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“The applications for a plant like this are more suited for users of industrial and distributed power,” Kingston said. “If, however, we can prove our fuel is competitively priced, then we’ll be able use it to develop BioOil power stations in Canada and worldwide.”

Q&A WITH ANDREW KINGSTON

Q: What are biomass fuels?

A: Biomass fuels are fuels that are generated from organic matter such as forest residue, sugar cane bagasse residue, any type of agricultural residue, energy crops, and sewage sludge waste from water treatment plants. Anything organic is biomass.

Q: What are the practical uses for biomass fuels?

A: Biomass fuels have been used to generate energy since the beginning of time as firewood. What we’re doing is we’re taking the biomass fuels as our abundant and using them more efficiently. Practical uses: they are being used everyday for power generation, heat, gasification, and also to produce ethanol and other types of liquid fuels. It’s a very abundant and available fuel resource.

Q: How much biomass is available?

A: Biomass is everywhere and we use biomass everyday. Paper is biomass. Everything we process in wood and agriculture produces biomass. It is perhaps the most pervasive fuel in the world. The fact that people are used to handling hydrocarbons is because of its availability and the infrastructure’s availability to use them efficiently. What we’re doing by processing biomass and turning it into liquid fuel is providing the opportunity to use the same infrastructure and the same technology to use biomass more efficiently. I believe biomass will play a significant role in the energy mix as we move forward. The growth of biomass as a fuel source will be quite dramatic in the next decade and there are a number of studies that show that biomass will be one of the more predominant fuels in the future.

Q: What are the environmental benefits of biomass fuels?

A: The environmental benefits are, first, that biomass, as it grows, absorbs CO₂ from the atmosphere. If we convert the biomass into fuel and then burn it, we’re putting the same amount of CO₂ back into the atmosphere. When we can use biomass to displace fossil fuels, we can generate zero net CO₂ emissions rather than use fossil fuels to add CO₂ to the atmosphere. Another advantage is that it is abundant and readily available. We don’t have to go to significant cost and use of energy to extract the biomass from the ground, as with hydrocarbons.

Q: How can utilities use biomass fuels?

A: Utilities are using biomass fuels already. Cogeneration plants use biomass fuels. Gasification plants also use biomass fuels. DynaMotive is producing a liquid fuel that is energy efficient in regards to its concentration of energy. It’s environmentally friendly because it can be applied to displace the use of fossil fuels in an increasingly larger number of installations.

Q: How can the industrial or commercial facilities use biomass?

A: Any industrial or commercial facility that produces biomass and has heat and electricity generation requirements could use biomass. Mainly, cogeneration plants, saw mills, and pulp mills produce and process biomass to generate heat, carry electricity and steam for their own applications.

Q: Why would a utility want to use biomass fuels?

For various reasons: one, cost. Biomass fuels are accessible in remote areas and potentially they can be applied to generate electricity and heat in areas where you have to transport fossil fuels at a greater cost. Second: efficiency. If you’re looking at a liquid fuel, the energy efficiency is greater than solid fuels so that

opens some significant opportunities. Third: cost. We can produce a liquid fuel that is price competitive with fossil fuels. Utilities can look at the different costs for biomass-produced fuels and see they are significantly competitive with fossil fuels. Fourth, and most importantly, biomass is considered a renewable fuel. Biomass can meet a company’s renewable portfolio standard requirements and their emission profile reduction requirements.

Q: How can utilities extend the life of existing power plants by using biomass fuels?

A: The life of the power plant is dependent on its environmental profile and its emissions profile. Overtime, these two factors need to be improved. Using a renewable fuel of any kind would allow them to meet that profile and extend the viable life of that asset. In regards to cost, if you can provide a fuel that is price competitive or lower cost than the current fuel that’s being used, that enhances economic position and doing so would also enhance the life of that asset.

Q: What other financial or economic advantages are available to utilities that use biomass fuels?

A: Unfortunately, I’m not in the position to answer that question because I don’t work at a utility. The main tax advantages that I see are sudden R&D costs, certain tax write offs, ancillary depreciation opportunities. As a package, there are a number of elements that come into play. It’s quite complex at this point.

Q: What regulations are being put in place in North America and around the world to mandate the reduction of greenhouse gases?

A: There are a number of regulations. Let’s start with the Kyoto Protocol and the countries that subscribe to it. The objective is to reduce the emissions pro-

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**Andrew Kingston, President and CEO
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file of those countries to a certain level. For instance, Canada has committed to reduce 6% below our emissions level of 1990. That requires a significant effort in emissions reductions. Utilities and other types of energy producers are also looking at reducing their emissions profiles. There are renewable portfolio stan-

dards in the UK and in other parts of Europe. In Canada, standards are being implemented too. In the UK, 10% of the electricity provided would have to be produced from renewable sources by 2010. In Canada, there are certain standards being established and that is creating a significant boost for renewable energy technologies. Again, what drives this is, on one side, there is the legisla-



One biomass technology is BioTherm™, a fast pyrolysis system DynaMotive uses to convert biomass waste into BioOil, a liquid fuel.

tion, the intent to reduce carbon emissions and greenhouse gas emissions. On the other there is the economic profile. If we can meet those two parameters, reduce green house gas emissions and, do it economically, than the opportunity is pervasive.

Q: What percentage of the market share will biomass receive considering it's a mature technology?

A: If we can convert biomass to liquid fuel, it can be stored and exported efficiently. That means there is full availability of that fuel despite climatic conditions. Wind power is a very clean source of energy but it is dependant on weather and weather conditions for that generation to occur. With biomass and liquid fusion biomass, which is not weather dependent, the availability can be ascertained.

Q: What containment systems are necessary when utilizing biomass fuels?

A: I'm not an expert on this but, biomass decomposes naturally and methane is released into the atmosphere. This happens in nature everyday. We have landfill. There is specific technology that is very mature that collects methane gases. There are landfill gas plants that have been in use quite a few years without any major accidents and that establishes that there are very good safety procedures in place. In regards to what DynaMotive does, we are producing a liquid fuel which again, has to be handled in the same way as hydro carbon. It is low risk because it is not a gas. The process is very low risk and it is very well contained. There is nothing in our process that would require control and safeguards that would be different at any other plant. **ET**