

# What the sewage sludge treatment plant of the future looks like

Today, the technology exists to build sewage treatment plants that are 100% water and energy autonomous. This is demonstrated at the Veolia-built and operated T PARK sludge treatment facility in Hong Kong.



*T PARK is exceptional on several counts: environmental, technological and societal. It reconciles urban ecology with the art of living; an example of the circular economy serving economic development and the environment.*

**T**he plant processes 1 200 tonnes of sludge per day from 11 sewage treatment works in a region of over seven million inhabitants, with a total design capacity of 2 000 t/day – making it the world's largest sludge treatment plant.

Yet even more technologically impressive is the fact that the plant is completely self-sufficient in terms of water and energy.

At the heart of the plant is Veolia-supplied fluidised bed incineration technology that incinerates the sludge at 850° C for two seconds, reducing the volume of waste to be landfilled by 90%, and the emission of greenhouse gases by up to 237 000 t/year. The heat generated during this process is recovered and transformed into electricity.

The 14 MW that is produced is able to supply the entire site, including a 600 m<sup>3</sup>/day desalination plant that meets the plant's process water requirements, with the remainder, fed into the public power grid. At full capacity, the plant can produce up to 2 MW of surplus electricity, which is enough to light up to 4 000 homes.

In addition, the facility achieves zero effluent discharge via a Veolia-supplied wastewater treatment plant that collects, treats and reclaims the wastewater produced on site for various uses such as irrigation and cleaning.

The low footprint and efficient design of the plant equipment is integrated within a remarkable architectural feat that is

environmentally harmonious with its surrounding landscape of sea and mountains, with approximately 70% of the 7-hectare site greenspace and water. In addition, the facility has a 2 800 m<sup>2</sup> interactive exhibition centre focusing on sludge treatment, which plays an invaluable educational role in creating greater knowledge and support for the circular economy transition.

On completion of the plant, Veolia assumed a 15-year operations and maintenance contract. In addition to ensuring the plant meets the most stringent ecological performance standards, Veolia will also ensure continual technology-driven optimisation to guarantee the plant remains a landmark of sustainable waste management strategy long into the future.

Turning waste into a source of renewable energy, T PARK is a prime example of the circular economy that gives value to materials previously considered worthless.

## Circular approaches to wastewater and sludge in South Africa

Veolia Water Technologies South Africa brings these technologies and expertise to sub-Saharan Africa's municipalities and industries. Since opening its doors in 1999, it has been involved in some of the region's most progressive resource recovery applications.

At the Durban Water Recycling Plant, Veolia has taken care of the daily operations and maintenance requirements of the plant works since 2001. This facility treats up to 47 Ml of municipal and industrial effluent each day to a specification that is required for reuse by pulp and paper and petrochemical companies in the city. Not only are these customers able to lower their water costs by reducing their reliance on the bulk municipal water supply, the city reduces its load on the marine environment and frees up potable water that allows it to extend its bulk water services to support more communities within the region.

At Distell's distillation facilities in Stellenbosch, Veolia installed South Africa's first Biobulk® wastewater treatment facility to lower the chemical oxygen demand load in the outfall to the municipality and harvest the energy in the wastewater. This highly efficient treatment plant treats 1 000 m<sup>3</sup> of effluent per day containing a daily COD load of 8.6 tons, which it has reduced by approximately 94%, while harvesting the biogas generated during anaerobic digestion that is used as a fuel for the plant's boilers.

In one of the largest evaporation and crystallisation plants in the world, the Veolia-designed and built Ambatovy Mine treatment plant treats mine water while recovering up to 210 000 tons of ammonium sulphate per annum, which makes an ideal fertiliser. What was once a hazardous waste product has been transformed into a useful agricultural product that is sold as a secondary revenue stream by the mine.

In addition to these large-scale works, Veolia Water Technologies South Africa supplies fully containerised water reuse and recycling solutions as part of its Water Techno Packages range, such as Evalid™ evaporation technologies, Biostyr™ biological aerated filters, and Opus® reverse osmosis membrane plants for high water recovery.

By extracting and recycling useful resources contained in our waste, Veolia is helping bring the circular economy to life as we ramp up our fight against the challenges of climate change. □

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