



'Bharat Ratna'  
Sir M. Visvesvaraya  
Founder

FKCCI Celebrations of 15<sup>th</sup> Edition  
**MANTHAN**  
INNOVATION & BUSINESS PLAN PRESENTATION - 2023



Estd. 1916

MANTHAN 2023

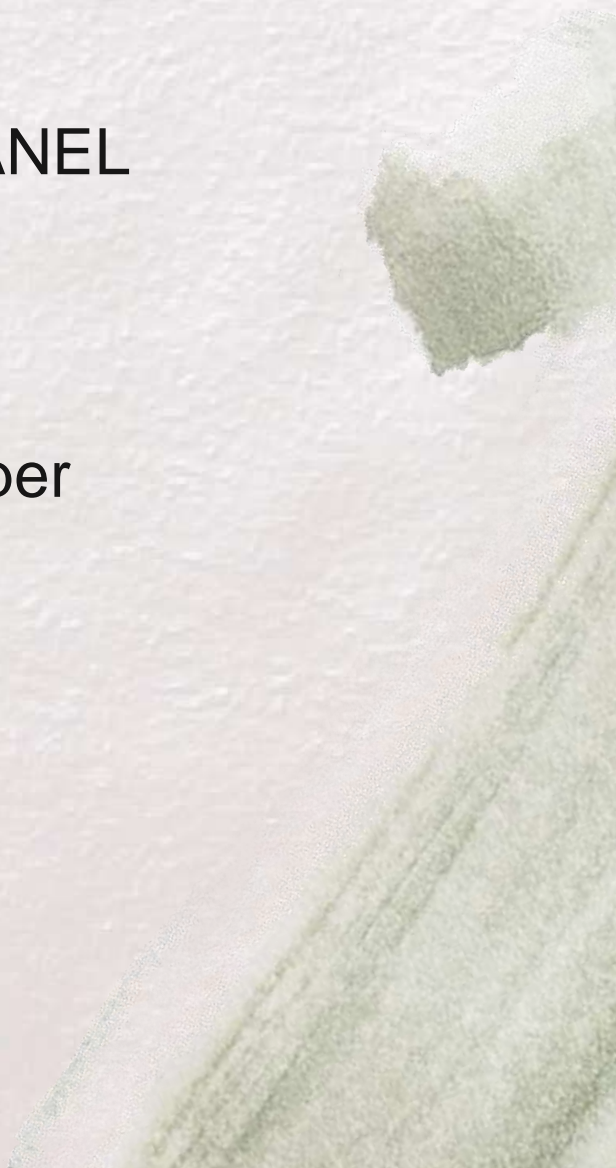
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Registration NO : 255





# INTRODUCTION

- Solar panels energy generation account to 3.6% of the global renewable energy
  - Over time sand , dust, and other contaminants settle on the panel, forming layers which acts as a barrier between sunlight and solar panel
  - Hence, the idea contributed by us is an AUTOMATIC SOLAR PANEL WIPER
  - This business model aims to create an automatic solar panel wiper which can be programmed to clean the surface and remove the contaminants, hence maintaining constant efficiency
- 



# ABOUT US



**DR. NAGESWARA RAO ATYAM**  
**MENTOR**

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**ADITHYA C**  
**TEAM LEADER**

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# Meet Our Team



**ADNAN ABEEDALI**  
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# Problem Statement

- Over the passage of time, solar panels accumulate dust, micro particles and water droplets on the surface.
- Accumulation of dust particles reduces its output by **30% per month**.
- Dust particles can cause physical damage to the cells.





