

Solar Direct

How a Solar Direct System Works for a Cap Solar Pump

A solar direct system is a simple and efficient way to power a Cap Solar pump without using batteries. These systems operate solely on energy generated from solar panels, making them an ideal solution for off-grid water pumping applications.

How It Works

1. Solar Panels Generate Power

- Sunlight is converted into DC electricity by the solar panels.
- The amount of power available depends on sunlight intensity and panel positioning.

2. MidNite Combiner Box Regulates Power Input

- The MidNite Solar combiner box combines multiple panel outputs into a single connection.
- It provides circuit protection and includes disconnect breakers for safety.

3. Sun Sensor Module Ensures Optimal Operation (for Lorentz Pumps)

- The Sun Sensor prevents the pump from starting until there is sufficient sunlight to deliver water effectively.
- It avoids false starts that could lead to inefficient operation at low power levels.
- The sensor module must be mounted at the same tilt as the solar array for accurate sunlight measurement.

4. Power is Sent to the Pump Controller

- The Cap Solar pump controller regulates and optimizes the power from the solar panels.
- It protects the pump from voltage fluctuations and ensures smooth operation.

5. The Pump Operates When Sunlight is Available

- As long as there is sufficient solar energy, the pump runs automatically.

- During peak sunlight hours, the pump works at full capacity, and output decreases in low-light conditions (e.g., cloudy weather or early morning/evening).

6. Water is Pumped to the Desired Location

- The system moves water to a storage tank, trough, or irrigation system.
- A float switch, pressure sensor, or manual valve can control water delivery as needed.

Key Advantages of a Solar Direct System

- **Low Maintenance** – No batteries to replace or maintain.
- **Energy Efficient** – Uses only available solar power, reducing operational costs.
- **Reliable** – Runs when sunlight is available, perfect for daytime pumping needs.
- **Eco-Friendly** – 100% renewable energy source with no emissions.

Considerations

- Water availability depends on sunlight, so a storage tank is recommended for overnight or cloudy-day use.
- Systems can be customized with low water probes and pressure sensors to protect the pump and optimize performance.
- Proper installation of the Sun Sensor ensures accurate sunlight measurement and efficient system operation.