

OFF GRID SOLUTIONS FOR SAFARI LODGES



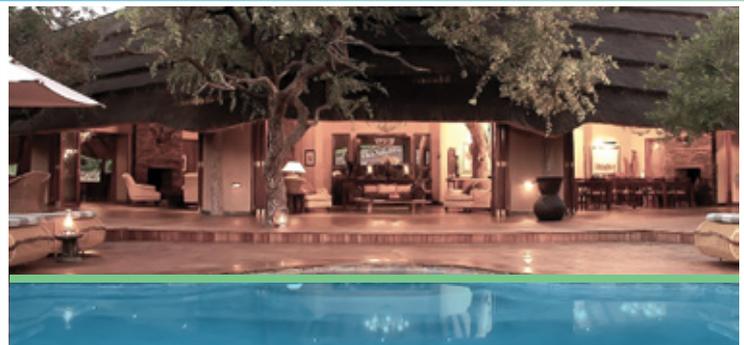
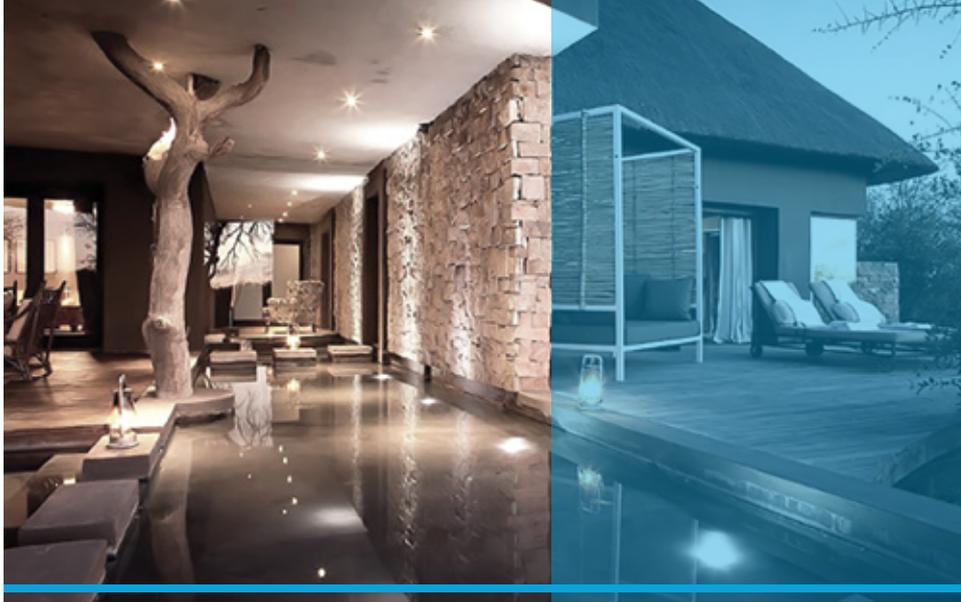
M | METKA | IPS

Taking Safari Lodges Off-Grid

The energy supply of remote African safari lodges and natural parks has always been an important challenge.

The conventional solution offered until now was the extensive and exclusive use of diesel generators, at a high cost and significant ecological impact.

However, safari lodge operators are now looking into hybrid/ off-grid solutions utilizing smarter, greener and more efficient energy management systems, in order to reduce their diesel based electricity generations costs and become more sustainable.



