School energy storage kathmandu

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The 10.8kWp Solar PV system which comprises twenty 550Wp Solar modules would be the primary source of energy to power the school along with charging the energy storage in the form of sixteen 200Ah maintenance-free batteries equivalent to a 38.4kWh battery bank.

IEEE Senior Member Morgan Kiani [left] led the team of engineers that installed photovoltaic panels at the Shree Batase Secondary School in Melamchi, Nepal, on behalf of IEEE Smart Village. She collaborated with Paras Loomba, [right] founder of Global Himalayan Expedition, an organization that couples tourism with humanitarian technology to provide solar energy in off-grid communities.

That all changed this year, after a team of IEEE volunteers traveled to the village and installed photovoltaic panels, a battery storage system, and a solar water heater at the Shree Batase Secondary School in Melamchi, which is about 45 kilometers from the capital city of Kathmandu.

"The effect that access to reliable electricity has had on the village is amazing," says Morgan Kiani, an engineering professor at Texas Christian University, in Fort Worth. The IEEE senior member led the team of engineers that installed the systems on behalf of IEEE Smart Village, a program that brings electricity--as well as educational and employment opportunities--to remote communities worldwide. Smart Village is one of the donor-supported initiatives of the IEEE Foundation. The project in Nepal was supported by funds Kiani raised through the IEEE Industrial Electronics Society.

Her team collaborated with Global Himalayan Expedition (GHE), an organization that couples tourism with humanitarian technology to provide solar energy in off-grid communities.

The idea for the project came from a chance encounter in a shopping center. Kiani traveled in 2018 to Cairns, Australia, for the IEEE International Symposium on Industrial Electronics. While in Cairns, she visited a store that sold purses and clothes made by Melamchi villagers. The owner told her sales of the products supported the village"s school, which had been destroyed by an earthquake in 2015. The earthquake severely damaged Melamchi"s power lines. Although the school had been rebuilt and new power lines had been installed, the electricity wasn"t reliable.

To decide which system would best serve the town, Kiani and Loomba met virtually with school administrators and members of the community. Not surprisingly, the leaders said their priorities were access to reliable electricity and hot water.

Kiani and her team trained teachers and other school staff members how to perform maintenance and how to monitor the health of the solar panels and battery bank. An online portal allows the staff members as well as Kiani and Loomba to monitor the system. The portal--which displays information such as the amount of

electricity being produced, consumed, and stored--is included with the solar panels and is accessed through the manufacturer"s website.

The project has improved the town"s educational system, officials say. The school has had a tough time finding qualified teachers willing to travel to the remote village. Now that the school has reliable Internet access, students can be taught remotely.

Teachers also have access to free online educational resources from IEEE, such as the TryEngineering and REACH (Raising Engineering Awareness through the Conduit of History) programs, Kiani says. TryEngineering offers hundreds of lesson plans, hands-on activities, and other resources. REACH helps teachers explain the history of technologies used in agriculture, health care, and transportation.

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