# Problem Solution

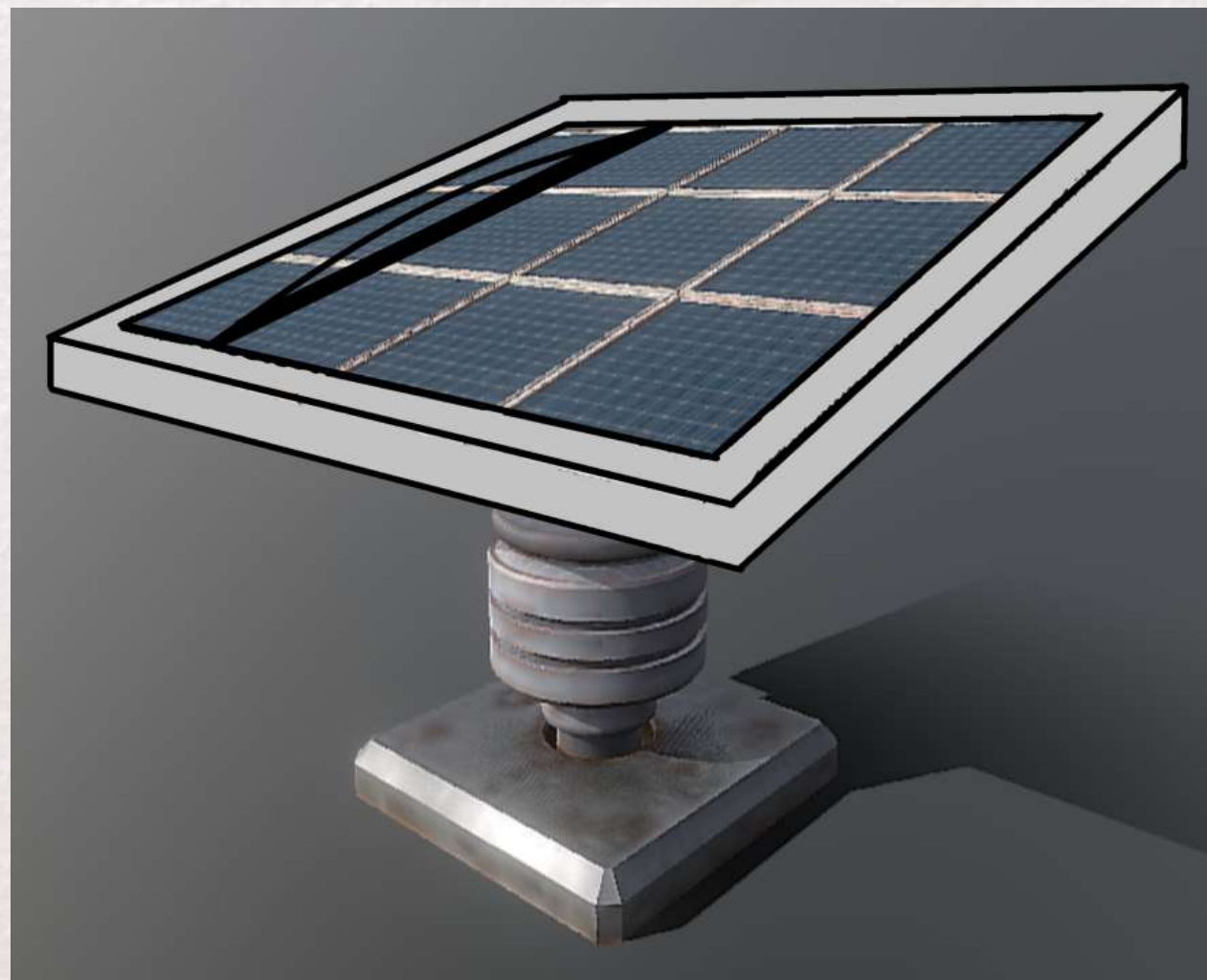


- We have designed a product that cleans the solar panels periodically which makes sure that the effectiveness of the solar panel does not decrease.
- This helps us in utilizing the solar panel to the maximum.
- Our product is cost-efficient and easy to maintain. Also most of the raw materials can be recycled, which makes the product eco-friendly.