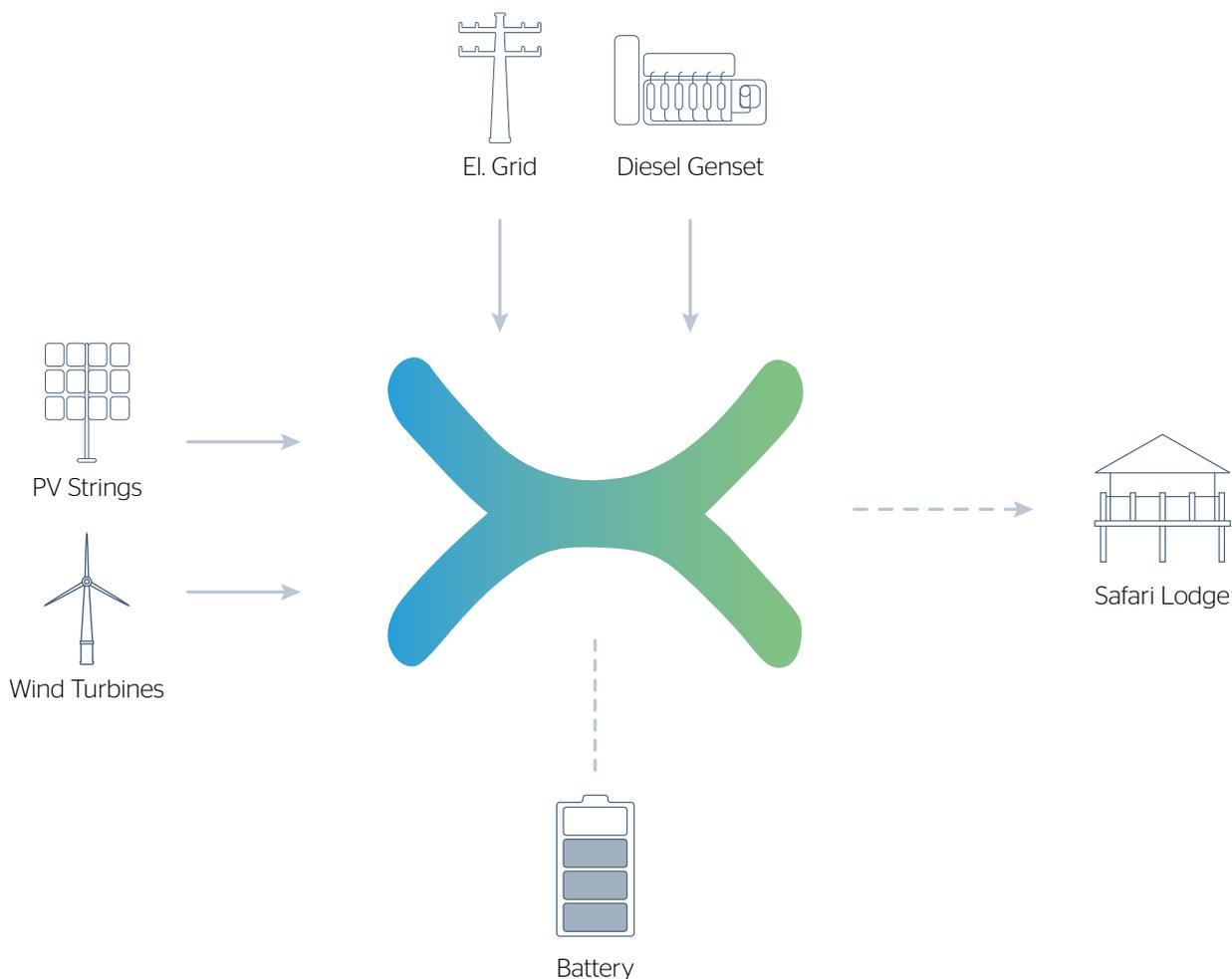
Solutions

The tourism industry is at the forefront of realizing the potential benefits of reduced CO2 footprint. Safari lodges, mostly located in environmentally protected areas and playing a vital role in eco-tourism, continuously seek to reduce their environmental impact and at the same time provide high quality services to their customers.

Energy production finds itself at the center of this approach, with renewable energy sources and battery storage gradually winning the game against traditional power generation with diesel oil.

Hybrid systems, using the power of sun and wind, coupled with battery storage systems for increased availability and reliability, are becoming the ideal solution for safari lodges owners who want to minimize their dependence on fossil fuels and operate a reliable, cost-effective power generation system based on renewable energy sources.

METKA & IPS have developed a hybrid solution for safari lodges, based on the unique technology of EXERON. By combining traditional RES together with battery storage systems (utilizing the existing diesel generator only as emergency back-up), EXERON's advanced modular architecture efficiently manages the flow of energy, providing significant OPEX savings and unparalleled reliability to the end customer.



Benefits

The pristine location of safari lodges creates the need for an intelligent energy management solution that not only preserves the surrounding nature but also minimizes the negative environmental footprint.

Our hybrid mini-grid system contributes towards an eco-friendly and sustainable operation of the remotely located safari lodge, whilst simultaneously guaranteeing unmatched reliability and uninterrupted power supply.

Hence, safari lodges / natural reserve parks have now the opportunity to maintain the sustainable tourism measures enforced by the government, whilst meeting the requirements of their increasingly demanding clientele, who expect reliable, clean, quiet and sustainable power supply during their holiday stay. Ultimately, they can achieve higher ratings in travel portals and attract more visitors to their lodge/reserve by being energy independent and greener.

| FEATURE | EXERON |
|-------------------------------------|--|
| Customizable & Modular | <ul style="list-style-type: none"> • Customizable design, perfect fit for every site setup • Unlimited scalability of all system components |
| Integrated System | <ul style="list-style-type: none"> • Site upgrade with 100% integrated components • One system manages all power sources (storage incl.) |
| Reliability | <ul style="list-style-type: none"> • Military-grade design & specifications • Full redundancy |
| Remote Monitoring & Control | <ul style="list-style-type: none"> • Unlimited options for connections of external alarms to the system's Main Control Unit (MCU) |
| Temperature Regulation & Protection | <ul style="list-style-type: none"> • Maintenance free • Low energy consumption • Modular and roof mounted, easily detachable • Equally distributed airflow • Dust and humidity proof • Anti-Corrosion protection |



Case Study

This case study aims to provide a detailed overview of the benefits of operating a fully off-grid lodge or maintaining grid connection as a back-up facility only. Following an in-depth analysis of a lodge's typical energy consumption, we developed a solar PV and storage based hybrid energy system that significantly reduced the lodge's operating cost.

A lodge with an average annual electricity consumption of 419,058 kWh.

This demand can be met by the following configuration:

- 250 kWp solar PV panels: 125 EXERON SML2000 MPPT charge controllers
- 600 kWh of usable energy storage (1,300 kWh nominal capacity in the case of a lead-acid solution)
- 144 kW maximum output power: 48 EXERON I3000B inverter modules
- 160 kVA backup diesel generator: 80 EXERON ML2000 DG charge controllers
- 10 pieces EXERON FX cabinets

| | EXERON | Diesel |
|----------------------------|--------------|---------------|
| Price per kWh | \$0.37 | \$0.62 |
| Annual OPEX | \$47480 | \$259816 |
| CO2 emissions | 39 t/year | 368 t/year |
| Diesel consumption | 14722 l/year | 139686 l/year |
| Renewable Energy Component | 89.46% | 0% |

Our solution offers a number of additional long-term benefits such as significantly reduced man-hours for diesel generators' servicing; low maintenance costs; reliable power supply 24/7.



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