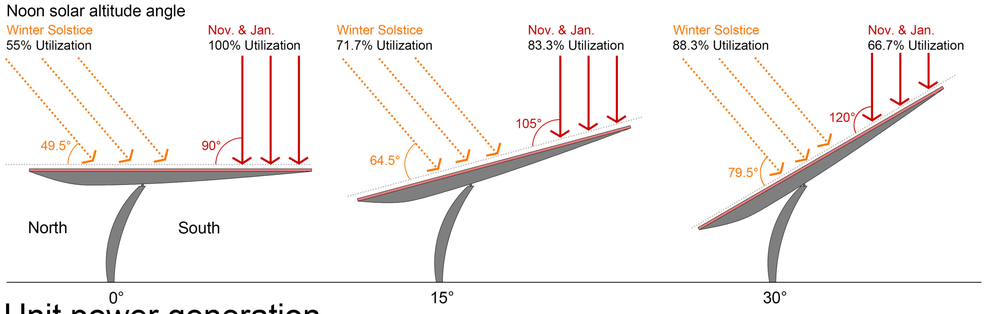
# POWER GENERATION SYSTEM

## Annual solar altitude angle

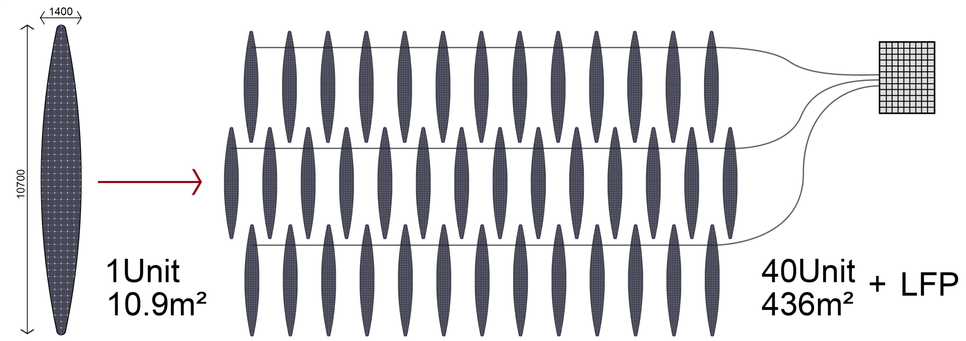
The site is located at 17 degrees south latitude, within the tropical zone. Each year, the solar altitude angle reaches 90° at noon twice, in November and January. The minimum solar altitude angle occurs at noon during the winter solstice, approximately 49.5°. The device's design features a movable top surface that can rotate from 0° to 30°, adapting to most solar inclination angles. It achieves a maximum utilization rate of 100% and a minimum sunlight utilization rate of 55%.

Noon solar altitude angle

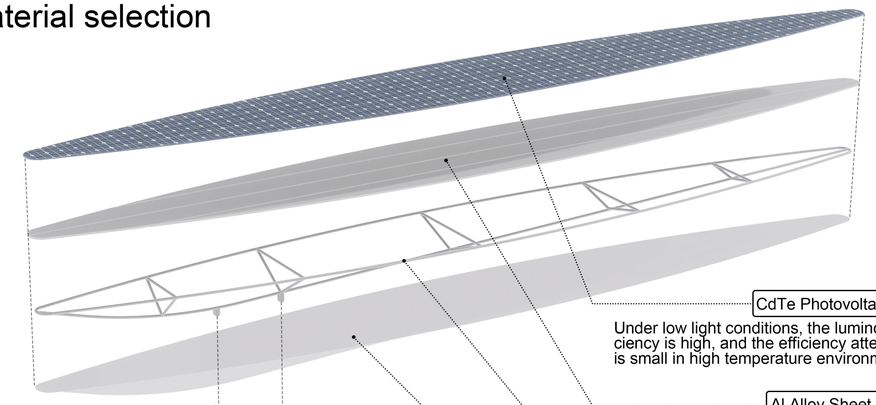



## Unit power generation

Each device is about 10.9 square meters. The device uses cadmium telluride photovoltaic panels with a conversion efficiency of about 18%. According to the different sunshine conditions in Fiji throughout the year, the average light intensity is 1000w/m², and 416 square meters of photovoltaic panels are required to meet the 75kw requirement. Therefore, 40 units are set to meet the needs of photovoltaic power generation.




## Material selection



**CdTe Photovoltaic Panel**

Under low light conditions, the luminous efficiency is high, and the efficiency attenuation is small in high temperature environments.

**Al Alloy Sheet Support**

As a top plate supporting photovoltaic panels and increasing the overall strength of the frame.

**Fiberglass Skeleton**

Fiber materials are lightweight and can rotate more flexibly along the axis of rotation at the top under air flow.

**ETFE Membrane Bottom**

Lightweight material, as the shape of the lower surface, absorbs the force of wind to make the top plate rotate better.

**316 Stainless Steel Column**

Stainless steel provides sufficient strength for the structure, strong thermal conductivity, and provides food-grade safety materials.

**316 Stainless Steel Collector**

Food-grade safety materials to store condensed fresh water.

**Concrete Foundation**

Concrete protects underground metal structures from corrosion, while also serving as insulation and counterweight for the installation.

**Steel Connecting Rod**

Follow the piston movement of the top plate to guide the air into the water collector.

**Air Inlet and Outlet**

The steel movable cover controls the one-way flow of air and also serves as a water intake.