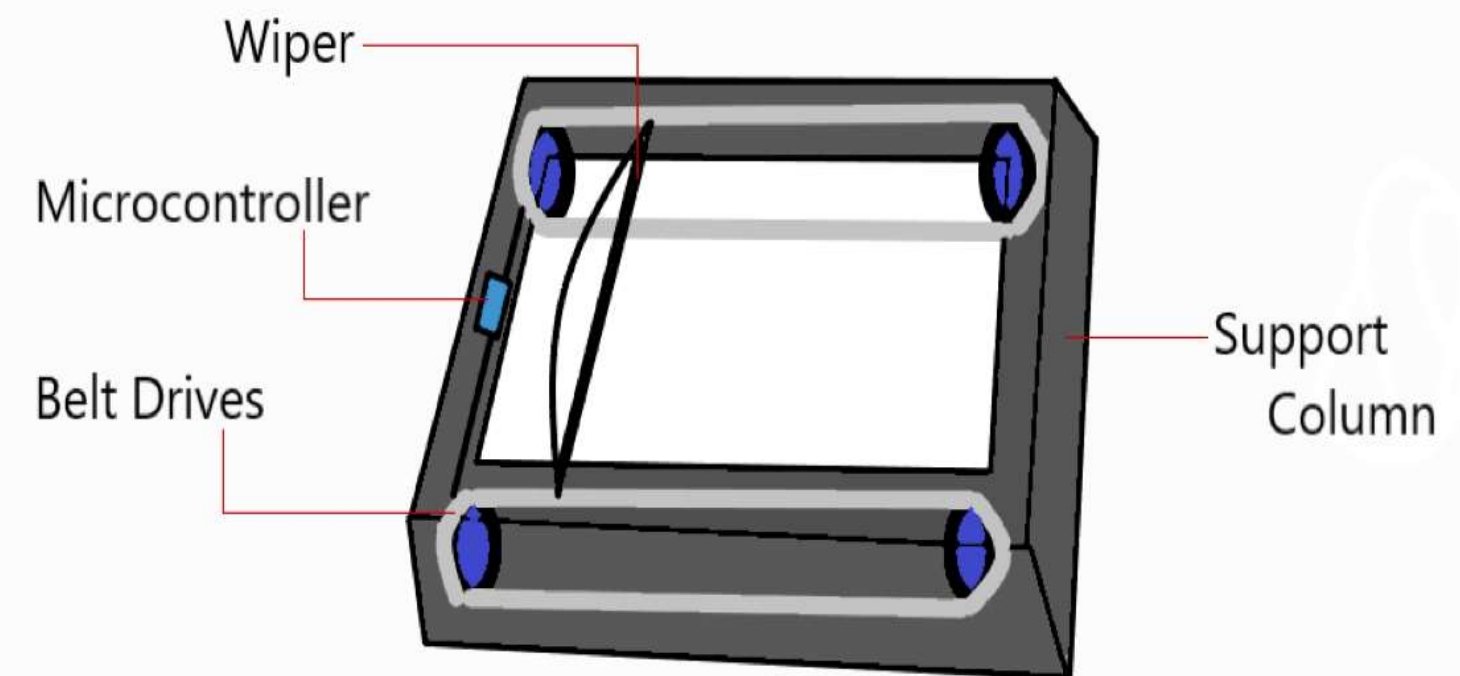


# OUR IDEA

**THIS IS HOW OUR PRODUCT LOOKS ON  
THE SOLAR PANEL**



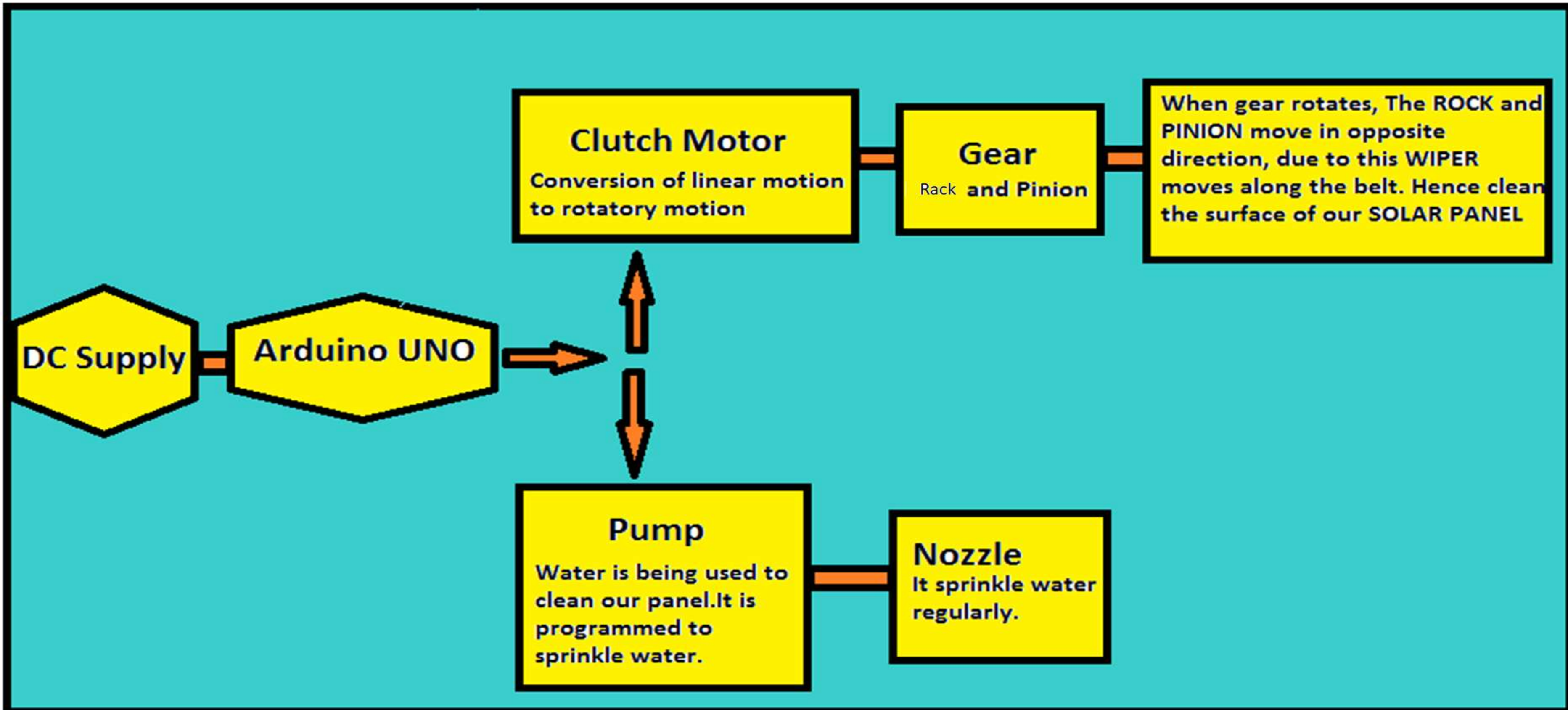
**STRUCTURE OF OUR PRODUCT**  
THE SUPPORT COLUMN PROVIDES  
SUPPORT TO THE BELT DRIVES,  
MICROCONTROLLER AND THE WIPPER





## Block Diagram

THIS IS HOW OUR PRODUCT WORKS MECHANICALLY AND ELECTRICALLY TO WIPE PANELS







## **Current Status**

- ❖ Our product is in the design stage. The concept and sketch of the product has been completed.
- ❖ The prototyping and testing of the product will take two years and the gathering of funds will take one year.
- ❖ We will launch our product in early 2026.





# Market Potential

- ❖ The consumers want a cheap and effective system for cleaning solar panels. As of now, the most commonly used method is that of manual labour. This method is used in the domestic sector and small scale sectors. In large scale sectors, robots are being used for cleaning.
- ❖ Our invention provides a reliable, effective, eco-friendly and cost efficient method for cleaning solar panels. As the cost and maintenance is very low, consumers will find it more accessible.
- ❖ Our product is made of recyclable materials which can also be easily be dismantled. This makes it easy to transport.



