SEQUENCE OF CONTENTS INVOLVED IN PPT

Note the following points:

- Prepare the presentation on these topics and post in the group **asap** for compilation
- Despite allocation of topics, everyone needs to go through the entire content and get well-versed with each and every detail included
- Either post your presentations in ppt or pdf
- Use the resources attached apart from referring the web

Introduction and Problem Statement (Pranav)

- Introduce the group no, members, project theme
- Briefly state the goals and objectives of the project
- Discuss the challenges faced by traditional solar panels, efficiency problems and what is the uniqueness in this concept
- Describe how solar tracking systems can address these challenges by following the sun's movement throughout the day
- Discuss how weather monitoring can further improve the efficiency and safety of solar energy generation by providing real-time information on local weather conditions

Principle of Operation (Sreeram)

- Solar tracking: Provide a more detailed explanation of how the solar tracking system works, including the use of sensors and motors to track the sun's movement in two axes. Discuss the mathematics behind solar tracking, including the use of trigonometry to calculate the optimal angle for solar panels based on the position of the sun.
- Weather monitoring: Explain how the weather monitoring features of the system work, including the use of various sensors to measure temperature, humidity, wind speed and direction, and precipitation. Discuss the physics behind weather phenomena, such as how wind speed and direction are influenced by temperature differences in the atmosphere.

Methodology (Ankur)

- Systematic representation of the sequential steps involved with help of flowchart
- System control and design: Explain the design process of the solar tracking system, including the selection of components such as motors, gears, sensors, and controllers.
- Mechanical and electrical assembly: Elaborate the assembly process for the mechanical and electrical components of the solar tracking system. Discuss any challenges encountered and how they were resolved, as well as any safety considerations that were taken into account during the assembly process.
- Software and algorithm development: Explain the development of the software for the solar tracking system, including the control algorithms and user interface. Discuss the programming languages, tools, or frameworks used, as well as the validation and testing process for the software.

Evaluation of Performance by Data Analysis (Devam)

- Calculate the energy output of your solar panels with and without trackers. Include the equations and formulas used in the calculations, as well as any assumptions made
- Calculate the efficiency of the solar panels with and without trackers. Explain the methodology and assumptions made in the calculations. Present the results in a graph, with the y-axis being the efficiency percentage and the x-axis being the different scenarios (with trackers, without trackers)
- Present your data in tabulated form about efficiency and weather

Merits-Demerits (Lakshya)

- Include and elaborate 4-5 merits and 2-3 demerits
- Explain why this project is more beneficial in order to pose the product as useful to the customer

Budget and Cost Analysis (Johan)

- The budget of the prototype will be around 2.5-3k
- Actual model vs. prototype: Explain the difference between a fully-functional model and a prototype, and the cost differences between building a real model and a prototype.

- Material costs: Discuss the cost of materials required to build the solar tracking system and the weather monitoring component. Include a detailed breakdown of the costs of each component, such as solar panels, tracking motors, and sensors.
- Cost-benefit analysis: Analyze the cost-benefit of implementing a solar tracking system with weather monitoring component. Include an estimation of the energy savings and the amount of time it will take to recoup the initial investment.
- Potential for future cost reduction: Discuss any potential cost reductions that could be achieved in the future, such as through economies of scale or improvements in manufacturing technology.

Conclusion (Vishnu)

- Recap the main objectives of the project, highlighting how you achieved them through the solar tracking system with weather monitor.
- Summarize the key findings from your analysis of the solar tracking system, including the efficiencies with and without trackers, the impact of weather conditions on the system's performance, and the potential cost savings associated with using the system.
- Discuss the potential applications and benefits of your solar tracking system, highlighting how it could be used in various industries and regions.
- Address any limitations or challenges encountered during the project, as well as any recommendations for future improvements.
- Finally, emphasize the significance of the solar tracking system with weather monitor and how it can contribute to a sustainable and energy-efficient future.