

INVESTING IN GROUND MOUNT PV TO POWER MINING FACILITIES: AN ANGLO AMERICAN CASE STUDY

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Editor's Note: This case study will be featured at Energy and Mines' upcoming Renewables and Mining Summit on June 23-24 at the Hilton Sandton in Johannesburg with a joint presentation from Solar Africa and Anglo American. For details see www.energyandmines.com/africa/

Timing is everything, a lesson driven home to SolarPower Africa when it made a cold call to Anglo American in early 2012 and successfully landed a meeting. From that single phone call, SolarPower Africa was invited to make a presentation to all of the company's various heads of energy at its different mines, says the company's CEO Darren Hollander.



DARREN HOLLANDER -
CEO, SOLARPOWER AFRICA

At roughly the time when SolarPower Africa rung up Anglo American, the mining giant was exploring different forms of renewable energy for its across-the-board projects. After Anglo American verified that SolarPower Africa was a reliable provider of photovoltaic power, it was asked to go to one of Anglo American's South African coal mines and analyze its electricity accounts. After this analysis, which took place in the summer of 2012, the company decided to investigate ways to add extra power to its internal grid.

Headquartered in London and listed on both the London and Johannesburg stock exchanges, Anglo American is one of the world's largest mining companies. The company, which posted \$2.7 billion in earnings for 2013, is the world's fourth largest iron ore producer. And in South Africa, Anglo American not only mines iron ore but it also mines thermal coal, platinum, and diamonds.

BREAKING INTO A NEW MARKET

"In South Africa, solar power is relatively new," explains Hollander. "People are concerned when it comes to solar because they haven't seen many projects completed." He points out that while mining companies are intrigued by renewable energy, they're jittery about "the unexpected."

Adding to the difficulty of convincing mines to try solar is the fact that a few early projects by SolarPower Africa's competitors haven't worked out as planned. "Some companies overpromised on performance and then under-delivered," says Hollander. He notes that well-publicized problems have "given solar a bad name in South Africa."

To allay the fears of mining companies, SolarPower Africa offers its clients performance guarantees. Typically, it guarantees a minimum of 80% of the annual yield that the system is supposed to produce. Hollander points out that this type of guarantee is "the industry norm," and guaranteeing 100% isn't feasible given that in some years, the weather is terrible and the sun rarely shines. That said, Hollander points out that to date, his company's PV plants have uniformly over-performed on yield.

Hollander notes that this mining leader had carefully studied results from overseas plants and had a true grasp of what solar power can accomplish. He is convinced that Anglo American will benefit by being viewed as a leader when it comes to "paving the way for other mining companies in South Africa."

When Anglo American decided to embrace solar energy, it wasn't hoping to solve a specific problem. Its main goal was to grapple with the general challenge that all mines are facing: the industry is extremely energy intensive and the cost of energy in South Africa continues to rise.

GETTING SOLAR UP AND RUNNING

Anglo American decided to hire SolarPower Africa to build a solar PV plant that would generate 241.92 kilowatts of energy at peak. The plant uses polycrystalline solar modules and produces 413,000 kilowatt hours of energy each year.

SolarPower Africa purchased only top-tier solar panels for Anglo American. Although it used its own technology when building the solar plant, it did have Schletter, a German company, build the mounting structures that SolarPower Africa designed. In the end, SolarPower Africa used just under 1,000 285-watt solar panels made by China-based E. T. Solar.

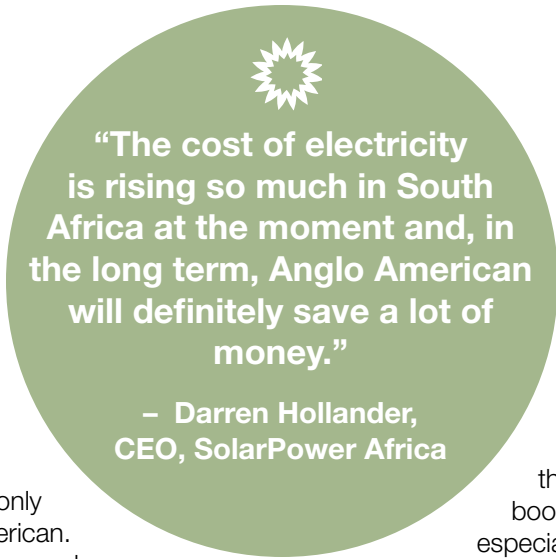
Building and implementing the PV plant, which is currently in operation, went very smoothly, recalls Hollander. The greatest challenges for getting Anglo American’s solar plant up and running were administrative. Hollander notes that the South African bureaucracy for the mining industry is extremely cumbersome. In addition, South African mines face a set of hurdles when it comes to meeting labor requirements. Before a mining worker is allowed to set foot on site, he or she must complete days of induction courses, as well as a two-day, mine-specific medical exam that is held at a local hospital.

“Mines are different from the normal commercial environment,” says Hollander. “We do whatever it takes to ensure the safety of our workers. You can never be too careful.”

REAPING THE BENEFITS

Solar energy provides numerous benefits, the greatest of which is adding internal energy to the grid in an environment of skyrocketing energy prices. “The cost of electricity is rising so much in South Africa at the moment,” says Hollander. “In the long term, Anglo American will definitely save a lot of money.”

Another key benefit is the boost to reputation. Hollander points out that mining companies are frequently faulted for damaging the environment. Using solar energy--especially before one’s competitors have done the same- gives mines a chance to burnish their public image. “This creates a lot of publicity and has got a lot of people talking,” says Hollander. “The publicity and the going-green image for this mine are big.”



By using solar power, Anglo American offsets 290,000 kilograms of CO2 each year. Hollander points out that this is the equivalent of planting 81,938 trees. “Anglo American,” he says, “is a leader when it comes to putting back into the environment what they take out.”

Over time, Hollander anticipates that solar energy could prove a real boon for the African mining market, especially because the entire continent tends to get plenty of sunlight. He notes that

“a lot of mines are running off diesel generators and diesel is very expensive.” In addition, mines are usually located in rural areas, and so bringing in diesel fuel and then properly maintaining diesel generators are costly and difficult propositions.

“Solar can help reduce the load of diesel generators and save millions and millions of dollars in fuel,” concludes Hollander. “Africa is so rich in resources and there are mines all over. When it comes to mining I think there’s opportunity in every single African country.”



ANGLO AMERICAN

ANGLO AMERICAN'S PV PROJECT IN NUMBERS

Solar Plant Specifications:

- 241.92 KWp Solar PV Plant
- 864 x 280W Polycrystalline Solar Modules
- 8 x 27.6KW Grid-Tied String Inverters
- Expected Production Data: 413 MWh/year

Solar Plant Statistics:

- Amount of free electricity produced per year: 413,000 KWh
- Amount of CO2 offset per year: 290,000 Kilograms
- Equivalent to planting 81,938 trees
- Money saved by investing in solar: R 20 358 668
- Creating a sustainable environment = priceless

(The above figures are based on variable inputs over a 25-year period and are subject to variations. Source: SolarPower Africa)