



Oil Price Breakdown Unlikely

Oil rose back above \$127 a barrel on May 19, after OPEC's president said the producer group will not call an early meeting and even at its September gathering was unlikely to boost supply as the world had enough oil.

According to Reuters, US light crude for June delivery was up \$1.16 at \$127.45 a barrel by 8:24 a.m. EDT.

It closed at \$126.29 a barrel on May 16 after touching a record peak of \$127.82 earlier that day after publication of a bullish price forecast from investment bank Goldman Sachs.

London Brent crude was up 67 cents at \$125.66 a barrel. Chakib Khelil, president of the Organization of the Petroleum Exporting Countries, said oil markets were well supplied and blamed high prices on speculation, a weak dollar and geopolitical problems.

"As for OPEC, indications show that there is no shortage (of supply)," he said in Algiers.

Khelil said OPEC would not meet before its next scheduled gathering in September and that this meeting was unlikely to result in an output increase.

"All in all, there is little indication that we are on the verge of a major price breakdown," said Edward Meir, analyst at broker MF Global.

He said a production increase from Saudi Arabia, revealed on May 16, was only "token" in



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terms of extra production.

Saudi Arabia has boosted oil output by 300,000 barrels per day to meet demand and compensate for other producers' lower output, Saudi Oil Minister Ali al-Naimi said.

US President George W. Bush said on Saturday he was pleased with the Saudi move, but it was not enough to solve problems in the top energy consumer the United States.

But comments OPEC oil ministers on Monday all highlighted that

global oil supplies are enough to cope with demand.

Qatar oil minister Abdullah al-Attiyah also said there was no need to boost oil supplies to global markets. "The market doesn't need more oil," he said, pointing to a cut in forecast oil demand growth by the International Energy Agency.

"There is more oil in the market than consumers want," said Iraqi oil minister Hussain al-Shahristani.

Iraq aims to boost total oil exports to 2.3 million barrels per day from 2.0

million bpd by the end of the year, he said.

Oil prices have risen six-fold since 2002 and doubled since last year as rising demand from China and other developing nations stretched spare production capacity, adding pressure on the US economy already hard hit by a housing slump.

Diesel has taken centre stage in the world energy crunch as tight power supplies in China, South Africa, Chile, Argentina and parts of the Middle East triggered a boom in demand for middle dis-

tillates for electric generators, lending support to oil prices.

Chinese demand for imported diesel is expected to rise even further in June after last week's earthquake disrupted gas supplies to major cities and as companies built stockpiles ahead of the summer Olympics.

Broker Lehman Brothers warned that record-breaking commodities prices that were drawing in hundreds of billions of dollars in new investments threaten to create an asset bubble.

In the News

Powering Villages From Rice Husks

Two students from the University of Virginia's Darden School of Business recently started a business that supplies electricity to rural villages in India by gasifying the rice husks that are a waste product of rice milling.

So far, two rice husk generators are providing power to about 10,000 rural Indians, but the business plan calls for a rapid expansion that will put the miniature power plants in hundreds of more villages within a few years, RenewableEnergyWorld reported.

Last week, the duo received \$50,000 and a big vote of confidence in their business plan when they won the Social Innovation Competition at the University of Texas. The Darden students, Charles 'Chip' Ransler and Manoj Sinha, were judged to have the most compelling new idea to change the world.

The University of Texas' RGK Center for Philanthropy and Community Service awarded the prize to their business, Husk Power Systems, which uses a proprietary technology to gasify rice husks and generate three valuable products: electricity, waste ash that can be sold as an ingredient for cement and a reduction in carbon emissions.

This technology provides off-grid power to rural Indian villages of 200 to 500 households. Using the husk-powered mini power plant, the team plans to offset close to 20 tons of carbon emissions per village, per year in India.

The competition's audience handed Husk Power Systems an additional \$1,000 in the vote for the People's Choice award. Selecting from a competitive field of exceptional ideas, the competition judges, which included University of Texas faculty, nonprofit directors, foundation grant makers and business leaders, chose three finalist teams.

The \$50,000 award was the latest in a string of accolades that Ransler and Sinha have received for their Husk Power plans. On April 7, they picked up a \$10,000 check for winning Darden's annual business plan competition. Also in April, they were selected as one of 10 finalist teams among 245 entries from 23 countries in the Global Social Venture Competition hosted by the University of California at Berkeley.

Husk Power was also a top-10 finalist at this year's Ignite Clean Energy competition at MIT, where Ransler and Sinha took a second place finish worth \$35,000, bringing their total winnings to almost \$100,000.

