Gaitheri Secondary School Solar PV Roof



Why to choose this solution?
The iron-sheet roof is covered in tiles fitted with energy-producing solar cells, an innovative solar- power technology known as building-integrated photovoltaic (BIPV) offering an alternative to adding solar panels on top of a conventional roof to produce power from the sunâ€™s energy. The energy thus produced has enabled students to improve their performance thanks to more reliable power, which means they can study even after dark. This solution also buffers the school against failures of a costly and unreliable national grid power.

Savings per day or production:
The solar tiles have reduced the school spending on electricity from KSh 5,000 (USD 50) per month, which is largely a fixed charge for access to grid power, to 1,500 KSh (USD 15) a month, or KSh 50 (USD 0.5) per day. This has translated to savings of about KSh 3,500 (USD 35) per month.

Cost in money and in own time to construct:
A grant of USD 2,000 (KSH 200,000) from the United States African Development Foundation (USADF) through Young African Leaders Initiative (YALI) was provided to implement the Gaitheri solar-roof project.

Lifetime:
30 years, if kept in good condition.

Maintenance needed:
The only maintenance required by the system is to clean the tiles regularly, when they are covered with dust or leaves.

Resources needed in use:
Iron sheet roofs, Building Integrated Photovoltaic (BIPV) tiles, sunlight, power control unit, a battery bank of 8-Volt batteries.

Problems and limits:
Installing solar panels on the roof is expensive. Its intake is reduced by cool, cloudy, or foggy weather. Market penetration is still slow, given that the technology is new and will require some time to achieve acceptance among a wider customer base. Lack of awareness on the potential of photovoltaics is widespread.

Where and how can you get it or make it?
It is available in Kiharu Constituency, within the Muranga County. The system is provided by Strauss Energy.

Skills needed to produce, install. maintenance, use:
Production, installation, and maintenance need expertise in engineering, energy, and construction. The use requires only a short introduction.

How to use it:
To be added.

How to maintain it:
Not relevant.

Climate effect (if any):
The school no longer uses kerosene and candles, which emit smoke, a source of global black carbon that is detrimental to health and that also worsens to global climate change.

Where it is used and how many users are there?
Used in Gaitheri Secondary School, which has 275 students, with student enrolment every year.

Why is it successful?
It is successful because it ensures uninterrupted power supply for the computer lab. The system has a power control system, and there is no danger of power surges that are used to destroy plugged- in electrical gadgets after a blackout. Thus, the system has reduced related losses for repair or replacement of affected gadgets. The system also costs little to operate and to maintain.

If you can make it, a short description, typical problems, materials needed:
Materials include an iron-sheet roof, Building Integrated Photovoltaic (BIPV) tiles, power control unit, and a bank of 8-Volt batteries.

How to make it (if possible):
Not relevant.

How is it delivered and by whom?
The business model is installation by Strauss Energy, providing renewable and cost-effective energy through BIPV technology, a revolutionary solar- powered roofing tile designed and made in Kenya. Through the YALI program, Strauss Energy received a grant of USD 2,000 from the United States African Development Foundation (USADF) to implement the Gaitheri solar-roof project.

Successful financial model
Support for development and public relations through Strauss Energy.

What policies and strategies helped the success?
Received a grant from the United States African Development Foundation (USADF) through the YALI program to implement the solar-roof project.

More info:
http://straussenergy.com/

Sources:
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