Renewable sector must educate users or risk the same wrath being directed at Eskom

By Lance Dickerson

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South Africans have had enough of the electricity crisis. The recent days-long outage in Bedfordview only added to a barrage of negative sentiment. The anger directed towards Eskom, municipalities and the government is almost palpable. The timing is right for renewable energy - not just at a national and corporate level, but also at a consumer and business level - to be thrust into the spotlight.

Lance Dickerson, MD at Revov

However, unless this industry handles itself carefully, it won't be long before it, too, is subjected to anger founded on broken promises. If something is presented as an alternative, it must work as promised.

A few years ago, talking about renewable energy was out of the question for many. It was considered way too expensive and not viable. Compared to all other sources of energy, the cost of renewable power technology is reducing to a point where it is no longer just viable, but logical.

Renewable energy is the future. Sure, there will be kicking and screaming, and powerships and fracking attempts and all sorts of arguments for the use of coal, but we all know that the future of our energy security lies in the sun and wind that make this country so beautiful.

Storage is vital

What does any of this have to do with Bedfordview, or any other suburb for that matter? Unless a very public discussion is held about energy storage, there will continue to be a few disappointed consumers that give the entire industry a bad name.

The average person on the street must understand these basics: solar panels harness the energy of the sun and - very simplistically - turn it into electricity. If you do not use this electricity, it is wasted, unless - of course - you can store it. If there is no sun there is no energy being produced.

The battery systems that underpin solar or wind installations can make or break the value a consumer gets. If something is promised - such as protection from Stage 4 load shedding - then you need to make sure that the system is capable of storing that amount of power. In these instances - the batteries could well be charged by Eskom's power when it is available, but as the week-long experience proved, sometimes we cannot bank on this availability.

The same holds true for those who wish to drastically reduce their dependence on municipal power or those that wish to be off the grid completely. The solar panels will charge the batteries, which hold the power until you need it.

Another, very simplistic explanation: If the sun is the food, the solar panels are our enzymes that convert it into usable energy. The batteries are the storage in our liver, muscles and fat cells. The management system - the brain - tells the storage cells when the energy in the stomach and blood is depleted and then it taps into our reserves. If we did not have this energy storage we would die a few hours after having no food. In the case of solar and wind power, it is a lot more instant. Of course, we can go into the technology of PV panels and the engineering behind inverters, but the basics must be understood first.

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Growing shortages of lithium

Lithium iron phosphate batteries are fit for purpose to store energy. Besides being safer than other lithium chemistries, and safer and less maintenance-intense than traditional lead acid batteries, they perform better. The problem here is that growing shortages of lithium mean that local sellers of new lithium iron phosphate batteries either have to absorb the price increases or pass them on to their customers. There's only so much absorbing anyone can do, and so customers will foot the bill.

This is a problem, because customers are switching to renewable energy on the promise that it has become economically viable. If they go without batteries they have no backup, and if they use lead acid batteries - which inexplicably some installers still use - they give up on quality, performance, safety and longevity.

So they're doomed, then? Not quite. Second-life batteries provide a compelling two-pronged solution. Firstly, they are environmentally sound because the cells from which they are made have already paid their carbon penalty, so to speak, by living a life in electric vehicles before they are repurposed, and secondly, they are as good as, and in many ways superior to, first-life lithium batteries.

The need for back-up power must be measured against the environmental cost

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The second hand myth

How, one may ask, can a used battery be superior? It can't. Second-life batteries are not used batteries. They are built from repurposed cells that come from EV batteries. The second hand myth was peddled by those who don't have access to the repurposed technology.

This is how it works: EV batteries are built to withstand high charge and discharge rates and challenging conditions and temperatures. However, after a few years, the weight of the battery becomes too much to justify performance. At this point, the batteries are thrown out. The clever engineering folk discovered that within these batteries are perfectly sound individual cells that are fit to be used in storage where weight is not an issue. These cells are taken out and repackaged and configured into brand new casings, with brand new management systems. The difference from first-life cells is that they have the added advantage of high temperature and performance specs - perfectly suited to harsh environments in Africa. Beyond this - they are not subject to the recent spikes in lithium prices because of exponential demand worldwide for new EV batteries.

And so, as people in the industry look to capitalise on the anger and discontent of electricity consumers, they'd do well to educate the public and tell them the whole story behind what it takes to keep the lights on. The last thing the industry needs is to be painted with a brush of broken promises because that would make us no better than the incumbent national power utility. Freedom from dependence requires freedom from half-truths and outright myths.

ABOUT THE AUTHOR

Lance Dickerson, MD at Revov