



# SOLAR ORIENTING SYSTEM: HARNESSING THE POWER OF THE SUN



## INTRODUCTION

Solar energy is a sustainable and environmentally-friendly energy source that is sourced from the sun. It has the potential to greatly decrease carbon emissions and reduce our reliance on non-renewable fossil fuels, thereby aiding in the fight against climate change and promoting energy autonomy.

## RENEWABLE ENERGY & SOLAR POWER

Renewable energy is poised to lead the way in the future of power production, with solar power taking center stage. The benefits of solar power are numerous, including its cleanliness and renewability. Maximizing the power output of solar panels is made possible through the use of automated solar orienting systems. In this presentation, we will delve into the significance of these orienting systems to minimise renewable energy wastage.





## HOW AN AUTOMATED SOLAR ORIENTING SYSTEM WORKS

An automated solar orienting system uses sensors to track the movement of the sun and adjust the angle of the solar panels to maximize solar energy yield. The system can also adjust for shading and weather conditions. By continuously adjusting the orientation of the solar panels to face the sun directly, automated solar orienting systems optimize the amount of solar energy captured by the panels, maximizing their overall efficiency and energy production.

## TYPES OF SOLAR ORIENTING SYSTEMS

There are several types of solar orienting systems, including:

1. Single-Axis Tracking Systems
2. Dual-Axis Tracking Systems
3. Altitude-Azimuth Tracking Systems
4. Clockwise/Counterclockwise Tracking Systems
5. Sensor-Based Tracking Systems



## COMPONENTS OF SOLAR ORIENTING SYSTEMS

These systems typically consist of several components working together to ensure maximum solar exposure.

1. Solar Panels
2. Mounting Structure
3. Tracking Mechanism
4. Sensors
5. Actuators
6. Controller
7. Power Supply
8. Control System





## BENEFITS OF AN AUTOMATED SOLAR ORIENTING SYSTEM

An automated solar orienting system can increase solar energy yield by up to 25%, reduce installation costs, and minimize maintenance requirements. The system can also reduce the need for manual adjustments, making it a more convenient and efficient solution.

Along with this, new features like adaptation to varying conditions and extended operational hours have also been worked upon.



## CASE STUDIES: AUTOMATED SOLAR ORIENTING SYSTEMS IN ACTION

Several companies have implemented automated solar orienting systems with great success till now.



The SOSs can be used in many areas like :

1. Utility-scale solar power plants.
2. Residential and commercial rooftop installations.
3. Solar-powered water pumping systems in agriculture.
4. Solar tracking systems for electric vehicle charging stations.

# CONCLUSION

An automated solar orienting system is a critical solution for maximizing solar energy yield and reducing costs. By tracking the movement of the sun and adjusting the angle of the solar panels, the system can increase solar energy yield by up to 25%. It's an efficient, convenient, and cost-effective solution that's perfect for any solar power system. Thank you for your attention.

**THANK YOU**