Market Segment: Microgrid

POWER PROFILE

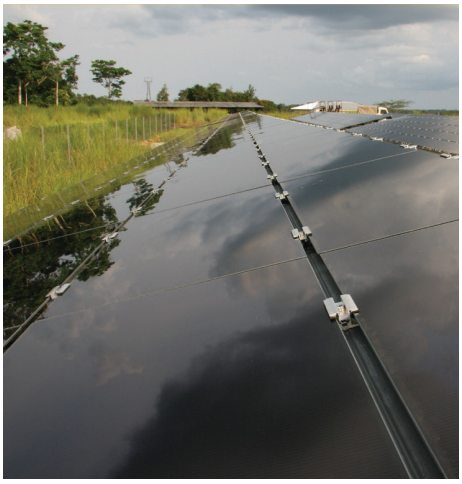
Customer: Société d'Exploitation du Parc de Lékédi (SODEPAL)

Location:
Lékédi Park, Bakoumba, Gabon, Africa

Customer Business Issue:
Stand-alone power and water supply system for an off-the-grid private nature park in Central Africa

Solution:
Cat® microgrid technologies, including
420 Cat PVT110 solar panels
Cat 3.3 diesel generator set

Cat® Dealer:
Tractafric Equipment



Local Cat® dealer, Tractafric Equipment, designed and installed a solar power plant consisting of 420 Cat PVT110 solar panels.

POWER NEED

Nestled in the grassy plains of Gabon's savanna region, Lékédi Park is home to several fisheries as well as monkeys, buffalo, antelopes and other wildlife indigenous to Central Africa. A private enterprise run by the Société d'Exploitation du Parc de Lékédi (SODEPAL), this 140-square-kilometer park was created by mining company COMILOG in an effort to promote tourism and create a protected area for animals.

COMILOG had been mining manganese in the region for decades, deep in the rainforest where exporting ore was a challenge. The metal had to be transported via cable car to a railway in the neighboring Republic of Congo, the nearest reliable transport route at the time. The cableway was headquartered in the town of Bakoumba.

But this route became obsolete in 1986 when a new railway opened closer to the mining site and many people lost their jobs. Thus Lékédi Park was built in 1990, in an effort to provide a new source of income for people in Bakoumba.

Recently, park management wanted to build a base camp to accommodate staff and visitors, including one administrative building, one research laboratory and three on-site houses. A cost-effective, reliable, scalable solution for power and water supply was required for this remote, off-the-grid location.

"The power and water supply system had to be environmentally friendly and sustainable in order to seamlessly integrate into the conservation park," said Eric Willaume, Lékédi National Park manager. "Silent, clean and reliable power and water supplies were prerequisites for this project."

SOLUTION

SODEPAL worked with local Cat dealer Tractafric Equipment to design and install two separate power solutions. The first, a solar power plant, consists of 420 Cat PVT110 solar panels. These thin-film solar modules capture more energy than c-Si technology, especially in high-temperature, high-humidity climates such as in Lékédi.

In addition, the system includes 154 kWh VLRA storage to provide the most economical and advanced energy storage with controls and monitoring. A Cat 3.3 generator set with nominal power of 33 kVA offers high power density, high-part load efficiencies and an excellent capability to follow loads.

The equipment was installed by the local SODEPAL labor force under Tractafric Equipment supervision.

A second, separate system of solar panels was installed to power the raw water supply system. Six Cat PVT110 solar panels power a pump placed in a pond, which pushes water uphill (30 m water head over 620 m distance) to the water treatment plant located near the larger PV system. The water purification system provides drinkable water to the entire camp. A single phase AC backup generator set will supplement power to the pump on bad irradiance days.

"With Cat microgrid technology, the base camp is offered an innovative suite of power systems that adds environmentally friendly solar panels, state-of-the-art energy storage, and advanced monitoring and control systems," said Brice Parmentier, application engineer with Tractafric Equipment.

They are also designed to reduce fuel expenses, lower utility bills, decrease emissions and reduce the total cost of ownership while increasing energy efficiency in even the most challenging environments.

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RESULTS

With this power solution, Lékédi Park has become a valued private attraction in a country with one-tenth of its landscape covered by national parks.

The solar generation offsets 18,000 liters of diesel and saves 2,100 hours in commute time with staff living on site.

Ultimately, it raises the standards of living for permanent park management residents and enables the protection and research of great apes, leopards, elephants, buffalo, mandrills, mangabeys and other species. Tourists are also able to visit and stay at the research center and take part in the daily research program.

"Because of installation's success, The National Center for Scientific Research, or CNRS, has elected to conduct a study at Lékédi Park for the next four years," added Parmentier. "There will be a full-time team here, relying on Caterpillar to power their analysis."

For more information, please visit cat.com/powergeneration

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