

The National

Masdar City may adopt US waste tech

Vesela Todorova

- Last Updated: February 01. 2009 7:14PM UAE / February 1. 2009 3:14PM GMT



EnerTech Environmental's first commercial plant, the Rialto Regional Biosolids Processing Facility, is situated some 50 miles east of Los Angeles and handles wet sludge generated by five municipal treatment plants in the area. The facility is designed to handle 750 tonnes of sludge per day, generating 160 tonnes of fuel per day. Courtesy / EnerTech Environmental

A technology that revolutionises the economics of dealing with waste could help Masdar, the Abu Dhabi Government's sustainability initiative, to achieve its target of zero-carbon emissions.

The fledgling technology is 60 per cent more energy efficient than the usual methods used to deal with the sludge that is left after waste is treated.

A US\$42 million (Dh154.2m) investment by the Masdar Clean Tech Fund in the US technology, which produces renewable solid fuel from sewage, is helping to push the

innovation into the mainstream. And as the first commercial plant in California nears full operating capacity, the company behind the innovation, EnerTech Environmental, is looking to use it in the Emirates.

“We are being considered for Masdar City,” said Kevin Bolin, the chief executive of EnerTech Environmental. “We are receiving a positive response from the UAE market.”

Khaled Awad, the director of Masdar’s property development unit, said: “EnerTech is one of the waste technology solutions we are seriously considering in Masdar City pilot programmes.”

A trial study will start in April and run for a year.

EnerTech says its technology is 60 per cent more energy efficient than thermal drying or incineration, other methods commonly used to deal with the sludge that is left after sewage waste is treated. In addition, its solid product has been certified as a renewable fuel in California.

Mr Bolin estimates that the US produces about 40 million tonnes of sludge a year, and the value of the market to EnerTech at \$4 billion. The company’s first commercial plant is situated at Rialto, 80km east of Los Angeles, and handles wet sludge generated by five municipal treatment plants. It is designed to handle 750 tonnes of sludge and generate 160 tonnes of fuel a day.

“That would be equivalent to [the output of] all of Dubai,” said Mr Bolin.

Large amounts of energy are needed to remove the high water content of sewage sludge. The company uses an energy-efficient technology, patented by one of its co-founders, to remove the water by mechanical means. The SlurryCarb patent was developed after 15 years of research by Norman Dickenson, an inventor and chemical engineer who is also Mr Bolin’s grandfather.

In 1992, the two men, together with Mr Bolin’s father, co-founded the company in an attempt to commercialise the technology. A 20-tonne-per-day demonstration plant in Japan, built in partnership with the Mitsubishi Corporation, proved the technology’s viability. In 2007, after securing some funds from investors, EnerTech began work on its California facility. The \$160m plant would not have been completed without the Masdar Clean Tech Fund, said Mr Bolin.

Masdar’s \$42m investment, secured in Dec 2007, allowed EnerTech “to continue on as a company”, said Mr Bolin.

“It helped execute Rialto... and expand and develop other projects in the US, Europe and the UAE,” he said.

Mr Bolin said the main challenge in getting any technology to market was finding “an initial adopter”.

“Once you find your initial adopter and you are successful... then municipalities come to have a look,” he said. “We hope to have another project by next year.”

The Rialto plant made its first fuel delivery early last month, with output over the next five years commissioned by two cement kilns in the area, said Mr Bolin.

With an energy content of 50,000 kilojoules per kilogram, the fuel has the same heat value as brown coal or wood. The Rialto plant is a net energy producer, which means it produces more energy than it consumes.

“We are duplicating a process that nature used to form fossil fuels from organic matter,” said Mr Bolin, explaining the principle behind the technology.

The sludge is what remains after raw sewage is treated in specialised plants. Such treatment usually removes about 20 per cent of the water content of raw sewage and that water is often used for irrigation and industrial purposes.

The remaining sludge had the consistency of mud, with about 80 per cent water content, said Mr Bolin.

At the plant, the sludge is pumped and pressurised, allowing for a molecular transformation. This can then be dried to produce what Mr Bolin calls “a very uniform carbon product”. The remaining water is further treated in a stage in which bacteria process the organic material in the absence of oxygen. The process is used commonly in treating sewage effluent and generates substantial amounts of methane. In the Rialto project, this gas is captured and used. The factory produces 550 tonnes of water per day.

The factory’s fuel product is cleaner than coal when burnt because it releases carbon dioxide, which has been sequestered once. Coal, on the other hand, includes carbon dioxide that was sequestered in solid form millions of years ago.

“The carbon we are making is already in the cycle,” said Mr Bolin.

The \$250m Masdar Clean Tech Fund is a venture capital investment vehicle launched in 2006 with \$100m in government funding, a matching endowment from Credit Suisse and \$50m from the Consensus Business Group. Now fully invested, the fund holds stakes in German and US developers of solar energy technology, a Dutch waste-to-energy processor, and a US developer of portable water treatment products.

vtodorova@thenational.ae