



MADISON'S TIMBER PREVIEW

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An electricity power plant outside London, England, which recently converted from burning coal to using wood pellets, erupted into massive flames on February 27. It took 120 firefighters to control the blaze, which continued to burn for several days. On March 1, directors of the UK arm of German utility RWE announced that the Tilbury Power Station in Essex, UK, would not again be fully operational until July. The plant, which a year ago began converting from coal-fire to wood pellets, had only been running in its new form for a month. No one was hurt in the blaze.

At that time the cause of the fire, which was first thought to have started in the turbines but turned out to have ignited in one of the 5,000 tonne pellet storage silos, was as yet not known. Ongoing research in Canada has since shed light on that fire's source.

This week, the University of British Columbia, in Vancouver, BC, played host to the second meeting of the BC-Korea Bioenergy Collaboration. Korean government representatives, green energy producers, Korean energy companies, Canadian scientists and researchers, and BC government representatives gathered together for two days of intense meetings and presentations. The event was organized by the BC Bioenergy Network. It was during the morning session of the second day that attendees learned that wood pellets stored in silos can increase in temperature by 2 degrees Celsius per hour.

"If a facility is in 35 degree summer temperatures, this can be a problem." explained Staffan Melin, Honorary Research Associate at the UBC Department of Chemical and Biological Engineering and Research Director of the Wood Pellet Association of Canada. "The maximum safe temperature is 60 degrees, before combustion problems occur."

There is research currently going on at UBC to test pellet off-gassing and self-heating.

Governments the world over have regulated both emission reductions and increased use of sustainable fuel in existing power facilities. One reason why this meeting included Korea specifically is because that country has already mandated that all coal-fired operations use 2 per cent green energy this year, and that basically means pellets. Torrefied pellets, most likely.

As a relatively new technology, information on all aspects of wood pellets; from the best feedstock, the most economic production techniques, the best process to get the most fuel into each pellet, and customer demands, is highly sought after.

From an end-user point of view, "Biofuel companies in Korea are very interested in biomass but have a problem getting feedstock," explained Soo Kyung Anh of the BC Ministry of Jobs, Tourism and Innovation, standing in as a representative for the Korea East-West Power Authority, or Genco. "There is a need for co-firing of 200,000 or 300,000 tonnes of pellets per year on average per Genco plant to achieve the 2 or 5 per cent green fuel consumption mandated by government. At the moment domestic prices are US\$150 to \$200 per tonne for a heat value of 4,000 to 4,500 Kcal/Kg. Torrefied pellets, or bio-coal, cost the same but produce 5,000 ~ 6,000 Kcal/Kg."

"This year BC's pellet production will be one million tonnes," explained Soo. "Canada's will be 2 million tonnes total. In the year 2020, Korean industry will have to be 10 per cent sustainable, which amounts to 10.7 million tonnes of wood pellets per year."

The EU has mandated 14 per cent green energy for industry by 2020.

"Demand for wood pellets in Europe is conservatively forecast at 25 million tonnes per year by 2020,"

explained Michael Weedon, Executive Director of the BC Bioenergy Network. "The Tilbury fire is a major concern, that plant was to use 2.5 million tonnes of pellets in the next 18 months.

"Wood pellets are priced per GigaJoule (GJ) in Europe, and sell for US\$235 per tonne on the open market. In Canada the price is \$10 per tonne, regardless of whether pellets are torrefied or white. To Europe, freight charges total about \$40 or \$45 per tonne from Ridley Terminals."

Weedon and other presenters talked about the huge advantage of torrefied pellet delivery, as they can simply be added to bulk storage with coal and take an inexpensive ride across either ocean.

A very candid discussion panel, populated by Korean power companies, BC pellet producers, and a Korean-Canadian wood chip and pellet trader, revealed some interesting details about the realities of this growing business.

While enthusiastic to get going, no Korean power producers have as yet actually built silos or storage facilities for pellets. Meanwhile, Canadian producers are looking for signed agreements, real commitment from Korean customers, before investing in increased pellet supply.

"If we're talking about a need for more supply a year from now, we must start building a new plant immediately," said Vaughn Bassett of Pinnacle Renewable Energy.

"The most important thing to a power plant in Korea is security and stability," explained Hoon-Tea Jung of Korea Southern Power. "It is not just about the unit cost of pellets. We are more interested in good infrastructure and a good business climate."

Peter Seo of LG International, responsible for wood chip and pellet procurement, said that it will be a year or two before Korean power companies are going to open tenders, and only then will trading companies start bidding.

In terms of feedstock, Korean biofuel producers are willing to accept fruit bunch discarded after harvest, and byproducts of palm oil harvesting, from nearby sources in Indonesia and Malaysia, but have concerns due to moisture content, storage problems, and uncertain supply.

Canadian fibre presents none of these problems, and also has several desirable attributes. Tony Sauder, Program Leader Forest Feedstocks at FPInnovations, detailed that while sawmill residue is ideal, it is BC's forest residue that is most likely to be used for pellet production.

"15 to 30 per cent of sawlog volume is non-merchantable," detailed Sauder. "Forest residue that is less than 75 km from a facility costs about \$80 to \$90 an oven-dried tonne (ODT)."

Next followed some detailed presentations on the differences between white pellets and torrefied. Suffice to say that torrefied pellets have an energy density 30 to 40 per cent higher than white pellets, are more easily stored due to a high degree of water resistance, and can be shipped bulk right along with coal thereby cutting costs.

One thing *Madison's* gathered during the networking sessions is that, despite the government regulation, industry in Korea is in no hurry to implement the green energy requirements. Given the price of oil and natural gas, companies are quite comfortable to pay the penalty for not meeting requirements for the next couple of years while they work out the logistical details.

It is clear there is great opportunity for investment in this critical new sector.

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