SolarTech Power Solutions

Guatemala Solar Drip Irrigation System Project

Overview

The objective of this project is to design, develop, and implement a hand-made solar drying fruit equipment, and a solar-powered water drip irrigation system that is controlled by a low-power consumption micro-controller in a permaculture farm in Poptun, Petén, located in the north east of Guatemala.How does a solar drip irrigation system work?

Solar drip irrigation systems are simple and straight forward. Once introduced and setup properly, they can be extended easily. Water is distributed at low pressure (app. 1 bar/15 psi) through pipes, hoses and tapes to the water outlets, so called emission points, and leaves the conveyer by dripping.

How do I use a solar-direct irrigation system?

If you choose to operate a solar-direct system, use a solar tracker for more steady pressure und volume. Optionally a second pump can be applied for boosting water from a lower reservoir. Any low pressure (drip) irrigation system can be used with PV pumps with proper pump layout and effectuate the most efficient crop production.

Can a solar irrigation system be used with a PV pump?

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How does drip irrigation work?

Drip irrigation systems achieve the highest water efficiency of up to 90%, reducing water losses by conveying or evaporation. If the drip pipes or tapes are placed below mulch or into the topsoil, evaporation (Eo) losses are close to zero.

Can a solar irrigation system boost water from a lower reservoir?

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Can a solar-powered irrigation system work at night?

In rural areas, manual management systems are predominant, just using a timer or water meter to determine the delivered amount of water. Night-time irrigation by PVP implicates the problem that solar-powered pumps, lacking solar irradiation, cannot operate at night if not amended by costly battery systems.

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