The idea for the rice husk generators was originally conceived by Sinha, who earned his engineering degree from the University of Massachusetts and holds 10 patents for work done at Intel, and Gyanesh Pandey, the third leader of Husk Power, who left an engineering career in Los Angeles to return to India and oversee the rice husk project on the ground there.

PGCC Petrochem Capacity To Treble

Already a global force to be reckoned with, the Middle East's chemical and petrochemical sector is on the brink of a new era of investment and expansion.

The PGCC already produces 30 of the most common intermediate petrochemical products, representing 7 percent of worldwide production. This is set to increase to 20 percent of global output by 2010, with Saudi Arabia accounting for almost half of that increase, Menafin reported.

The UAE is investing heavily in its petrochemical industry, and will see capacity increase threefold, opening up new opportunities in the downstream and end-use processing sector.

An estimated US\$40 billion in new investments is expected in the PGCC chemical and petrochemical sector, including non-oil products such as polymer resins, polystyrene and liquid industrial chemicals, by 2010.

According to Abdul Rehman Falaknaz, President of International Expo Consults (IEC), organizers of CHEM Middle East exhibition, this is just the start of a period of rapid growth for the region's chemicals sector.

"With petrochemical facilities in Europe and the US facing cutbacks due to increasingly high prices and shortage of feedstock, the Persian Gulf countries have emerged as the world's first choice for new facilities and best choice for investment in this industry," Falaknaz says.

The decision of where to locate a new complex is an important one for petrochemical companies. The major staging ground in recent years has been the Middle East, and there seems to be valid reason for international companies to locate facilities in this area.

"The continuing expansion and growth in the Middle East has resulted in a need for more sophisticated logistics and supply chain processes to distribute more than 40 million tons of petrochemicals and plastics to over 70 countries on a plant-to-customer basis," Falaknaz explains.

"For the next 10 years at least the Middle East will continue to have an edge over others. Beyond that, new technologies may change the way we produce polymers and petrochemicals. Economics will ultimately decide the future," he adds.

Fuel Cell Power Up 50%

MIT engineers have improved the power output of one type of fuel cell by more than 50 percent through technology that could help these environmentally friendly energy storage devices find a much broader market, particularly in portable electronics.

The new material key to the work is also considerably less expensive than its conventional industrial counterpart, among other advantages, Energy-daily said.

"Our goal is to replace traditional fuel-cell membranes with these cost-effective, highly tunable and better-performing materials," said Paula T. Hammond, Bayer Professor of Chemical Engineering and leader of the research team. She noted that the new material also has potential for use in other electrochemical systems such as batteries.

The work was reported in a recent issue of *Advanced Materials* by Hammond, Avni A. Argun and J. Nathan Ashcraft. Argun is a postdoctoral associate in chemical engineering; Ashcraft is a graduate student in the same department.

Like a battery, a fuel cell has three principal parts: two electrodes (a cathode and anode) separated by an electrolyte. Chemical reactions at the electrodes produce an electronic current that can be made to flow through an appliance connected to the battery or fuel cell.

The principal difference between the two? Fuel cells get their energy from an external source of hydrogen fuel, while conventional batteries draw from a finite source in a contained system.

The MIT team focused on direct methanol fuel cells (DMFCs), in which the methanol is directly used as the fuel and reforming of alcohol down to hydrogen is not required. Such a fuel cell is attractive because the only waste products are water and carbon dioxide (the latter produced in small quantities).

Also, because methanol is a liquid, it is easier to store and transport than hydrogen gas, and is safer (it won't explode). Methanol also has a high energy density—a little goes a long way, making it especially interesting for portable devices.

The DMFCs currently on the market, however, have limitations. For example, the material currently used for the electrolyte sandwiched between the electrodes is expensive. Even more important: that material, known as Nafion, is permeable to methanol, allowing some of the fuel to seep across the center of the fuel cell.

Among other disadvantages, this wastes fuel and lowers the efficiency of the cell—because the fuel isn't available for the reactions that generate electricity.

Using a relatively new technique known as layer-by-layer assembly, the MIT researchers created an alternative to Nafion.

"We were able to tune the structure of [our] film a few nanometers at a time," Hammond said, getting around some of the problems associated with other approaches. The result is a thin film that is two orders of magnitude less permeable to methanol but compares favorably to Nafion in proton conductivity.

To test their creation, the engineers coated a Nafion membrane with the new film and incorporated the whole into a direct methanol fuel cell. The result was an increase in power output of more than 50 percent.

The team is now exploring whether the new film could be used by itself, completely replacing Nafion. To that end, they have been generating thin films that stand alone, with a consistency much like plastic wrap.

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