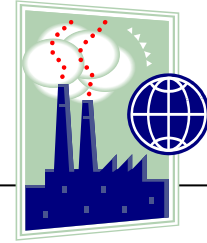


A Burning Issue:

What is Energy from Waste?



DURHAM - Garbage as a resource. It is a somewhat uncertain opportunity -- but the technology to harness energy from garbage exists. Durham throws out 150,000 tonnes of rubbish annually, hauled by truck to the Pinetree landfill site in Michigan. It's not an ideal solution. Even with the most effective source separation, reusing and recycling, there will always be waste left over. In the Netherlands and Sweden, land is at a premium, so time and money has been spent to develop the process of turning waste into energy.

Once thought of as just burning garbage, today incineration is looked at as using garbage as the fuel in energy-making factories. It was only after MacViro Consultants Inc., adviser to the Durham-York Joint Waste Management Committee, studied the effects of different systems on the natural, social, economic, technical and legal environments, that thermal treatment, with energy recovery and recovery of materials from ash, was identified as the best route for Durham and York to travel.

In its favour, thermal treatment reduces the volume of material going to landfill by 80 per cent, thereby reducing the consumption of limited landfill space. And, by generating electricity, waste is a resource.

How it works

Garbage is the lifeblood of waste-to-energy facilities such as the ones the regional delegation visited in Sweden and Holland in May.

"They were clean, they were well run, the emissions were controlled," said Cliff Curtis, Durham Region's commissioner of works. "They were actually an asset to the community." Three of the facilities visited, Sysav in Malmo, Sweden, and Afval Energie Bedrijf (AEB) and Alkmaar in the Netherlands, have slight variations but their technology is basically the same.

"The real story with energy from waste is what process they use to scrub the flue gases," Mr. Curtis said. "Some were better than others. I would say both Malmo and Alkmaar were extremely clean, extremely well-run, good looking, efficient operations." After residents reduce, reuse and recycle as much waste as possible, the residual is taken to the incinerator where it is burned and electricity, along with hot water for district heating, is produced. Smoke is taken through a flue gas purification process where a number of filters, each with their own job, take out fly ash, salt and dioxins and other harmful emissions.

Amsterdam

Amsterdam is known as a city ingrained with the principle of tolerance. The citizenry's liberal views on much society has to offer do not include the mismanagement of waste. At the energy-from-waste facility here, the goal is to maximize the use of waste from 32 million residents,

which comes to the HVC EWF facility each year. Owned by the city of Amsterdam, HVC EWF has 85 years of energy-from-waste experience and services 19 affiliated local authorities in the region. Dr. Evelien Jonkhot, who works in the marketing department at the Amsterdam facility, said the waste-to-energy plant is considered recycling.

“Only when recycling is not possible does it come to the incinerator,” Dr. Jonkhot said, adding only non-recyclable, non-combustible material is allowed to go to a landfill. From the ash, they extract iron and non-ferrous and precious metals like gold. Sand is used to make limestone bricks and granulate to make concrete. After all the processing, one per cent of the waste goes to landfill as a hazardous material. The facility produces 630 kilowatts per hour, per tonne of waste. It is currently undergoing expansion to build the first high-efficiency, waste-to-energy plant, described as a waste-fired power plant. Two new burners will process 530,000 more tonnes taking its total capacity to 1.6 million tonnes by 2007.

“Amsterdam had a few challenges,” Mr. Curtis said. “But, they were actually running a very energy-efficient operation. They were extracting the maximum amount of energy they could from the incineration process but... it seemed to be just a little bit of a messier operation.”

Sysav

“A total view of how waste is handled,” is the slogan this energy-from-waste facility uses.

“Treating waste in a waste incineration plant today is very environmentally friendly,” said Jonas Eek, manager of the facility’s energy department. “We get very low emissions and replace a lot of fossil fuels.” Sysav is publicly owned by 14 municipalities and processes the waste of 620,000 inhabitants, fifty tonnes each hour. Organic waste and plastics are burned in the incinerator, but plans are in place to collect 35 per cent of biological waste and treat it biologically by 2010. But, also important to its operation are the landfill sites located on the facility grounds, which measure 100 kilometres in width by 50 kilometres in length. Only 8.9 per cent of all waste that passes through the facility, including ash, goes to landfill.

Alkmaar

A city more than 750 years old, Alkmaar is steeped in history. In the 1700s people used to throw their garbage in the streets, but much has changed. The Alkmaar facility looks at itself as a factory that makes electricity. It began operation in 1971 and in 1995 they finished the current facility. The Alkmaar facility services a population of 1.5 million people and processes 630,000 tonnes of burnable waste each year. The facility has 17 shareholders made up of 42 municipalities. As a non-profit company, any profit goes back to the shareholders and eventually to the residents in the form of a lower cost of waste management.

The facility can generate electricity for 100,000 homes. Seventy five per cent of the architecturally modern installation houses the system used to clean the smoke. The checks and balances at the Alkmaar facility are one of the most unique and interesting elements of the facility. On the grounds of the Alkmaar facility, spinach and flowers are grown to test the air quality. As well, they have cows, and the milk is tested to ensure there are no contaminants.