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SOTHPUWI: Solar tracker of high precision using web cam and control interface

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SOTHPUWI is an automatic, high-precision solar tracker, with a graphical control interface, and a temperature control for recording the temperatures reached by a Fresnel lens used as solar concentrator. The tracker is a metal structure of two-axis, on which the Fresnel lens of 0.32m^2 is always oriented perpendicularly to the direction of the solar rays in order to obtain the highest energy efficiency. The tracker uses a web cam as a single sensor for the tracking of the sun. This sensor captures ten pictures per second and it sends the information to a computer through a USB cable, where using the interface, we can watch the position of the sun in real time according to the plane of the collector. The interface automatically sends feedback signals through an electronic device to two DC motors in order to maintain the collector perpendicular to the radiation source. The interface allows the displaying of readings from various sensors mounted on the tracker and it also enables or disables functions such as the web-cam to control the tracker via digital keypads and on the other hand, it is possible to reactivate the web-cam to return the automatic position control to it. SOTHPUWI proved an accuracy of 0.1° and a response time of 0.7 seconds. The maximum temperature recorded was 410°C , on a cloudy day at 14:30 hours in Mexico City. The interface remains open to the new programming features. The system proved its satisfactory operation for future applications.

Biography

Rafael Solano Sanchez was born on 18th Sep 1988 in Xalapa Veracruz, México. Has completed his Bachelor as a mechanical electrician engineer at the age of 23 years from the Universidad Veracruzana, actually he is 26 years old and is studying a Master degree in Bioelectronics in the CINVESTAV in México City.

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