# Business Model & Strategy

- ❖ Our first targeted customers are companies and factories that rely on solar energy as they are in more urgent need of proper maintenance.
- ❖ We plan to install our product in nearby plants and use them as reference to promote our product to potential buyers.
- ❖ As our product provides better efficiency, it prompts companies to use solar power, hence increasing our consumer growth exponentially.
- ❖ When we gain a strong foothold in the industrial market, we will shift to the domestic sector which we will expand our consumer range.





# Budget

	OUATER 1	QUATER 2	QUARTER 3	QUARTER 4
TOTAL CONSUMER				
INDUSTRIAL	2	5	9	10
DOMESTIC	0	0	10	15
HUMAN CAPITAL				
TECHNICIANS	2	2	4	4
LABOURERS	6	8	10	15
MARKETING	2	2	2	2
HUMAN RESOURCES	1	1	2	2
MAINTENANCES	3	3	4	4
RAW MATERIALS	15,00,000	37,50,000/--	67,50,000/-	75,00,000/-
ASSEMBLY COST	1,00,000/-	2,50,000/-	4,50,000/-	5,00,000/-
TOTAL COST	16,00,000/-	40,00,000/-	72,00,000/-	80,00,000/-
INFRASTRUCTURE <ul style="list-style-type: none"><li>VEHICLES</li><li>BUILDING</li><li>MACHINERY</li></ul>	3,90,000/-	3,90,000/-	3,90,000/-	3,90,000/-
SALARY	1,59,000/-	1,89,000/-	2,72,000/-	3,22,000/-
TOTAL COST				
GROSS EXPENDITURE	21,49,000/-	43,79,000/-	21,49,000/-	87,12,000/-
GROSS REVENUE	44,00,000/-	1,10,10,000/-	44,00,000/-	2,20,00,000/-
GROSS PROFIT	22,51,000/-	64,21,000/-	22,51,000/-	1,32,88,000/-



# COMPETITORS

- ❖ In the present market , our product mechanism is fresh and revolutionary. As per the competitors there are many companies with years of experience in the maintenance of solar panels yet there are grievances unaddressed and we would like to give solutions to this issues through our product.
- ❖ Nandi solar , solarth private limited , konark solar are some notable companies which uses manual cleaning which can be overcome by our solar wiper.
- ❖ So far we have covered our product advantages over our competitors so that we can provide better services to our customers



Companies	Product	Working	Problem with the product	How our product will overcome this problems
KENBROOK SOLAR	Solar cleaning kit - extension poles, nylon brush , adapter	Manual cleaning	1. Requires man powers 2. No water pressure 3. Expensive (3999rupees)	1. Automatic 2. Water pressure can be controlled 3. Cost effective
Syphon Energies	Automated cleaning system	independently programmed to and fro movements and scheduled cleaning	1. Expensive (68000 rupees) 2. Water cleaning is not possible 3. It is large	1. It is Cheaper 2. Both dry and wet cleaning can be done. 3. It is smaller in size.
TAY PRO	1.tay pro 2.1 automatic 2.tay pro basic	Waterless autonomous solar panel cleaning robots for hassle free cleaning and improved generations results	1.expensive (2 lakhs) 2.it is heavy and large	1.it is cheaper 2.it is smaller and light weight 3.easy maintenance
ECCOPIA	1.Eccopia H4 2.Eccopia E4 3.Eccopia T4	E- H4 is used for fixed tilt &single axis E- E4 is used for fixed tilt only E-T4 is used for single axis only	1.expensive 2.it is not for domestic use	1.It is cheaper 2.it concentrates on domestic use



# Market Segments

- A target of installing 100 GW of grid connected solar power by 2022 has been kept by government of India.
- The India Solar Power market size is expected to increase by **USD 240.42 billion** from 2021 to 2026, at a CAGR of 35.24%.
- The Ministry of New and Renewable Energy (MNRE) said that India's installed solar PV capacity was around 40.1 GW in 2021, up from 34.6 GW in 2020.



