Case Study

CLEVER SUN TRACKING SYSTEMS. A CASE IN GREECE

Keywords: use of sensors, clever systems of tracking, optimisation of power generation

Background to Case Study.

Solar Panels used for energy production can optimise their performance by using clever solar trackers. By following the sun throughout the day, PV trackers maximise power generation. They also better match the grid demand profile, which peeks in the afternoon, and contribute to a smarter and more sustainable energy system.
The use of solar sensors allows them to detect where sun rays are the strongest and directs the solar panel towards it in order to that it can harvest as much energy as possible from the sun. Solar trackers can be controlled by GPS and each solar tracker has a wireless receiver in order to know which position to move to depending upon the season and time of the day.

Introduction to the Case Study and it's growth within Industry 4.0
Biaxial Tracking systems

The biaxial tracking system, of Mechatron, presents not only superior strength and strength according to the specifications of this series, but also increased energy production of up to 40 percent, since it has the ability to follow the sun both azimuthally (around its vertical axis) and at height (around its horizontal axis). These characteristics, combined with the superiority of the hydraulic drive mechanism, as well as the accuracy of the astronomical algorithm it uses to find the position of the sun, it makes it the optimal solution for the current, increased, market needs in the post-subsidy era.

The design principle on which the structure of the system was based is inspired by the exoskeleton of the beetle, which has an excellent strength-to-weight ratio. Its structure is a combination of an elliptical arm (like the wings of a wind turbine or the wings of a plane) and a simple mesh that supports the panels.

This new elliptical arm provides significantly superior strength and strength. The structure of the grid that supports the photovoltaic cells, safely carries the loads of the structure. It also offers high structural stability for better alignment of the panels and greater durability of the structure over time. The zero-vibration driver ensures seamless movement and operation. Also, due to the ability to continuously slip under strong winds, the driver provides excellent robustness and can withstand even hurricane conditions.

All of the above are combined with the unique, innovative features of Mechatron Solar Trackers, such as: Advanced hydraulic system for shock absorption and maximum durability (practically requires zero maintenance) High build quality (with certifications)

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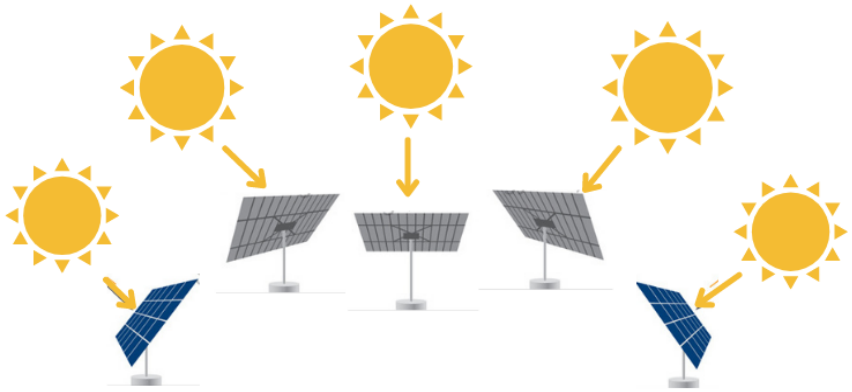
Quick and easy installation - compatibility of all parts Compatibility with all types of P/V elements

The motion of the system is based on the accuracy of the astronomical algorithm. This contributes to maximum intake of solar radiation even with cloudiness. The result? Quality and higher energy production up to 40%, which implies a greater benefit per unit of installed capacity than conventional systems. The biaxial tracking system uses advanced telemetry system that informs you about the operation of the machine in real time.

The Case Study and Industry 4.0 Elements: A Pictorial Overview



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The Element Explored within Industry 4.0 Application. **Mechatron.** Clever sun tracking systems	**Mechatron** is a company of innovation and creative compositions. It is a mixture of science - such as Mechatronics that combines Engineering, Electrical Engineering-Electronics and Informatics. It as one of the most innovative and dynamic companies in the global energy market. Mechatron specializes in the design, development and implementation of high-tech products and applications for photovoltaic parks, having foreshadowed a successful fifteen-year course in response to a series of industrial challenges. With the development of Renewable Energy Sources in Europe, Mechatron created and presented the most innovative tracking system, gaining a leading share in this market. The reason for this success is Mechatron's experience, knowledge and high expertise, embodied by Mechatron Solar Trackers. The energy industry is vital and Mechatron knows it better than anyone. The global trend in investments in photovoltaic parks "shows" advanced sun tracing systems that maximize efficiency and Mechatron Solar Trackers combine increased energy production with practically zero operating costs.
Application Target Audience	*PV plants*

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Resources Used:	https://www.mechatron.gr/ http://www.soltigua.com
Further Reading:	https://www.youtube.com/watch?v=T1L_EjuFav4 https://www.sciencedirect.com/science/article/pii/S2352484719304780

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