

Case story | Sanfeng

Danfoss APP pumps **purify landfill leachate** in Chongqing **waste-to-energy** power plant



3 years
maintenance free



Highlights

- Proven reliability
- Low maintenance

Garbage landfills produce leachate with significant concentrations of organic and inorganic compounds. Highly toxic to flora and fauna, landfill leachate has devastating environmental impact if it is allowed to enter aquifers and surface water systems. So, when Sanfeng Environmental Group designed the leachate wastewater purification system for a new zero-liquid-discharge waste-to-energy power plant in Chongqing, China, it chose Danfoss APP pumps to drive the plant's two-stage reverse osmosis process.

The challenge:

Reliable purification of landfill leachate wastewater for a massive **waste-to-energy** power plant

The Baiguoyuan waste-to-energy power plant plays an important role for residents of Chongqing in southwest China. Its six incinerators and three 35 MW steam turbine generator sets transform up to 4,500 tons of garbage into electricity every day – enough to supply 400,000 households.

Left untreated, leachate wastewater from the plant's significant landfill would have devastating environmental impact. So, in keeping with China's increasingly strict environmental policies, Sanfeng Environmental Group designed a leachate treatment system which includes pretreatment, biochemical treatment, and then a two-stage reverse osmosis treatment.

To keep this all-important leachate purification process running non-stop, Sanfeng required high-pressure pumps with proven reliability that are easy to maintain.

The solution:

A **two-stage RO system** driven by **Danfoss APP pumps**

Sanfeng's engineers had worked with Danfoss APP pumps in other water purification projects and knew them for their operational dependability, long service intervals, and small footprint.

Due to the high demands for purification, for the Baiguoyuan application they opted for double pass RO purification powered by Danfoss APP high-pressure pumps. The APP 46 handles the first RO pass. The permeate is then sent through a second RO pass powered by an APP 30.



The result:

Purified leachate and **problem-free RO treatment** – and a textbook example of **waste-to-energy** circular economy

After more than three years of operation, managers at the Baiguoyuan plant are very pleased with the landfill leachate purification system.

The double pass RO approach has been highly successful in removing the harmful organic and inorganic compounds from the leachate, enabling Baiguoyuan to meet very strict environmental standards. Furthermore, Sanfeng engineers report that the APP pumps' high reliability and low maintenance needs have more than lived up to their expectations.

Since coming online in June 2018, the Baiguoyuan ZLD waste-to-energy plant has won numerous awards for its sustainable approach to waste management and electricity generation. With its high standards of emission and effluent control, striking architectural design, and park like setting, the plant is a textbook example – for China and the world – of waste-to-energy circular economy at its best. After purification, the leachate wastewater is reused for cooling. Burnt slag gets a second life in the form of bricks or pavement. Garbage that previously ended in landfills now generates 600 million kWh of electricity annually, saving the world from 800,000 tons of CO₂.



Chongqing Sanfeng Environment Group Corp., Ltd. specializes in the construction and operation of waste incineration plants. With 26 Chinese waste incineration power generation projects producing 7.5 billion kWh annually, it is one of China's top 50 environmental enterprises.

For more information, visit <http://www.cseg.cn/>

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