler powered entirely by solar energy, designed for use in small spaces.
10	Floating Solar Panels for Water Reservoirs	Solar installations often require large land areas, which are scarce.	Floating panels on reservoirs that generate power while reducing water evaporation and algae growth.
11	Solar ROI Calculator	Users struggle to calculate the financial benefits of installing solar panels.	A tool that estimates the cost savings and return on investment (ROI) from solar installations.

12	Solar Panel Maintenance App	Regular maintenance of solar panels is often neglected, reducing efficiency.	An app that tracks panel performance and notifies users about maintenance schedules.
13	AI-Powered Solar Placement Advisor	Inefficient placement of panels reduces energy generation.	Software that uses AI to suggest optimal panel placement based on terrain, angle, and sunlight exposure.
14	Community Solar Energy Sharing Platform	Excess solar energy often goes unused in residential setups.	A platform that enables users to share or sell surplus solar energy within their community.
15	Real-Time Solar Power Monitoring App	Users lack real-time insights into their solar energy generation and consumption.	An app that tracks energy usage, savings, and production in real time for better monitoring.
16	Solar Installation Learning Simulator	Setting up solar panels requires technical expertise not easily accessible to beginners.	A simulation tool that trains users in the installation and maintenance of solar panels.
17	AI-Driven Energy Optimization Tool	Solar users face difficulties in reducing energy waste efficiently.	A tool that analyzes energy usage patterns and provides recommendations to optimize solar energy use.
18	Smart Home Solar Energy Dashboard	Solar data is often separate from other smart home systems.	A dashboard that integrates solar energy metrics into smart home systems for centralized control.
19	Solar Irradiance Prediction Tool	Unpredictable sunlight makes energy planning challenging.	A tool that uses weather data to predict solar irradiance, helping in better energy management.
20	Solar Grid Interaction Simulator	Designing efficient solar-grid systems requires complex modeling.	A simulator to model how solar installations interact with existing power grids for optimized designs.
21	Solar-Powered Smart Irrigation System	Farmers waste water and energy due to manual irrigation methods.	A solar-powered system that automates irrigation based on real-time soil moisture and weather data.
22	Solar Energy-Powered Desalination Unit	Remote areas lack access to fresh drinking water.	A solar-powered unit that converts seawater into potable water using renewable energy.
23	Solar-Powered Livestock Tracker	Livestock monitoring in rural areas is labor-intensive.	A solar-powered device attached to livestock for location tracking and health monitoring.
24	Solar EV Charging Station with App Control	EV users face challenges locating and booking charging stations.	A solar-powered station integrated with an app to locate, book, and manage EV charging slots.
25	Solar-Powered Drone for Farm Monitoring	Monitoring large farm areas is time-consuming and energy-intensive.	A solar-powered drone equipped with imaging tools to monitor crops and identify issues like pests or irrigation needs.