

What Lies Beneath

An Edinburgh University spin-out is poised to commercialize hydrocarbon mapping technology that could, it claimed, save the oil industry billions of dollars a year. The company, MTEM, has already received £7.4 million in venture capital funding to develop a system that can pinpoint fresh sources of oil and extend the life of existing oil fields with unprecedented speed and accuracy.

Oil companies typically use seismic reflection surveys to locate potential reservoirs of oil and gas. This technique maps subsurface formations by generating acoustic pulses and measuring the time it takes them to return to the surface after reflection from geological formations with different physical properties.

However, these surveys are generally poor at determining the nature of the fluids in the rock pores, and expensive drilling is needed to determine whether the reservoirs contain hydrocarbons.

MTEM founder and geophysicist, Prof Anton Ziolkowski, explained that his company's multi-transient electromagnetic technology is based on a method that can determine whether deep underground reservoirs contain hydrocarbons before drilling. The technology works by sending controlled pulses of electric current between electrodes in the soil and using a measurement of the resistance encountered to determine the properties of the ground.

For instance, because hydrocarbons are more resistive than brine, which is frequently contained within porous subsurface rocks, MTEM's method is able to distinguish between



Oil companies typically use seismic reflection surveys to locate potential reservoirs of oil and gas.

the two.

While the company is not the only one to use subsurface resistivity, Ziolkowski claimed that, Ziolkowski has considerable advantages over marine systems developed by firms such as the UK's Offshore Hydrocarbon Mapping, Norway's EMGS and the US's AOA Geophysics.

These methods use individual receivers dropped on to the sea bed to acquire the data generated by a towed source operating at a continuous frequency of 1Hz. Ziolkowski claimed that it can take up to a week to collect and process the data, and therefore a week to discover whether or not the survey has been a success.

In contrast, MTEM's process provides real-time data, and will enable oil companies to quickly discover whether oil or gas is present, Ziolkowski claimed. The reason for this, he said, is that instead of a continuous signal, his system puts in pulses of current with a range of different frequencies.

"Every time you put a pulse of current in you get a response; we put in many, many pulses in each place and measure the response for each one. By adding them up you increase the signal-to-noise ratio," he said.

While the marine system has not yet been built and is

unlikely to appear for a couple of years, the company's land-based system, which recently underwent successful proof-of-concept tests in the south of France, is expected to enter production later this year.

And with much more oil on land than off-shore, it is perhaps the land-based system that has the greatest commercial potential, claimed Ziolkowski.

The real 'Achilles heel' of competitive systems, he added, is that their application is limited to deep water. Because they operate at a continuous frequency, when used out of deep water they also generate a signal that travels through the air.

"Not only do they measure what's going through the ground, but they also measure, at exactly the same frequency, what's going through the air, and this contaminates the signal that's going through the ground," he said.

Ziolkowski declined to reveal the identity of likely customers, although there appears to be plenty of interest. "All of the major oil companies are interested in our technology," he claimed.

This optimism was echoed by David Sneddon, director of chief investor Scottish Equity Partners, who claimed that the potential market for the technology is around £500m a year.

Shell Reopens Oil Stations in Nigeria

The Anglo-Dutch energy group Shell has reopened all its oil pumping stations shut down last month because of community unrest in southern Nigeria, a spokesman has said.

"Ekulama I is up," the spokesman said on Friday, referring to the last of several flow-stations to reopen after angry villagers from the Kula community forced Shell to shut down the facilities since 5 December.

The shut-down caused a production loss of some 130,000 barrels per day of crude oil exports from the Bonny

export terminal. Shell is Nigeria's biggest operator, accounting for almost half of the west African country's daily exports of 2.5 million barrels.

The Anglo-Dutch oil giant has in the past week gradually reopened three other plants—Belema, Santa Barbara and Ekulama II—which led to resumption of 65,000 barrels per day out of 130,000 barrels from the area.

The spokesman could not however say if the reopening of the Ekulama I plant on Friday would enable Shell to reach the peak production of some

130,000 barrels per day from the protest-hit stations, aljazeera.net reported.

"I will advise on production rates later in the afternoon," he said.

