

Energy Issues

IEP Newsletter

World Crude Oil Demand

By: IEP Staff Writer



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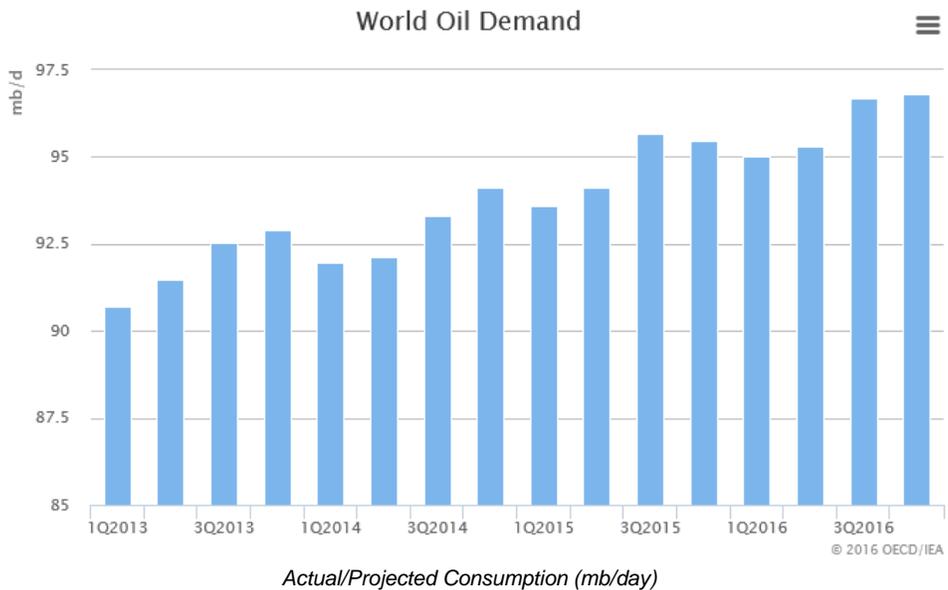
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“..the global supply of crude oil increased by 250,000 barrels per dayin April.



Founded in 2006, RedBird LED specializes in high efficacy fixtures. In 2012 they received the Illuminating Engineering Society IES Progress Award.

According to information published in the International Energy Agency’s (IEA) *World Market Report*, the global supply of crude oil increased by 250 thousand barrels per day (kb/day) to 96.2 million barrels/day (mb/day) in April. An unexpected drop in output by several countries, including Canada, Ghana, Kuwait and Nigeria, was more than offset by increased production from OPEC members.



The report also noted that the global demand for crude for the first quarter of 2016 was revised upward by 1.4 mb/day. This was attributed to increased requirements by China, India and Russia.

Of note was the projection that second quarter global refining capacity is expected to fall short of the growing demand.

As of May 23rd the WTI Nymex price for crude was approximately \$48US/barrel, up \$10.00US since mid-April.

Technology Update

By: IEP Staff Writer

High Bay LED Fixtures

Recently, it was announced that a collaboration between RedBird LED (Atlanta, GA) and Brisbane Materials Technology (Brisbane, Australia and Silicon Valley, USA) has merged RedBird’s Cardinal® High Bay fixtures line and Brisbane Materials’ antireflective coating (XeroCoat®) to produce a high bay fixture providing over 190 lumens per watt. – Source: LEDs Magazine

Enhanced Battery Technologies Holds Potential for Electric Vehicles

By: Thomas D. Mull, PE, PEM, CEM

Even though the fuel cost of operating an electric vehicle may be less, or comparable, with conventional gasoline-powered automobiles, issues such as insufficient range and higher initial cost have caused many consumers to select more conventionally-powered cars. There are, however, five (5) battery technologies that hold the potential to alleviate some of these concerns and improve sales.

Lithium-ion batteries (LIB)

Used in the majority of current vehicles, lithium-ion battery technology has received major investments from several automotive manufactures, assuring that it will remain a dominant force for the next several years.

Lithium-ion batteries have come under significant criticism due to well-publicized overheating issues. Therefore, manufacturers have invested a great deal of effort into improving their stability and integrating safety mechanisms to prevent fires.

