The Oil Drum
DISCUSSIONS ABOUT ENERGY AND OUR FUTURE

From ASPO-USA to MinExpo - a Study in Contrasts

Posted by Heading Out on September 30, 2008 - 10:15am
Topic: Supply/Production
Tags: big trucks, china, coal, coal-to-liquids, coalbed methane, india, original [list all tags]

It seems as though I have inhabited two different worlds in the past 24 hours. I went from the relatively small (500 folk) meeting in Sacramento where Peak Oil is viewed as imminent, to the halls of the Convention Center in Las Vegas, where the Quadrennial MinExpo is showcasing the latest machines to over 41,000 folk involved in the Mining Industry. It overflows that very large (600,000 sq. ft) building and extends out into the parking lot. Here, with an industry in considerable profit, the displays were large and much more optimistic than I have seen them in previous years. The two meetings were, however, joined by a common complaint that the human resource, the engineers and scientists needed by both communities, are in critically short supply.

Wandering the booths, with only one day to catch all the new and different products, I did come across a couple of items that are, I believe, worth a brief comment before I write a concluding post to wrap ASPO-USA 4. In that post, I will give some of my own interpretation of the conference.

One of the first things that I noted going into one of the halls was the display by Bucyrus, a company that I have long associated with making equipment that is used to mine coal and minerals at the surface. The display now includes a significant amount of equipment for underground mining, perhaps a recognition on their part of the changing future of the industry.

At the same time it was hard to miss the number of training simulators that dot the floor of the different halls. There is a lot of concern about training new employees and management, and the loss of the knowledge base of the industry, but in displays such as this, and the computer generated pictures of the ore in the deposit, there are some answers that technology can give to help.

However, more to the topic of this site I saw that Coal India Ltd (CIL) had a booth, and with all the emphasis that was placed on China at the ASPO Conference, it is perhaps useful to give some statistics, from their brochure, on the other country anticipating considerable increased coal use. India uses coal to meet around 55% of its industrial power needs, and has estimated reserves of 264 billion tons, with a proven reserve of 102 billion tons, 80 years at current rates of consumption. CIL mines 84% of India's coal feeding 72 of the 75 thermal power stations in the country (64,285 MW) with the 380 million tons they mine. Their sales brought in $9.69 billion of which $1 billion went in tax.

Because of increasing total demand, which is expected to rise to 730 million tons by 2011-2012,

CIL will increase its production to 520 million tons, rising to 664 million tons by 2016-2017. At present 84% of the coal is mined at the surface, though this may only last some 30 more years. They recognize that mining will thus have to focus more in the future on underground production. Indian coal needs to be cleaned to meet international standards at higher prices, and so the company will also invest in larger coal washeries. It has planted 69 million trees as part of land reclamation after mining. With 473 mines and 424,000 employees, CIL claims to be the largest coal producing company in the world.

Wandering around the rest of the exhibition, I discovered that EPA has a Coalbed Methane Outreach Program, which it uses to encourage mines to collect and use the methane that is found with the coal, rather than just venting it to atmosphere (the historic practice). Herewith are some facts from their material. In 2005, for example, some 388 million metric tons of CO2E of coal mine methane (CMM) was vented, with China leading at 34%, the US second at 13% and Russia, North Korea and Ukraine third at 7% each. This is about 6 - 10% of the methane generated by human activity. Methane is considered to be a much more powerful greenhouse gas than carbon dioxide (about 20 times by weight) in trapping heat. The Methane to Markets program is an international program to make use of this resource.

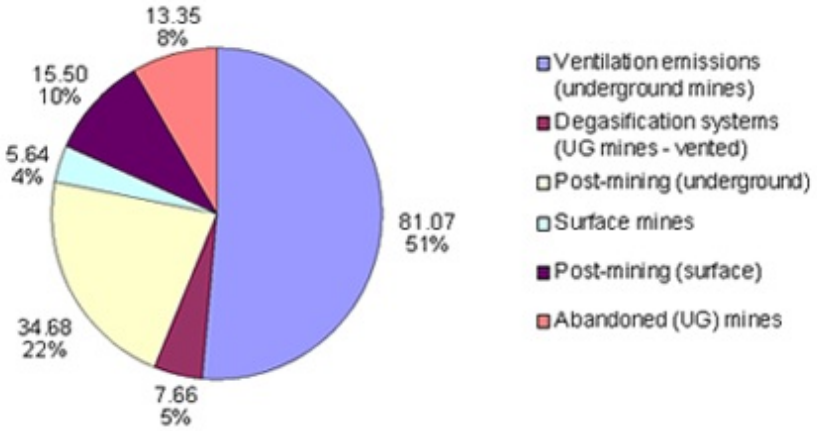
One illustrative example comes from the Jincheng Anthracite Mining Group in China, which started feeding methane to a 1.6 MW power plant in 1995, and a second plant, raising total power to 4 MW was added in 2002. A third unit bringing power produced up to 120 MW is planned for this year. A total of more than 166 million cu.m. of gas will then be used. It is worth noting that this is also the site of Chinese CTL plant. The methane capture program is part of an effort in China to clean up its air.

> China has set a goal of reducing the emissions of major pollutants by 10 percent during this five-year period. As part of the second Strategic Economic Dialogue, the United States and China have agreed to develop up to 15 large-scale coal mine methane capture and utilization projects in China in the next five years.

One of the problems with the conventional capture of CMM is that it is released from the coal as it is mined, and becomes dangerous as air concentration increases (since it can ignite and cause a coal mine explosion). To stop this from happening, mines increase the ventilation current to keep the concentrations at safe and low levels. This makes it difficult to capture and then use the gas. It also vents large quantities into the atmosphere. To most effectively capture the gas requires that the coal bed be drained of methane before mining occurs. This can be done by either drilling horizontal holes from within the mine forward into the coal, or by drilling down from the surface into undeveloped sections of the mine (or even before the mining has occurred). This is known as degasification.

Methane also migrates into the broken rock over the mining operation and can again build up concentrations over time. By putting pipes or boreholes into these areas, methane can still be recovered from the abandoned regions of a mine, or even after the mine has closed.

The greatest volume of methane is, however, still emitted as part of the ventilation of the mine at about 46% of the volume, with only 25% being captured and used. It is thus an area where there is a continued need for research and results that will allow total capture of the resource. Looking at the brochure, however it is from 2002, more recent values (from the website) show the US CMM Emissions for 2006 (in billions of cubic ft):



By the way, and just to prove to those I told at ASPO that I was going to kick some tires that were a whole lot bigger than I, this is a snapshot of one of the haul trucks in the main hall. There were several parked, one beside the other down the room. They may each hold up to 400 tons of rock.

There was one final booth that I wanted to comment on and this was the EcoShale booth, describing plans for mining the Utah oil shale. However because of the details of the process, and the complexity of my discussion of it, I will put that off until another post.

For now I am taking my weary feet and heading back home, and will there try and put together a summary report for the week, to appear soon.