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Sub-Saharan Africa set to reap the benefits of hybrid power

Cape Town, 16 January 2018: Hybrid power solutions, which combine renewable energy with fossil fuel and battery storage, are estimated to grow from a few installations to several thousand Megawatts in sub-Saharan Africa, between now and 2025.

Renewable energy is now cheaper than gas and nuclear, and in several locations cheaper than coal. Battery costs are also dropping rapidly as storage technology evolves. With the addition of renewables and battery storage to diesel or heavy fuel oil power, hybrid solutions are able to offer secure 24/7 supply, price security and a reduced carbon footprint.

Amiram Roth-Deblon, head of global business initiatives for juwi Renewable Energies, notes that at a global level, utility scale solar electricity prices seen in 2017 went as low as \$0.02 per kWh.

Roth-Deblon says that the applications of hybrid power are wide-ranging: “Hybrid can supply energy cost-effectively and securely to large electricity users such as mines, industry and farming even if they are completely off the grid.”

“Recent technology advancement of hybrid power solutions combining wind or solar with batteries and fossil fuels, such as diesel, makes it possible to provide uninterrupted 24/7 power supply even to critical loads of large-scale customers.”

Global investment trends towards renewables

“Since 2015, more money has been invested in renewable energy than in all other power generation types combined. In 2017 some 58% of all energy investments went into renewables ([see Bloomberg new energy outlook 2017 report](#)), while less than 10% has been invested in nuclear globally,” Roth-Deblon notes.

According to the Bloomberg report, 10.2 trillion USD is expected to be invested in new power generation capacity worldwide to 2040. Of this, it is anticipated that 72% will go to renewables. The report also states that wind and solar will account for 48% of installed capacity and 34% of electricity generation worldwide by 2040.



“Money managers look at risk and return – renewable energy ticks both these boxes and hybrid solutions offer added security.”

DeGrussa mine, Australia

Roth-Deblon’s insights come from his global experience developing renewable energy projects in many countries around the globe. This includes the world’s largest hybrid project for a copper and gold mine in Western Australia.

In 2016, juwi completed this off-grid solar hybrid project at the DeGrussa mine in the Australian Outback, 900 km north of Perth. The system is comprised of a 10.6MW solar PV array on trackers that follow the sun with a 6 MW battery that are fully integrated with an existing 23MW diesel-fired power station.

The hybrid power plant now saves around 450,000 litres of diesel each month, which translates to around 20% saving in fuel consumption, and 12,000 tonnes reduction in carbon emissions per year.

Power system stability is of paramount importance at mining operations and the electrical superintendent of DeGrussa, Peter Gordon, confirms that, “The hybrid system is running smoothly, delivers substantial diesel savings and the power quality and reliability are as good or better than before.”

juwi’s team has substantial experience in power systems for mines and is able to provide reliable, cost effective and customized solutions for mines in Africa. For instance, juwi has developed and tested a new application at DeGrussa – the juwi hybrid SCADA – which provides full visibility of all generation assets in high resolution. Mine managers and power station owners are now able to analyse the complete power system and improve their operations with much greater precision than was possible before.

Lower costs improve feasibility

As costs come down for renewable and storage, hybrids become more and more compelling. “The capital cost of hybrid systems has almost halved since DeGrussa was conceived four years ago. Lower costs mean lower power price and enable shorter-term power purchase agreements (PPAs). This also enables mines to consider solar or wind even if the life of mine is as short as five years,” says Roth-Deblon.



Roth-Deblon notes that challenges now mostly come from legislation rather than from renewable energy pricing. Regulation in various places either attempts to protect monopolized power generation or has not kept up with the rapid technological advancements. “Our team in South Africa, for example, sees significant potential for projects behind the meter, but a generation license is needed, which is very difficult to obtain at the moment. On the other hand, in the United States, some utilities are working with developers and miners to facilitate arrangements that benefit all parties. So, creativity in the commercial structure and technical details can go a long way.”

juwi's mission is therefore to translate hybrid options into fully integrated and secure power solutions that are compliant with mining requirements and standards.. That is why juwi provides mining executives and operational experts with assistance and various options for their journey towards solar and wind powered operations.

juwi is hosting a Hybrid Power Webinar in February 2018. The session which is open to all interested parties, will discuss the technology, applications and feasibility and answer participant questions. For more information or to book visit: <http://www.juwi.co.za/solar/hybrid-off-grid/> or email: hybrid@juwi.co.za.

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About the juwi Group and juwi Renewable Energies (Pty) Ltd:

juwi, one of the leading global companies in the field of renewable energy, celebrates its 22nd anniversary in 2018. As an experienced renewable energy pioneer with a strong regional presence, juwi offers project development and EPC services with related offerings for the transition to greater utilisation of sustainable energy globally. Company activities focus on solar photovoltaic (PV) and wind projects, and ongoing renewable energy power plant operations & maintenance activities.

The juwi Group was established in 1996 in Rhineland-Palatinate, Germany. Since the end of 2014, Mannheim-based utility, MVV Energie AG, has been partner and majority shareholder (63%) of the juwi Group. juwi has about 1,000 employees located in offices on all continents and has a growing pipeline of project activities across the globe. Working together with passion to implement renewable energy economically and reliably is what drives us.



To date juwi has completed wind projects totalling approximately 950 wind turbines with a total capacity of 2,100 megaWatts (MW) at more than 150 sites. In the solar PV segment, juwi has designed and constructed more than 1,600 projects with a total capacity of around 1,600 MW. Combined, these energy systems produce more than 7.7 billion kiloWatt hours (kWh) of clean energy per year, equalling the annual demand of around 2.5 million South African households. In the process, juwi has initiated an investment volume of around 8.6 billion Euros to realize these projects.

juwi Renewable Energies based in Cape Town, South Africa ("juwi South Africa") participates in the Renewable Energy IPP (REIPP) Procurement Programme initiated by the South African government for utility-scale renewable energy power generation. To date juwi South Africa has built five solar plants totalling 121MW under the REIPP Procurement Programme. juwi South Africa also develops and bids wind projects under the Programme, and is also active in the government's Small IPP Programme. In addition to this, juwi South Africa has realised large solar PV projects that deliver cost competitive electricity to a range of commercial and industrial end-users.

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