

Green power generation turns wastewater treatment into a 'cash cow' - while also preserving the environment

The concept of using wastewater to create green energy is much more widely applicable than often realized. Any factory with a biological waste stream or wastewater with high COD (Chemical Oxygen Demand) can easily use this model to generate energy.

So far, most industries have mainly been focusing on treating their effluent to meet local discharge standards. By doing so, wastewater treatment installations have only generated additional costs and have never been seen as revenue generators.

However, applying anaerobic wastewater treatment sheds a whole different light on the cost structure of wastewater treatment infrastructure. It can now actually become a substantial additional source of income for many factories and processing plants in Australia, including vegetable and other primary product processing.

Power from effluent

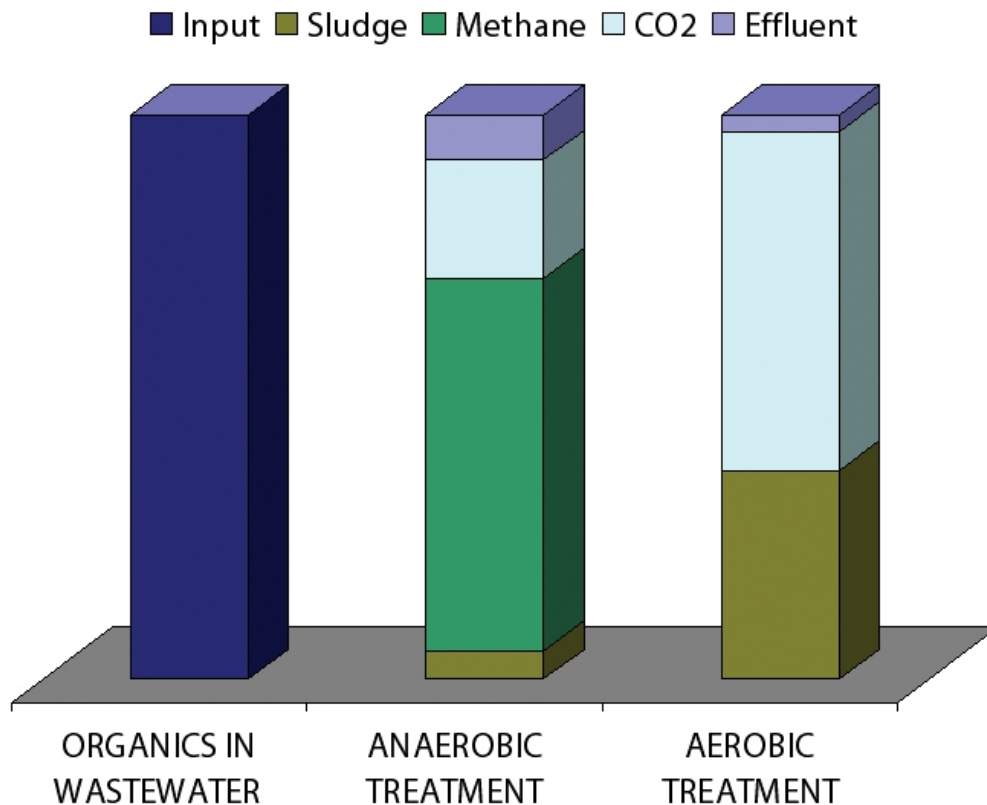
In realizing the value by anaerobically treating organic effluent and waste material, a whole series of benefits come into play.

The first benefit is of course the clean effluent, efficiently dealing with an important waste stream many companies have to contend with. On average the removal efficiency of GWE's anaerobic wastewater treatment installations is as high as 90-95%, easily bringing the organic load down to regulatory discharge standards for most types of wastewater. For the most heavily loaded wastewaters, extra post-treatment steps can further purify the effluent, meeting even the most stringent discharge regulations for water re-use.

