

BENEATH BOTSWANA



Discovery Metals takes giant leap

KS Energy scoops power station tender

DiamonEx readies for first sale

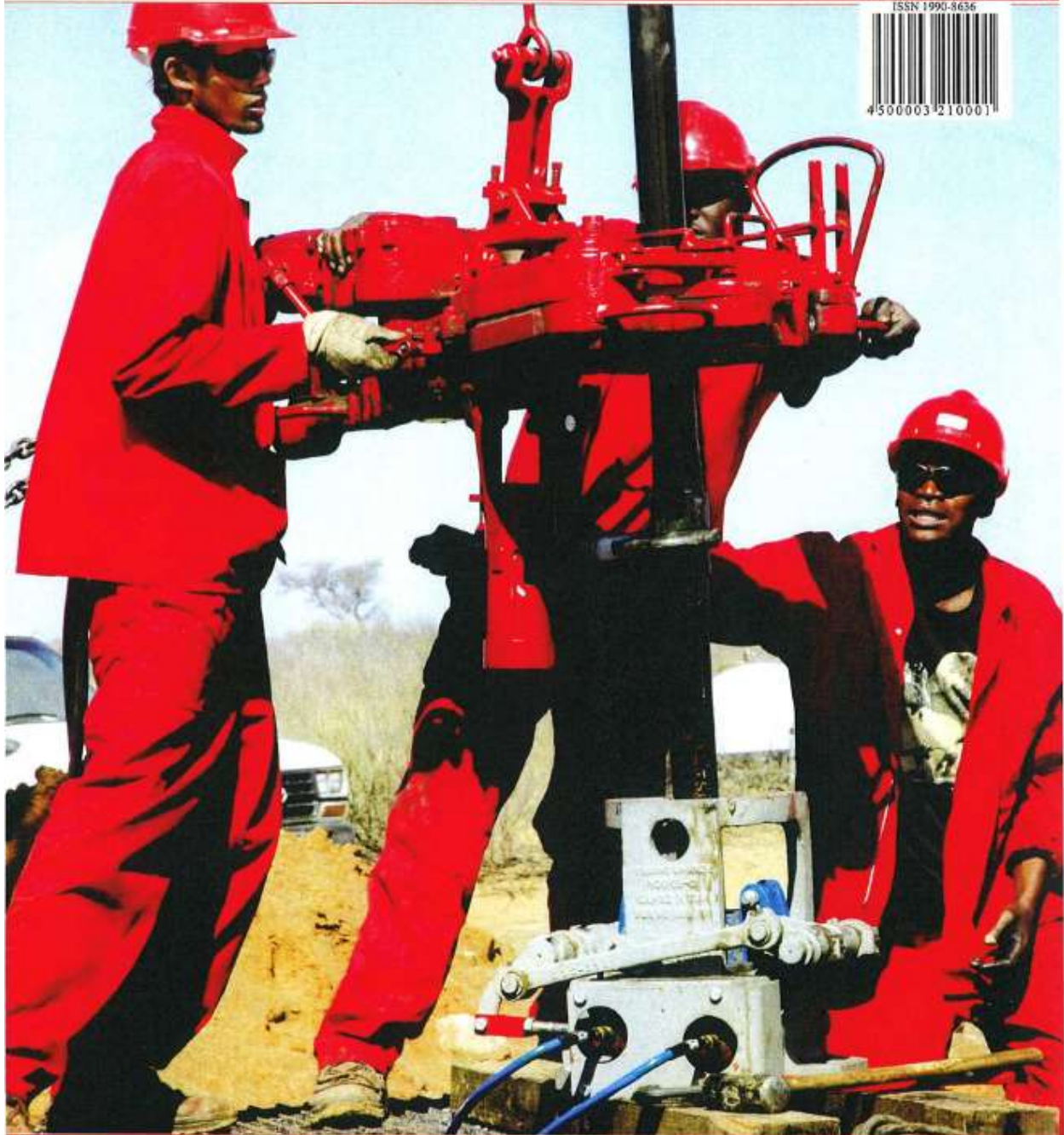
Crunch time for AfDiamonds, De Beers

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Botswana's Premier Mining Journal Incorporating Quarrying And Plant Hire Review

Karoo Sustainable Energy scoops multi-million Pula tender

Botswana-based energy developer, KS Energy (pty) Limited (t/a Karoo Sustainable Energy or "KSE"), has beaten a field of 33 bidders for the Botswana Power Corporation (BPC)'s 250 megawatt Independent Power Producer (IPP) station. The IPP station is part of the Corporation's short-term interventions to stave off the impact of the current power crisis in Botswana. Earlier in the year, the BPC had invited Expressions of Interest for the construction of a power plant by an IPP, which power would then be sold back to the BPC. According to information from the BPC, some of the proposals received ranged from coal-powered stations to solar powered.

Subject to conclusion of the Power Purchase Agreement negotiations with BPC and achieving financial closure, KSE will build, own and operate the associated gas production and processing and the integrated gas turbine power plant facilities for the next 15 to 20 years. The KSE project is not only going to be the largest power plant in the world to date solely based on CBM gas but also, as a well-mouth integrated project, the KSE IPP will be a first of its kind in many ways. Given the CBM gas development potential in Karoo and the power off-take demand in the Sub-Saharan Africa, a gradual expansion of the facility to 1 GW capacity within the next five years is expected.

