

“PROECO’S ICE CONVERTS HAZARDOUS WASTE INTO POWER”

By Janet Mowers

Feature – inventions from the patch
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“Big blue boxes” that recycle volatile organic compounds (VOCs) into energy may become a familiar sight in Canada’s oil patch. That is what PROECO Corporation of southeast Edmonton is banking on, with its blue-boxed dual fuel internal combustion engine (ICE) or co-generator that extracts volatile organic compounds from solids and converts them into electrical and mechanical power, and useable heat.

The co-generation units are unique in that they operate simultaneously on natural gas or propane as well as waste fuel. The units begin by burning supply gas-natural gas or propane-and then switch over to waste gas fuel.

The ICE meets the world’s toughest air standards-those of southern California. According to **Brian Winters**, president of Proeco Corporation, a level of 99.9 per cent destruction efficiency with the waste fuel is achievable. These results involved vacuuming contaminants from soil and cleaning them up.

“It’s all in the box,” explains **Gavin Scott**, Proeco’s operations manager.

Inside is a generator, a Ford 6.8 L V-10 engine, and a load bank. The engine creates a vacuum in the carburetor, which in combination with glycol, heats the waste media and lowers the boiling point. The VOCs emerge out of the waste and are used as fuel. It takes about half an hour after the engine starts up for this to occur.

The electronic engine management system monitor 60 process points every minute as well as the exhaust components. “The system will automatically manage combustions in the engine. It will add makeup air, more or less supply fuel, more or less waste fuel,” Scott explains.

When the unit is started up it calibrates, monitor the engine, and runs a diagnostic on itself. The high-tech machine is designed to run on as high a level of waste fuel as possible. Pre- and post catalytic converter exhaust temperatures are monitored.

It is totally self-contained. The ICE does not require an electrical hookup. It can be run continuously.

It is fully automated and can be operated from a desktop computer with the addition of a

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cellular phone line or regular phone line. The unit can store data collected over a period of 60 days. Manual process adjustments can also be made remotely.

And what about the exhaust? Winters explains that it is similar to that of a car: minute amounts of hydrocarbons, Nox, and a bit of oxygen with the balance of CO₂ and CO.

“We’re converting hydrocarbons into heat and electricity and emitting a lot less in volume and lot less harmful ones, “ states Winters.

Proeco’s first installation will be at its facility in southeast Edmonton. By winter 2002, Winters plans to set up a unit that will heat and power the shop using, in part, industrial waste. It will recycle flammable solids with VOCs.

It is said to be ideal for managing vapours after emptying large floating roof tanks. It can be used on solution vents, flare stack elimination, wastewater treatment, and soil remediation.

There are limitations to the technology. The ICE cannot be used on high volume or acid gas flare stacks. But it is ideal for light end hydrocarbons with VOCs at a minimum level of 300 parts per million.

“It is yet to be determined how much sulphur it can handle,” explains Winters.

Waste materials that can be used as fuel include hydrocarbons as vapours: benzene-toluene, ethyl benzene-xylene, propane, varsol-kerosene, diesel-jet fuel, other hydrocarbons up to C12, waste alcohols and other waste solvents.

The ICE can be used to run electric motors, compressors, hydraulic pumps, and electrical boilers. Excess power can also be directed to the Alberta power grid and sold.

“Turning waste into something powerful” is Proeco’s catch phrase.

According to Winters, the benefits include fuel savings, greenhouse gas and other emission reductions, and reduction in hazardous waste off-site disposal costs.

Stay tuned to see more of these savings quantified as this technology is introduced into Western Canada’s oil patch. According to Winters, there isn’t any other technology out there like these units.

Winters hopes Proeco’s exclusive Canadian license will put it in the driver seat in an industry that faces increasing environmental pressures.