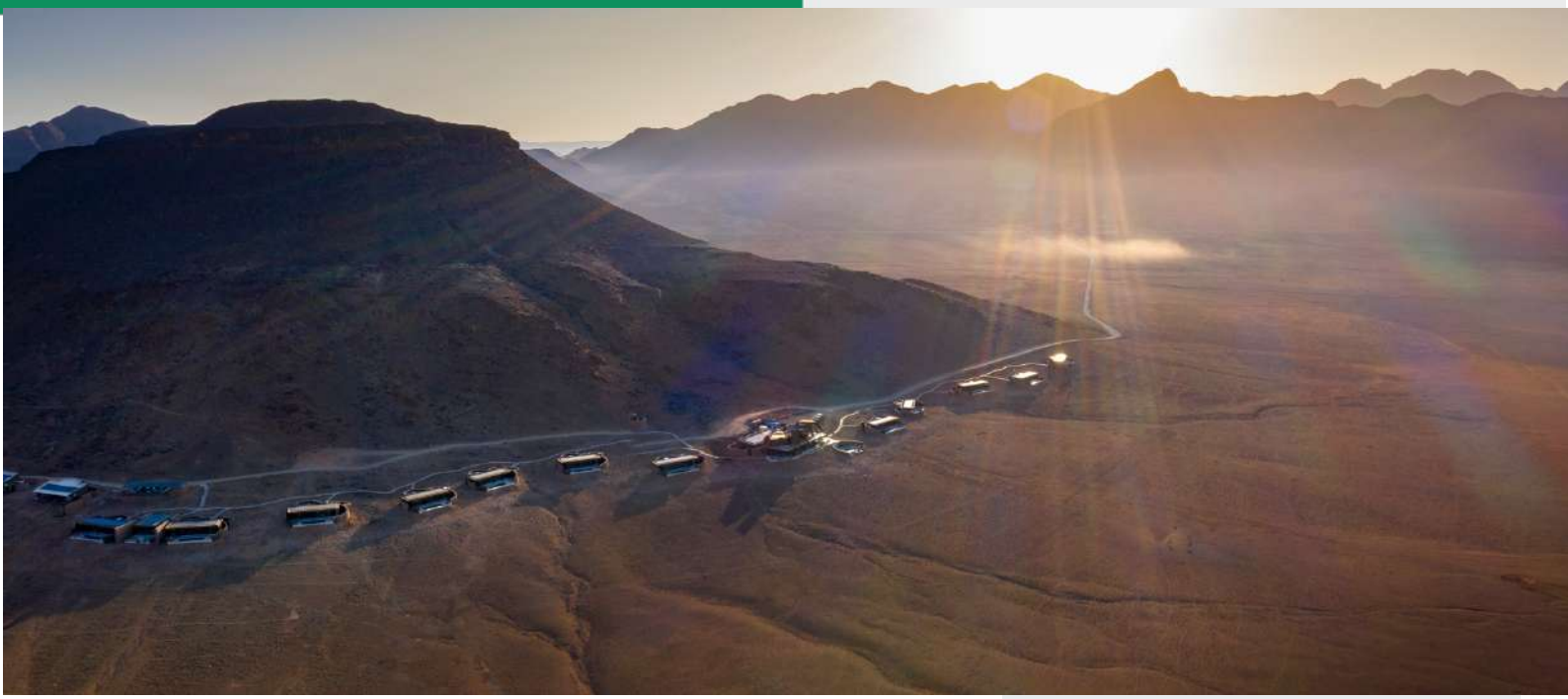
CASE STUDY

SOSSUSVLEI LODGE



Background

The Sossusvlei Desert Lodge is situated within the &BEYOND Sossusvlei Private Desert Reserve, a vast 12 715-hectare (31,419 acre) expanse deep in the Namib, the world's oldest living desert. Set amidst an ocean of dunes, rocky outcrops and gravel plains, the utter tranquility and extraordinary clarity of light makes this area one of Africa's most compelling landscapes.

In 2019, the property underwent a complete renovation, the result of which was a magnificent luxurious lodge in the desert. Prior to this, the lodge had used a diesel generator as its energy source. However, diesel in this area is both expensive and logistically challenging to transport. Therefore, an off-grid solar system was a welcome solution for this property that sought sophisticated sustainability.

Objectives

New Southern Energy approached &BEYOND with the proposal of a solar power system to provide the energy that the lodge needs. This system would form part of the company's delivery on its promise of embracing sustainability and providing an off-grid experience.

An off-grid solar system is not connected to the electricity grid and requires battery storage. This system would need to be designed accurately in order to generate enough power and have the necessary battery capacity to meet the lodge's electrical energy requirements throughout the year.

Additionally, in line with the objective to build a high-end, luxurious lodge, all facets of the system would need to be tastefully placed out of sight.

Quality management

The NSE team worked with the site's architects to ensure that the system would be highly efficient and invisible to guests. The solar system was built in parallel with the lodge's rebuild.

The panels were neatly mounted on the lodge's roofs with conduits dug into the walls to hide the cabling. A crane was brought in to move the large storage battery to behind the office and a stone wall was built around the inverter station.

Combination heat pumps were installed on site with one at each guest room, manager rooms and one at the kitchen. A cold-water supply is connected to each guest unit. The hot water outlet from the combination units is connected to the building's hot water reticulation, with a back-up unit in place.

↑ **Hydratherm**

CASE STUDY

SOSSUSVLEI LODGE

Solar solution

In order for the Sossusvlei Dessert Lodge to reduce the fuel consumption of the diesel power generator, an off-grid renewable energy system was designed. The micro-grid system now supplies the main lodge and staff village with the least possible impact on the environment. The ingenious roof design provides optimal shade for guests plus maximum space with unobtrusive solar panels.

The 199kWp PV system consists of 604 Canadian Solar 330Wp panels which convert sun radiation into electrical energy. Two Tesla battery powerpacks (440kWh) are utilized to store energy and supply the grid at night. Generators (258kVA Diesel) were incorporated into the solar design to assist in cloudy weather conditions and during the evenings.

↑ **Hydraloop**

System performance

The site was completed in September 2019. The system has saved the site R 809 000 in its first year alone. Similar savings are expected annually in future.

The system's performance is monitored and controlled through a master controller, which can also communicate with the inverters. All of the data is logged and saved in cloud-based storage. Furthermore, the performance can be monitored in real time via a smart phone app.

The plant is currently overperforming compared to simulated value. Inverter production on both sections of the plant is consistent on a clear day.

Operations and Maintenance

New Southern Energy manages the operations and maintenance of this solar plant. The system's performance is monitored daily and should any faults occur, technicians are dispatched to rectify it swiftly.

The panels are kept clean at all times to ensure optimal performance.

← **Rooftop solar installations, invisible from land**

FOR MORE INFORMATION Please visit www.newsouthernenergy.com