# MARKET TREND

- Increasing Global Demand: The global solar energy systems market size was estimated at USD 160.3 billion in 2021 and is expected to reach USD 189.5 billion in 2022.
- Technological Advancements: Solar panel technology continues to evolve, leading to higher energy conversion efficiencies and improved durability.
- Energy Storage Integration: This allows for the storage of excess energy generated during daylight hours for use during periods of low or no sunlight, increasing self-consumption and energy independence.
- Smart Energy Management: The rise of smart energy management systems enables users to optimize their solar panel systems' performance and maximize energy savings.
- Emphasis on Sustainability and Carbon Reduction: The global focus on reducing carbon emissions and transitioning to clean energy sources is driving the demand for solar panels



# REVENUE STREAMS

- Sales of Solar Panels wipers : Generate revenue through direct sales of solar panels wipers to residential, commercial, and industrial customers.
- Installation Services: Charge fees for professional installation services, including site assessment, system design, and installation.
- Maintenance and Monitoring: Offer service contracts or charge fees for maintenance, monitoring, and repair services to ensure the optimal performance of solar panel systems.



# Project Milestones







# Socio-Economic Impact

- Our product helps consumers in utilizing solar panels to the fullest which prompts non-consumers, seeing the effectiveness of the product, to use solar energy.
- It reduces the cost of maintaining solar panels drastically as compared to the present implemented methods.
- Low investment attracts people to use solar panels which helps in our shift to green energy.





# RESEARCH AND DEVELOPMENT

- We are working on making our own integrated circuit as there are many ports that are not used in Arduino UNO.
- We are working on the part where our panel can rotate with respect to the sun, so that we can get maximum out from the panel.



### KEY PARTNERS

- Our key supplies comes from primary industries.
- Primary industries supply us rubber, cast steel and other raw materials required.
- Gear industries supply rack and pinion

### KEY ACTIVITIES

- Our revenue is generated from small scale industries.
- Low investments
- Distribution channels are both online and offline.

### KEY RESOURCES

- 1.wiper
- 2.columns of cast steel,
- 3.nozzels
- 4.motor
- 5.pump
- 6.microcontroller

### VALUE PROPOSITIONS

- Over year solar panels accumulate lot of dust particles over them. They rapture lot of cells on the panel. By not cleaning them consistently, their efficiency recuses by 30% per month.
- Our technology offers a kit of automatic solar panel wiper which are made of wiper, 4 or more columns of cast steel, nozzles, motor, pump and a microcontroller built in together to perform it activity.
- With the help of our technology ,we are helping our customers by cleaning their solar panel and maintaining its efficiency throughout years.

### CUSTOMER RELATIONSHIP

- Tailored Solar panel cleaning solution with specific energy requirement, space availability
- We can have a long term relationship with our partners by providing them performance guarantee, providing maintenance every 3 months, henceforth establish sustainable partnership

### CHANNELS

- Customers can contact us both through online and offline modes.
- Based on their requirements, we can personalize their product.
- With the help of tempos//trucks, we can supply the product on their location.
- Henceforth, technicians will be sent to install them on the panels.

### CUSTOMER SEGMENTS

- The purpose of our product is to provide aid to the industries and companies utilizing solar energy
- Our intended target customers in the market are the industries and companies utilizing solar energy as renewable energy source.

### COST STRUCTURE

- Cost of one unit is 900 rupees.
- Most important costs inherent in our business model are:
  - raw material
  - Installation
  - Labour cost

### ➤ REVENUE STREAMS

- Sales of Solar Panels wipers : Generate revenue through direct sales of solar panels wipers to residential, commercial, and industrial customers.
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**THANK YOU**

**SOLAR IS FUTURE**