Best Value

Case Study
Panel: Polycrystalline Technology

Effective irrigation with solar energy

Installation of robust polycrystalline modules to power a more sustainable and economical crop irrigation for 600 farmers in Malawi

Irrigation project, Zomba District, Malawi
Installation by: SEINE TECH SL
www.seinetech.com

SEINE TECH Solar Water Pumping

www.sharp.eu

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Summary:

- This project is one of more than 70 in Malawi by Seine Tech in partnership with FISD Engineering Company using SHARP modules.
- 120 Sharp polycrystalline solar panels with a rated power of 255 Wp were used.
- The generated power is used to operate water pumps to irrigate 50 ha of fields, benefiting about 600 farmers.
- The Millennium Challenge Account Malawi (MCA-Malawi) is funding the development of the scheme under the Environment and Natural Resources Management (ENRM) Project.

The solar-powered irrigation system changes the lives of 600 farmers

Malawi has great water resources (including the third largest lake in Africa). However, it is difficult to access due to issues with the country's energy infrastructure. Decentralized, mini-grids using robust solar modules are a sustainable way to solve this problem. The Bakasala Irrigation Scheme taps water from the Shire River, the biggest river in Malawi, in Lilangwe, Blantyre. The aim of the scheme is to improve land usage and watershed management practices in the Shire River basin by addressing underlying environmental and social issues.

The solar-powered pump and irrigation system will ensure the sustainable and economical irrigation of 50ha of crops inlcuding maize - a crop that is widely used in Malawi to make the staple food "nsima". Prior to the project, irrigation was done using manual techniques like treadle pumps or fetching water directly from the river. Besides improving the daily lives of the 600 local farmers, the solar powered system ensures regular irrigation of the crops and thereby higher yields and increased income, eventually benefiting the whole community.

The project is supported by the US funded Millennium Challenge Corporation Compact

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Overall, 11 Non-Governmental Organisations were involved in the planning and implementation of the project that started in late 2017 and was finalized in July 2018.

Usually, about 50-60 m3 of water per day and hectare are required. Therefore, two surface pumps with 11 kW each were installed performing 270m3/h each on an average day. To operate these pumps, 30.6 kWp of solar panels were installed (120 units by 255 Wp = 30.6 kW).

The operator says:

“Currently, we have about 450 farmers who have portions of farmland here but our target is to have 600 farmers. As FISD, we realize that bringing this scheme to these communities is a means to provide them with alternative sources of income and at same time divert them from exploiting natural resources.“

Kondwani Nanchukwa, Program Director Foundation for Irrigation and Sustainability

The installer says:

“We've done several projects in Malawi since 2013 (more than 70), all of them using Sharp solar modules, because they offer high quality and good guarantees. Most of these PV projects are for medium-scale irrigation, but some are for rural electrification too, through decentralized mini-grids. Malawi has a huge natural resource in terms of water availability, but lack of energy infrastructure to manage these water resources, for example to use for irrigation. This means that solar PV energy plays an important role in Malawi for developing sustainable irrigation projects.“

Joan Grifé Singla, Seine Tech

Building the new solar plant with the community

PV Panels

Product:	Polycrystalline modules
Number of Modules:	120
Rated power:	255 Wp
Cells:	60
Size:	1,660x990x50 mm
Efficiency:	15.5%

Solar Power Plant

Plant size:	30.6 kW
Roof orientation:	North
Roof pitch:	15°
Mounting condition:	On the ground, using 5m steel poles

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New Sharp polycrystalline panels with 270 and 275 Wp (ND-RB and ND-RK Series)

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