Solid state batteries

These solid component batteries have several distinct advantages:

- Improved battery life
- Can operate at extended temperatures
- Minimal concern for electrolyte leaks (and fires if a flame-resistant electrolyte is employed)
- Less of a need for cooling mechanisms

Several major automotive manufacturers are interested and considering solid state batteries for their future models.

Source: Brookings – Tech Talk (09-15-2015)

Aluminum-ion batteries

Similar to lithium-ion batteries, aluminum-ion batteries use an aluminum anode. The potential benefits include:

- Increased safety at lower cost (as compared to LIBs)
- Decreased charging time
- The ability to flex (bend)

Researchers at the Oak Ridge National Laboratory in Tennessee and others are investigating the viability of this technology.

Lithium-sulfur batteries

In combination with solar panels, lithium-sulfur (Li/S) batteries were employed in the highly publicized three-day flight of the unmanned Zephyr-6.

These batteries utilize a lithium anode and sulfur-carbon cathode, providing theoretically higher energy density and a lower cost than Lithium-ion batteries. While improvements have been made, their primary disadvantage is low cyclability. NASA is investigating this technology for future space exploration. If proven viable, it could dramatically impact the electric vehicle market.

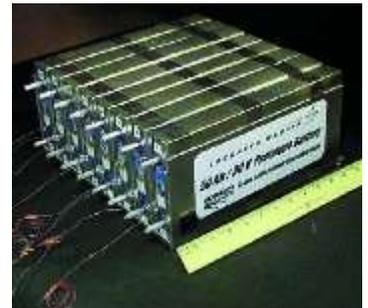
Metal-air batteries

Lithium, zinc, aluminum and sodium are the leading candidates for use as the pure metal anode in this battery technology. Using an ambient air cathode has the advantage of dramatically reducing weight.

Major hurdles this technology will have to overcome to be viable are capturing sufficient oxygen in the ambient air, the cyclability and short life.



Electric Vehicle
Courtesy of Pixabay.com



NASA prototype 75 watt-hour/kilogram (W-h/kg) Lithium-ion polymer battery. Newer Lithium-ion cells can produce up to 130 W-h/kg.

Source: Wikipedia

“Several major automotive manufacturers are interested and considering solid state batteries for their future models.”

Around the World

By: IEP Staff Writer

Venezuelan Energy Crisis –

Below are recent events impacting Venezuelan President Nicolás Maduro as he tries to address the country’s continuing energy concerns:

- In mid-April Schumberger (*the world’s largest provider of oilfield services*) scaled back operations in Venezuela due to insufficient payments.
- With no answer in sight to the country’s power problems, in late April the government announced plans to ration electricity.
- Given Petroleos de Venezuela’s monetary constraints and the reduction in private sector activities, the country’s oil production continues to slip.

Source: *The Economist*

China Leads in Electrical Usage –

The country consuming the most electrical energy in 2014 was China (5,583 tWh). The next largest consumer was the USA with 4,330 tWh (22% lower). Collectively, these two (2) countries consumed 57% more electrical energy than the next eight (8) industrialized countries combined.

Source: *Enerdata’s Global Energy Statistical Yearbook 2015*

Non-powered Dams Source of USA Additional Hydro Capacity –

The USA expects 1,083 megawatts (MW) of additional hydroelectric capacity will be installed before the end of 2019. Once thought to be a nearly fully-developed resource, 422 MW of this capacity will be from existing dams that do not currently have hydroelectric generating units. These dams are referred to as non-powered dams (NPDs).

The Cannelton Hydroelectric Project on the Ohio River in Kentucky (*below*) is expected to contribute 88 MW of generating capacity in 2016.



Picture Courtesy of Google Maps

Source: US Energy Information Administration



Venezuelan Flag

In 2014 China lead all other countries in the consumption of electricity, using nearly 29% more than the USA, the second largest consumer.



IEP is Relocating

By: IEP Staff Writer

Effective this summer IEP’s office will be relocating to another site south of Raleigh, North Carolina, USA. IEP has been at its current location (Garner, NC) since its formation in 2009. While the details have not been finalized, it is expected that the relocation will be completed by mid-September.

This transition will not impact communications by e-mail or telephone. However, the postal address will change and affect future mailings. Once the transition is completed and permanent mailing address established all members will be notified.

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