



Designing Solar Powered Water Systems

Workshop Overview

This comprehensive 5-day workshop prepares technicians and engineers to design, inspect, and evaluate solar-powered water systems (SPWS) that meet international standards and community needs. Participants progress through a structured learning journey – from calculating water demand and selecting appropriate pumps, to designing photovoltaic systems and assessing long-term financial sustainability. The workshop balances foundational technical knowledge with hands-on application through design exercises, a group project, 3D model building, and a site visit to an existing SPWS. Participants will also develop practical skills in system inspection, troubleshooting common O&M issues, and life cycle costing. By the end of the workshop, participants will be equipped to make informed, locally relevant design decisions that prioritize sustainability, climate resilience, and community impact. Participants leave with concrete action goals and access to ongoing resources to support SPWS design and implementation in their own contexts.

Target Audience

This course is intended for:

- Solar energy technicians and engineers
- Water systems engineers and technicians
- Utilities and infrastructure professionals
- NGO technical staff working on water access projects
- Government ministry technical officers (energy or water sectors)
- Project managers overseeing SPWS installations

Learning Outcomes

By the end of the workshop, participants will be able to design a SPWS that meets international standards and community needs by:

- Calculating the water demand being serviced by the SPWS.
- Identifying the water supply that will best meet the water demand.
- Calculating total dynamic head of a water system at a given design flow.
- Selecting an appropriate and locally available pump for a SPWS project to meet the water demand.
- Designing a photovoltaic system for a SPWS project to meet the water demand.

- Incorporating operation and maintenance requirements into the design of a SPWS.
- Evaluating a SPWS design for long-term sustainability.

Agenda Overview

Day #	Topic
Day 1	Introduction to Designing Solar Powered Water Systems (SPWS)
Day 2	Designing SPWS (AC & DC Systems)
Day 3	Designing and Building 3D SPWS Procurement, Operations and Maintenance, Life Cycle Costing
Day 4	Evaluating a SPWS
Day 5	Troubleshooting Common O&M Issues Action Planning, Next Steps