



Wind and Solar

Introduction

One of the greatest challenges facing GSM operators in emerging markets is the demand for network expansion in an environment where there is limited or no access to the electricity grid for base station power.

Wind and Solar power provides an efficient and reliable alternative to mains grid electricity for the powering of base stations. Furthermore Wind and Solar are both renewable and green power sources. By incorporating these types of renewable energy solutions into remote communication networks, operators can reduce their reliance on petro-diesel generators (which require frequent fuel deliveries and maintenance) or waiting long periods for connection to the mains grid.

Wind and Solar power solutions can therefore enable rural communities, service providers and, perhaps more importantly, new and established entrepreneurs, to gain greater access to voice and data services.

Programme Overview

The GSMA Development Fund, together with Motorola, has developed a solution for both emerging and developed markets, providing cost-effective, environmentally friendly power to bring the benefits of mobile communications to a wider audience. The Wind and Solar Programme aims to connect communities in rural and remote areas where connection to the electricity grid is either unavailable or not financially viable.

Role of the GSMA Development Fund and Motorola

Motorola has developed the Wind and Solar power solution, and is partnering with the Development Fund to pilot the concept in emerging markets with local operators, with a view to catalyse the commercial take-up of this technology. The two organisations work together with local operators in emerging markets to assess the feasibility of using Wind and Solar solutions to power base stations in remote, rural and off-grid locations.

Programme Drivers

The Development Fund believes Wind and Solar power offers operators the potential to:

- Provide a cost-effective, reliable and renewable power solution for remote and rural locations that have no access to mains electricity
- Reduce OPEX costs through the replacement of diesel generators as the primary power source for cellular sites located in off-grid locations
- Connect the unconnected
- Reduce operator carbon emissions by an average 4,580kg of CO₂ per site per year
- Provide an alternative power solution to local communities for services such as mobile phone charging and community information centres

Implementation Partner Case Study: MTC, Namibia



In April 2007, the GSMA Development Fund, together with Mobile Telecommunications Limited (MTC) of Namibia and Motorola, commissioned a trial site for a Wind and Solar power solution to support the operator's remote GSM cellsites.

The purpose of the 90-day trial was to validate the use of Wind and Solar power as a feasible and cost-effective alternative to using fuel generators at sites where the main grid connection is not available, too costly to run, or would take months, even years, to connect.

The trial involved the installation of the Motorola Wind and Solar solution at Dordabis, a site 100km east of Windhoek. This then became the single source of power for the base station equipment situated there.

Four main elements comprised the solution:

- 6kW turbine mounted on a 15m mast with a 5.5m rotor diameter with the potential to generate 6,000 to 12,000 kWh annually
- 28 190W solar panels with a cumulative power of 5.32kW mounted on a steel structure facing north
- Two groups of 24 DWEF First National Batteries, able to provide 60 hours support time
- Motorola control cabinet, housing all monitoring equipment and controllers responsible for regulating power supply

During the trial the MTC cellsite carried the same level of traffic as its usual operation. The 90-day trial concluded there were strong enough wind speeds and ample solar irradiation levels to power the base station site. The solution provided an average of 198kWh of power per week, 10kWh greater than necessary. These results demonstrated that the solution can support a typical 1400W-

1800W, 6-carrier base station, supplying around 200kWh of power per week.

It also concluded a Wind and Solar solution has a return on investment period of three years, making it a financially viable option for operators wanting to expand their network into rural and remote locations.

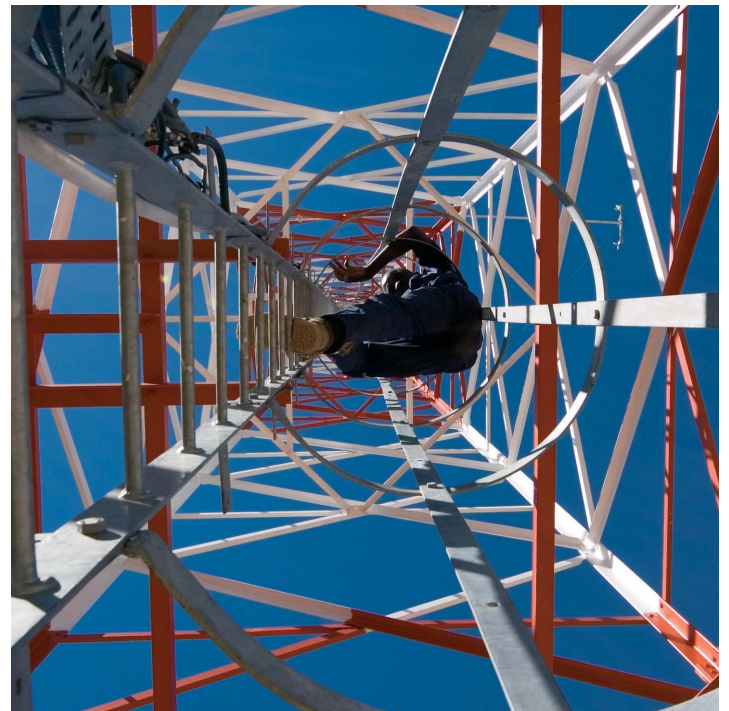
From an environmental perspective there were two significant benefits MTC found in using Wind and Solar power:

- MTC could save 12.55kg of CO² per day, or roughly 4,580kg annually using Wind and Solar over electricity grid.
- MTC could save an additional 649.25kgs of CO² emissions annually by removing backup Diesel Generators and using Wind and Solar power.

This project is just the first in a planned series in conjunction with Motorola.

"With the implementation of cell sites into more remote areas the Motorola solution provides us with an efficient and reliable alternative to the often costly roll-out of mains grid electricity. It is a commitment to our customers to provide the essential communication services needed in the region."

Albertus Aochamub,
Corporate Services General
Manager, MTC Namibia.



Development Fund

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If you would like to be part of our Wind and Solar Programme or would like more information, please contact...

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