Solar Microgrid Power for Rural School Electrification

by Jane Oyugi / 2017-06-16 21:47:58 / International / 10716 / EN

Year of commitment : 2015

Green energies : Photovoltaic solar, Energy Efficiency

1 €

Builder

Local construction company in Mpwapwa District; Local electrical company in Mpwapwa District; Technology Provider (ZeroBase Energy); Project Developer (Sustenersol Company Ltd.)

Manager / Dealer

Sustenersol Company Limited

GENERAL INFORMATION

Problem Statement:

Kisokwe village is located in Mazae Ward in Mpwapwa District in the Dodoma Region of Tanzania. Dodoma region is centrally positioned in Tanzania mainland. The region is almost entirely dependent on agriculture and animal husbandry, which are practiced in rural areas at a subsistence level. Kisokwe Primary School, in the village, enrolls about 800 students and faces significant challenges such as lack of access to clean water, inadequate sanitation, teacher student ratios of 1:80+, lack of electricity and no integration of computers and technology in the delivery of the curriculum. These challenges inhibit the effective learning and education of the children and result in a sub-optimal learning environment. Without an effective teaching and learning environment, children are perpetually at a significant disadvantage in society and they will not have the fundamental learning tools and education required to end their cycle of poverty.

Solution:

This project implemented a solar microgrid to provide clean energy from the sun to power classrooms, staff houses and security lights.

With electricity, the school can integrate information, communications and technology (ICT) in the delivery of their curriculums, establish a computer lab and on-line learning center, offer adult education after school hours, provide lighting in the classrooms, staff offices and teacher

housing, and offer an energy station to the community to allow them to use the electricity for phone charging and other productive uses.

Sustenersol Company Limited, a project developer in Tanzania, partnered with ZeroBase Energy, the technology provider, to deliver clean energy to provide power to a rural school. ZeroBase Energy designed the solar microgrid, a new hybrid power product, called the K-SERIES. It was designed specifically for rural electrification applications, for Kisokwe Primary School and it is the first of its kind. The compact system consists of a solar array that is mounted overhead the enclosed power management unit, which contains industry-leading lithium iron phosphate energy storage and industry-leading inverter and charge controller. The system is easy to operate, requires almost no maintenance other than wiping down the solar panels and it has been working flawlessly since its commissioning on October 22, 2015.

Progress Status

Delivered

Data Reliability

Self-declared

Funding Type

Private

Website Enterprise / Infrastructure

https://regions20.org/2016/01/18/new-partner-sustenersol/
http://www.sustenersol.com

Sustainable Development

Attractiveness : The Kisokwe Primary School has a person on the school grounds who is responsible for the cleaning the solar panels on the system on a regular basis.The teachers, staff and students regularly use the electricity from the solar microgrid and they have incorporated computers as part of their teaching environment. Without the energy to charge the computers and light the classrooms, the school would be at a significant disadvantage. Villagers in the community also charge their phones and appliances at the school. During the October 2015 national elections, the school was used as a polling station and a vote counting location where they had light to count votes late into the night. Hence, the school has become a hub for energy and learning in the village.

Well Being : Safety comes first so everyone at the school as well as the community were trained in safety of electricity.Lighting up this part of the village has improved the well being of users and stakeholders. Teachers are able in incorporate technology in their teaching

environment and there is an ongoing discussion of a plan to establish a computer laboratory and an online community learning center at the school. This would greatly improve the well being of the community.

Social Cohesion : A place that has electricity at night is a source for social interactions in the evenings and has the ability to extend learning after the regular school hours.

Preservation / Environmental Improvement : Constant education and collaboration and training with the community.

Resilience : The specifications for the construction and installation met and in some cases exceeded the standards.

Responsible use of resources : By installing a clean energy solar microgrid at the school has eliminated the need to burn kerosene to be used to light dark rooms at the school.

Testimony / Feedback

Governance

Sustenersol Company Limited

Holder Type : Private Company

Local construction company in Mpwapwa District; Local electrical company in Mpwapwa District; Technology Provider (ZeroBase Energy); Project Developer (Sustenersol Company Ltd.)

Sustenersol Company Limited

Sustenersol Company Ltd- Project Developer and Project Owner - was responsible for identifying the site, site assessment, community engagement, training, managing the sub-contractors (electrician, civil works, etc.), project management and accountable for the success of the project.ZeroBase Energy- Technology provider - was responsible for the design and production of the solar microgrid power system Lighting Science Group- Technology provider - was responsible for providing the energy efficient LED lights school and staff houses as well as security lighting Kisokwe Primary School- Customer of the solar microgrid system Kisokwe Village- Community that was provided safety and high level training on solar energy

Business Model : The Project Developer developed and delivered the solution with the technology provider.The Project Developer is responsible for overall O&M.The school provides support maintaining the system.This was a demonstration project to pilot a solar microgrid power system for rural electrification in Tanzania.Future projects will derive revenues from sales of such systems, installation fee, project development fee and O&M fee.

Sustainable Solutions

Solar Microgrid Hybrid Power for Rural School Electrification

Description :

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Sustenersol Company Limited of Tanzania partnered with ZeroBase Energy, the technology provider, to implement this solution. The solar microgrid is a new hybrid power product, called the K-SERIES, and it was designed specifically for rural electrification applications, for Kisokwe Primary School and is the first of its kind. The compact system consists of a solar array that is mounted overhead the enclosed power management unit with industry-leading lithium iron phosphate energy storage and industry-leading inverter and charge controller. The system requires almost no maintenance other than wiping down the solar panels and it has been working flawlessly since its commissioning on October 22, 2015.

- Governance :
- Quality of life :
- Economic development :
- Energy/climate :
- Citizen participation
- Climate adaptation
- Renewable energies
- SmartGrids

Company (es) Website :

Contest

Reasons for participating in the competition(s)

- strong local partner/project developer- strong technology provider- community engagement- capacity building and training - strong local partner sub-contractors- the ability to easily install and commission a solar microgrid in a remote rural village- the system provides continuous clean energy power the to school and staff houses

Building candidate in the category

Users' Choice

Sustainable Infrastructure Grand Prize

Date Export : 20230427095749