Aqualillies

The Aqualilly is a modular, solar-powered energy and water system designed to serve the Marou Village of Fiji. The design provides renewable energy, clean drinking water, and a communal gathering space that supports both recreational and cultural activities. The Aqualily fosters inclusivity, welcoming both community members and visitors to use the space for games, storytelling, and ceremonies such as the sacred Kava Ceremony.

Central to the design are seven interconnected, ferrocement pods shaded with solar panels that also act as rainwater catchment surfaces. The prototype can produce approximately 15 kWh/day with the 147 sq ft solar array, and collect water which is then channeled into a treatment system. The collected rainwater undergoes filtration through a series of filters and treatments including a slow sand filter, coconut shell activated carbon filter, and UV sterilizer before being stored in an underground cistern system, which holds approximately 5,400 gallons. Battery storage located below the deck provides power on cloudy days, or at night.

The system is designed to be built and maintained with local labor, reducing dependency on skilled technicians. With proper training, community members can both assemble the ferrocement cisterns and maintain the filtration components. However, more technical components like the UV system, solar panels, and batteries are installed by professionals.

Environmentally, the Aqualily minimizes its footprint. Though the cisterns are buried 8–10 feet deep to stabilize temperatures and prepare for cyclonic conditions, excavation is limited and soil is reused wherever possible. The instalment aligns with existing walking trails, encouraging natural exploration while minimizing impact to the surrounding area.

Scalable and community-focused, the Aqualily can expand to meet the Marou Village's energy and water needs as it continues to grow. Its modularity, sustainability, and cultural sensitivity make it a resilient and inclusive solution for renewable energy, clean water, and community space.