"We hope we will be able to source viable financing to make this exciting dream a reality for Botswana people and all the stake holders," company officials said. KS Energy's partners in the milestone development are Botswana's Kalahari Energy "KE", Tuten and Petron, all of them experienced CBM developers in their own right. KS Energy's winning bid is based on Coal Bed Methane (CBM), which KE has been developing for several years now in Eastern Botswana.

KE Chairman, Jim Best, explained that from 2006, the potential for CBM was realised on the eastern side of the Kalahari Karoo Basin. He said KE began negotiations with funding and project partners, out of the realization that the company could not go it alone. "We started to look for partners because we did not have the resources to do it ourselves. We have worked hard and with the right partners over the years," he said. Now the company controls a gas field in Mmashoro, between Serowe and Orapa.

Breaking the latest news, Steve Martin of Tuten, a vastly experienced power projects developer, said the deal with BPC was a milestone achievement for KS Energy. "We have been

waiting for this for some time. We were one of 33 applicants who pre-qualified for this and we have been awarded this 250 MW IPP from the BPC. Ours was the only bid from a completely Botswana-based IPP. "In addition, our bid represents an environmentally friendly alternative which will produce an enormous amount of water, gas and power," he said.

Under the deal, KS Energy will supply the BPC with power over an initial period of 15 years. Martin said at the Mmashoro gas fields, KS Energy will preferably install state-of-the-art equipment sourced from General Electric to develop the power station. Already, an agreement for the Engineering, Procurement and Construction contract has been signed with Group 5 for the power station.



A typical beam pump used for CBM. Today these pumps are being replaced with smaller units with less impact on the landscape.

Commercial operations are expected to commence in 2010. "By the end of the 15 years, we will have finished more than 300 CBM wells. The plan is to build a 1 000 megawatt power station in Botswana. We have gas reserves that can support that," he said.

Martin explained that KS Energy already has all the equipment it needs for the 250 MW power station. He said the company had "done a good job" of retaining third party expertise towards the development of the CBM project. "This will help other companies that will come into the CBM industry in Botswana," he said. Experts believe the KS Energy/BPC deal will kick-start the CBM industry in Botswana. With the contract signing on July 25, 2008, KS Energy has moved from "theorizing" about the possibility of CBM, to actualizing it. The deal is also expected to boost KE's drive to develop a viable CBM industry. Martin said: "The project with the BPC is the key to commercialising the gas sector. Doing a project like this in Botswana and having partners like Kalahari Energy, Tuten and Petron is beyond the imagination."

Already, it is understood other players in the mining industry are making enquiries as to how KS Energy can assist them with their power needs, through CBM. It is understood one of the interested parties is DiamonEx, which has started production at its Lerala site – the first diamond sale is set for August. DiamonEx, which is targeting 350 000 carats per year from Lerala, is heavily dependent on diesel which accounts for 50 percent of its operating costs. The Lerala Mine is currently using 400 000 litres of diesel per month, providing 4.2 megawatts of power. DiamonEx Managing Director,



An aerial view of one of KSE's drilling sites.



The impressive Atlas Copco KQ200 drilling rig is capable of drilling to depths of 1000m.

Dan O'Neill says the company is seriously considering converting its diesel generators to gas, which would require CBM most likely from Kalahari Energy.

It is not in doubt that Kalahari Energy is a sparkling find for

Sand is used in the process which fractures the coal seams allowing the gas to escape.



any investor. Martin says the portion of the basin held by Kalahari Energy "is phenomenal," and predicts a run on gas exploration. "This is especially so as the price of oil keeps going up. CBM presents a viable alternative fuel," he believes. Kalahari Energy and its partners plan to drill throughout the life of the project. As explained by Kalahari Energy Managing Director, Julian Scales in a previous interview: "The beauty of coalbed methane wells lies in that they present a low risk, incremental investment and gas wells can be completed to suit demand. Hence, the number of holes for a (say) 1000 MW power station would be twice that required for a 500MW power station. Wells could then be brought on line as the power station (or other gas consumer) demand comes on line - thereby enabling KE to fund itself once initial production has started."

While it is evident that Kalahari Energy's gasfields will boost Botswana's power independence, CBM from the company also has a wide range of alternative uses. Coal Bed Methane can be applied in different areas and in different forms, with the most common ones being:

- Compressed natural gas (CNG). This can be used as a



Care is taken to prevent the well from in place so as to prevent the loss of aquifers and ensure the longevity of the well.

substitute for petrol, diesel and propane fuel.

- Liquefied Natural Gas (LNG) is natural gas converted to liquid form for ease of storage or transport as the liquid form takes up less volume than gas. Neither LNG, nor its vapor can explode in an unconfined environment making it a safe product.
- Dimethyl Ether (DME) is a clean and economical alternative fuel whose properties are similar to those of Liquefied Petroleum Gas (LPG) and it can be used for similar applications (cooking, heating, industrial processes, vehicle fuel).

CBM products can be used in different market segments ranging from the *Automotive Industry* i.e. natural gas vehicles that are now increasingly popular in North and South America, *Backup power generation* or supply of power when no electricity supply is available (remote areas), *Agriculture* (greenhouse heating, crop drying, poultry farms, waste incineration, distillation), *Heating* (ceramics, metal & food processing, textiles, printing), *Industrial cooking* (fast food outlets, hotels) and *Domestic use* (cooking, heating, hot water etc).



Julian Scales demonstrates the firing of the CBM from the production site.