Unrest Community unrest had forced Shell to shut down the stations accounting for a daily output of some 130,000 barrels since 5 December, 2004, when angry villagers from Kula briefly occupied them.

The shut-down forced Shell to warn clients that it would not be able to meet export contracts from its Bonny terminal until early next month.

\$1.4b Gas Contract for Sempra

Sempra LNG, a unit of Sempra Energy, has been awarded a 15-year natural gas supply contract by Mexico's state-owned electric utility, Comision Federal de Electricidad (CFE). The contract is estimated at \$1.4 billion over its life and supports the CFE's future energy requirements in northern Baja California, including the Presidente Juarez power plant in Rosarito.

Beginning in 2008 and continuing through 2022, the agreement provides CFE with an average of about 130 million cubic feet per day (MMcf/d) of natural gas. Sempra anticipates fulfilling the contract using natural gas processed at its Energia Costa Azul liquefied natural gas (LNG) receipt terminal.

Energia Costa Azul is under development about 14 miles north of

Ensenada, Baja California, and when it is completed in 2008, will be the first LNG import facility on North America's West Coast capable of processing one billion cubic feet of gas per day, e4engineering.com reported.

The long-term CFE sales contract will consume more than one quarter of the 500 MMcf/d Sempra is procuring from

Germany installed more solar power plants last year than any other country worldwide mainly due to its renewable energy supporting schemes, solar industry body UVS said.

Despite strong growth, the share of solar power in the country's energy production remained at less than one percent, UVS managing director, Carsten Koernig told Reuters.

Germany's green energy law, which guarantees above-market rates for solar power fed into the electricity network, triggered an around 300 megawatt (MW) increase

in installed capacity to 700 MW in 2004, he said. This is similar to the size of a small nuclear or coal-fired power station.

Around 90 percent of new plants were installed on rooftops of private households and agricultural operations, said Koernig.

Japan and the US, the two other top solar markets, showed gains of 280 MW and 90 MW, respectively. But Japan was still the world's leading market with 1,130 MW total installed capacity, followed by Germany and the US with 365 MW, he added.

"Germany is still trail-



Around 90 percent of new plants were installed on rooftops of private households and agricultural operations.

ing behind Japan, but I am optimistic that we will get ahead in 2006," Koernig in an interview.

"But besides domestic growth, it is important for

German companies to position themselves in the export markets such as Spain, Italy and Greece in Europe as well as Asia and China."

He said he expected sales and installed capacity to grow by a double-digit percentage figure this year.

German companies to position themselves in the export markets such as Spain, Italy and Greece in Europe as well as Asia and China."

US Prepares for Hybrid Onslaught

Sales of hybrid cars in the US are set to double in 2005, research suggests.

Research group JD Power estimates sales will hit 200,000 in 2005, despite higher prices and customer scepticism.

Carmakers are starting to build hybrid sports utility vehicles (SUVs), the four-wheel-drive vehicles which now dominate the US car market.

Hybrids cut both petrol consumption and emissions by combining a petrol engine with an electric motor constantly kept charged by extra engine power.

Several jurisdictions, notably the state of California, mandate low emissions for new cars.

Equally, the rise in oil prices over the past year has sparked hopes that consumers may be tempted by potential savings of a few hundred dollars a year on fuel, bbc.co.uk reported.

The Race Is on At the Detroit Motor Show, a range of manufacturers are prominently displaying their hybrid cre-

dentals. Toyota has led the market to date with the Prius, popularized by a number of celebrities keen to burnish their "green" credentials.

In April it will launch a hybrid version of its luxury Lexus SUV, with a Highlander SUV due later in the year.

Honda has three hybrids on the market, and between them the two Japanese carmakers sold more than 80,000 units last year.

Ford, which has sold 4,000 of its first hybrid since its launch in August, is bringing a hybrid SUV—the Mariner—to market a year ahead of schedule, with plans for three more models by 2008.

GM has a hybrid pickup on the market and is showing two concept SUVs in Detroit. Even sports car maker Porsche may join the race, although it insists it is still considering whether to hybridise its Cayenne SUV.

