

# Solar power makes strides in innovation

The transformation of the world's energy markets continues to gain momentum. Renewable energy projects, which have seen a rapid decline in cost over the last decade, are increasingly powering the world's large economies in a bid to limit climate change and drive sustainable growth. In Africa, it is estimated that by 2035 solar photovoltaic (PV) projects will contribute 9.8% of overall electricity generation.



Tim Frankish, managing director, Solar Saver

Last year renewables accounted for 33% of total power generation in the United Kingdom and 40% of total power generation in Germany and Spain. These huge gains have been driven, in large part, by a massive reduction in the cost of generation from utility-scale solar PV projects. In fact, the International Renewable Energy Agency recently reported that the global average cost of electricity from solar PV projects has declined by 73% since 2010.

In South Africa, the National Energy Regulator of South Africa (Nersa) announced recently that it has the go-ahead to license 500MW per year of embedded generation projects each with an installed capacity of under 10MW. Those projects will now be able to proceed without having to seek prior approval from the energy minister. These sorts of projects typically cover residential, commercial and industrial sites, and would include properties such as retail centres, warehouses and offices.

## Different technologies

Along with shifts in the traditional energy market, consistent and rapid innovation in the field of solar PV places this energy generation alternative at the forefront of efforts to reduce our collective dependence on fossil fuels. "The solar energy sector is highly innovative and the past few years have seen a rapid growth in the range of available solar panels, also known as modules. These modules now come in innumerable different sizes and capacities, and employ a range of different technologies. These developments are all aimed at driving efficiency, from both a technical and a financial perspective," says Tim Frankish, managing director of SolarSaver.

Manufacturers, such as Canadian Solar, have been successful in developing higher performance modules that include features such as passivated emitter rear cell (Perc) and half-cut cells. "These technologies now see Canadian Solar's HiKu modules, for example, achieving efficiencies of up to 18.8% on 415 watt ratings. That's a big jump from the 16.4% efficiencies and 260 watt ratings we saw as recently as three years ago," he says.

The use of high-efficiency modules means that installers require fewer of them to yield the same system output. This benefits clients through a reduction in a project's BOS (balance of system) costs and enables more power to be generated off a smaller footprint. The latter is particularly beneficial for high energy consumers that have limited roof space, for example.

## **Bifacial solar modules**

Another innovation that is making a significant impact on the solar landscape is the bifacial solar module, which include solar cells on both the front and rear sides, enabling sunlight to be captured both from above and below. "In contrast to the one-sided absorption of traditional panels, bifacials are also able to absorb light that is reflected off the ground or roof. Our experience shows that these modules, if installed correctly, can yield 10-30% more than similar systems using traditional modules," Frankish says.

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