

“How battery storage is changing the renewable energy game”

The mass adoption and implementation of solar energy in South African homes and businesses has been rapidly increasing over the past few years. But, going completely “off grid” has so far been held back by the expense of storing power from renewable sources.

But this is changing, as the technology is available, and becoming more affordable, for dramatically reducing the reliance on state utility, Eskom, for electricity in South Africa.

While solar energy is an ample resource in this country, the real game-changer will be the ability to store the power generated by day, for consistent use around the clock, says Dominic Wills, CEO of [SOLA Future Energy](#).

Wills says solar and storage are becoming more sought-after for businesses in South Africa, which are facing escalating cost pressures from ever-increasing Eskom tariffs.

He says recent advances in battery technology, and the rapid decrease in costs of such storage components, has meant that the time has come to leave the national grid entirely, particularly for businesses.

“In the past, when power was needed, it was provided by baseload power, created by non-renewable energy sources that were burnt to produce power in response to the demand. For generations, we didn’t focus on developing the technology necessary to store power because fossil fuels were seen as endless sources of power,” Wills explains.

He points out that, while solar energy (and other renewable sources), have received increasing interest globally and in South Africa in the past, innovations in storage have been the hot topic in the recent years due to their game-changing nature for renewable energy.

“New storage solutions are emerging that make use of commonly available materials, and nano-technology could potentially improve the power and energy density of batteries,” says Wills.

“The price reductions of this technology in recent years means that currently a solar PV and storage microgrid, for example, is cheaper than diesel generated power in remote areas. This is a game-changer for off-grid electricity requirements,” he added.

Perhaps the most well-known of these storage battery innovations are commercial applications of the lithium-ion battery, which grew popular for their use in cell phones and electric vehicles. They can be packaged as such, as in the case of the Tesla Powerpack, which contains 16 individual battery pods, each with an isolated DC-DC converter. They support a host of applications that offer commercial consumers greater control, efficiency and reliability across the grid.

However, Tesla is by no means the only company delivering storage batteries, and case studies from around the world are proving that renewable energy storage can work in practice.

For instance, in 2017, BMW commissioned an enormous battery storage farm at its wind solar generation plant in Germany. The site houses as many as 700 second-life electric vehicle batteries, which can store excess renewable energy.

Closer to home, SOLA has been responsible for the installation of a solar energy microgrid on Robben Island, which has produced over 850 000 kWh of clean electricity since its launch in October last year. The project will help reduce the cost of buying and shipping diesel to the world heritage site. The system is able to deliver the entire daytime electricity load for the

island, and the solar PV energy generation is supported by 837 kWh battery storage, which makes it possible for the system to keep delivering power on cloudy days and at night.

“We’re particularly proud of our Robben Island project because it shows that solar power generation and storage can totally transform the energy accessibility for remote areas, which is particularly applicable to Africa,” says Wills.

These projects have shown that energy storage, combined with renewable energy, can deliver the results needed to keep both remote and commercial sites running both practically and affordably.

“In the world of decentralised energy supply and production, we are just scratching the surface of what is possible for both rural and urban businesses. For instance, there are interesting projects taking off around the world that use machine learning solutions to choose and balance relevant power sources by anticipating demand based on usage patterns,” says Wills. “This helps to minimise costs and optimise supply which will further enhance the business case for adopting energy storage technologies alongside their renewable energy supplies, making energy storage applicable for both on- and off-grid situations.”

“These solutions are becoming more affordable and widespread, and we are seeing the commercial sector flock to the reliability and affordability of renewables in general and solar in particular,” says Wills.