Others remain more skeptical. Nissan has bought

Toyota's hybrid technology, but plans to bring out its first model only in 2006. "We want to make sure we are not concentrating on one technology," Nissan chief executive Carlos Ghosn said.

"We will not be surprised by any acceleration or

deceleration in the hybrid market."

Volkswagen, meanwhile, says it will focus on clean-burning diesel engines instead.

And some watchers point out that the price tag on a hybrid - upwards of \$3,000 above that of an

Sindh to Generate 13,000MW From Coal-Fired Plants

The Sindh government has embarked upon a plan to generate 13,000 MWs (megawatts) of electricity from coal-fired power plants with a view to providing people cheap electricity.

The Minister for Mines and Mineral Development, Irfaanullah Marwat, disclosed this on Wednesday at a press conference before inaugurating a three-day workshop titled "Bankable Feasibility Study of Thar Coal Mining". REW Power International of Germany has conducted the initial study of the project at a cost of 2.9 million Euros.

The Minister said that the Thar lignite is suitable as a fuel for among other things, power generation. Investors have evinced tremendous interest in coal mining and coal-fired power generation in Sindh. Marwat said that the Chinese Prime Minister will perform the ground-breaking ceremony of a power plant to be constructed in Thar by the Chinese Shenhua Group in February. He said that the work on the project would start in September and would be completed within 48 months, jang.com reported.

The study was jointly sponsored by the federal Ministry of Petroleum and Natural Resources, and the Mines and Mineral Development Department, Sindh, and funded in the ratio of



World electricity demand is projected to double between 2000 and 2030.

80:20 respectively.

He said world electricity demand is projected to double between 2000 and 2030, growing at an annual rate of 2.4 percent. The strongest growth will be in developing countries, where demand will climb by over 4 percent a year, tripling by 2030. Coal is a major fuel used for generating electricity worldwide. There are countries heavily dependent on coal for

electricity, jang.com reported.

He said the USA, UK, Australia, Germany, China, India and South Africa have switched their electricity generation over to coal. He said the study/exploration target covered about 40 square kilometers. Based on drilling of 30 bore holes (26 core drilled in the lignite formation and four open holes drilled), the lignite reserves delineated in this area are estimated at 1003.320 million tonnes, which are sufficient to meet the requirements of 1000 MW mine mouth power plant for the life of the project.

The overall vertical stripping ratio is around 6.5:1 whereas, there are enough big areas for possible future mining with stripping ratio of around less than 5:1 to 5.5:1. The cumulative lignite thickness in the average is about 27 meters and depth to top of the first seam is about 150 meters.

The minister said that the 11 KV feeder emanating from the Islamkot Grid Station to the coal field/project site has been

Firms operating in the German photovoltaic industry include RWE Schott Solar, Shell Solar and Solarworld, which recently joined Germany's TecDAX index after its share price grew more than sevenfold last year.

Total sales in the German solar power industry grew by around 60 percent to more than 2 billion euros (\$2.62 billion) last year compared to the year before, said Koernig.

He said he expected sales and installed capacity to grow by a double-digit percentage figure this year.

equivalent normal-engine car, and suspicion of the technology - may still cool its attraction.

"The average consumers aren't willing to pay that premium for a car they won't drive more than six years," said Anthony Pratt from JD Power.

completed with the installation of 200 transformers and energized. Construction of 500 KV transmission line for power is also being processed by the WAPDA.

He said the construction of an airstrip to make the area accessible towards development initiatives was also on the cards. He said optical fiber cable laying/installation of system between Mirpurkhas-Mithi exchanges completed. Joint testing with the optical system had also been completed, he added.

The Minister said that the resettlement of the inhabitants of the villages located within the coal-field vicinity was also under consideration. Town Planning of Islamkot (nearest place to the coal field) is being processed with Town Planning Department of Sindh.

Touching on the issue of environmental problems, he said the scheme for evaluation of emissions of coal burning in the power station and environmental impact of disposal of coal ash and remedial steps to protect environment from pollution in other words to contain environmental degradation has also been sponsored.

About the water resources, the scheme for assessment of water resources of Thar coal-field envisaged quantitative and qualitative analysis of underground water, its recharge ability, sustainability, etc is also under consideration.