Besides cleaning the wastewater (which other processes can ultimately achieve) by far the greatest advantage of anaerobic wastewater treatment is the controlled, continuous production of valuable biogas that occurs during the wastewater treatment. Other types of treatment, such as aerobic, do not provide this benefit.

Closed anaerobic reactors generate large quantities of methane (CH₄) from the organic materials in the wastewater that can diminish or even completely replace the use of fossil fuels in the production process. To bring some

perspective to the value, one ton of COD (chemical oxygen demand) digested anaerobically can result in 350Nm³ of methane, equivalent to 0.15MW of power.



For specific industry applications with high organic loads, enough biogas can be generated to fully cover a factory's energy needs and still have a biogas surplus to feed it into power generators and sell electricity to the national grid. A project recently completed for a 300tons/day starch factory in Thailand illustrates this.

The energy yield from the anaerobic digestion of the starch factory's wastewater is double that which is required for the mill's production, making the factory 100 per cent self-sufficient for its energy needs. The surplus electricity is sold back to the grid, generating additional revenues.

For a greener footprint

But it doesn't end there. The GWE closed anaerobic process systems prevent large quantities of CH₄ being emitted into the atmosphere. With CH₄ being 21 times more harmful than CO₂, GWE's anaerobic wastewater solutions can also qualify for Emission Reduction Certificates for projects in countries listed under the United Nations Kyoto Clean Development Mechanism (CDM) and Joint Implementation (JI) programs.

Besides the economical advantage of GWE's anaerobic wastewater treatment, there is clearly also the environmental advantage, significantly reducing factories' carbon footprint. Not only by supplying renewable energy and thus reducing or even eliminating the use of fossil fuels, but also by replacing more traditional, CH₄-polluting, open lagoons and by replacing power consuming and sludge producing traditional aerobic WWTPs.

Can I also apply it to my factory?

Anaerobic wastewater treatment with biogas recovery is possible for a very wide range of industries. The main criteria for energy-generating projects to become viable is the COD loading rate. The higher the organic load of the wastewater, the more biogas and thus renewable energy can be generated from it. Cost of fuel also plays a significant role. As the world is learning to live with higher energy prices, choosing anaerobic technology now holds the key to immediate and future safeguarding of power supply for many industries.

Typical industries amongst GWE's proven references that are very suitable for anaerobic wastewater treatment are:

- ✓ beer and beverages (beer, soft drinks, tea, coffee- and milk-based drinks, fruit juices)
- ✓ food processing & canning (fruits, vegetables, meat, fish, seafood)
- ✓ snacks, confectionary, dairy
- ✓ fermentation industry (alcohol, yeast, monosodium glutamate etc.)
- ✓ biofuels (ethanol, biodiesel)
- ✓ pulp & paper
- ✓ agro and agro-processing industries (vegetables, beet sugar, starch, palm oil)
- ✓ petrochemical (PTA, PET, glycol and polyester factories)

Choosing the right technology

In selecting a suitable technology provider for wastewater treatment with biogas utilization, it is crucial to partner up with a reliable, experienced team, such as GWE/CSTWastewater Solutions, which between them provide a solid track record in this field complemented by more than 20 years of hands-on local wastewater experience.

From the design to implementation stage and beyond, into operations and maintenance of the plants, it is very important to look at the feasibility of a biogas project, both technically and economically. It is extremely important to choose the right reactor configuration. Each industry has specific wastewater characteristics, requiring thorough analysis and subsequent careful selection of the most suitable reactor design for these characteristics.

Too often we have seen companies left disillusioned after trying to implement anaerobic wastewater treatment with biogas reuse in the past. Although anaerobic technologies have improved significantly in recent years, the world is still littered with too many examples of how it is NOT supposed to be done. A significant part of GWE revenue comes from customers who had bad experiences with anaerobic treatment in the past and are often left with empty hands. This is too bad as it sheds a negative image on the technology although, in the right hands, it has so much to offer for a broad range of industries

