

USING WASTEWATER SEWAGE GAS TO PROVIDE ELECTRICITY AND HEAT FOR PAPER MILL IN CHINA

Solution reduces costs while converting waste to energy

Background

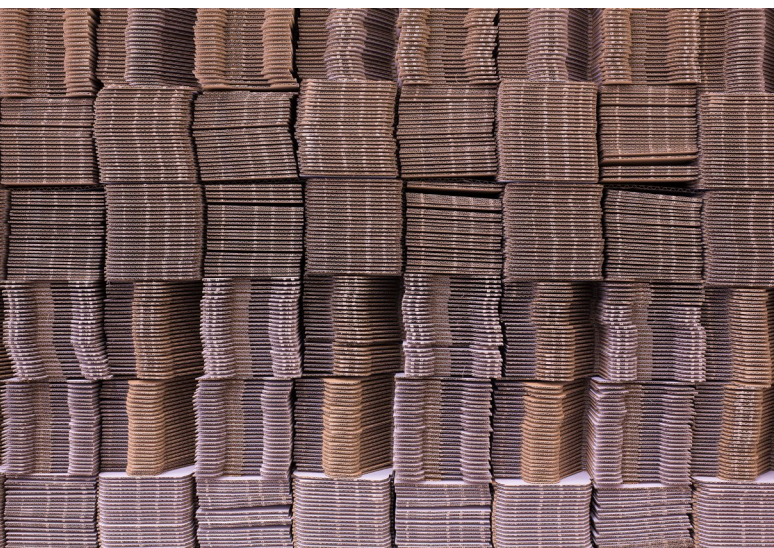
With broad prospects for growth, the paper industry occupies an important position in China's national economy. However, the industry faces huge energy consumption and environmental protection pressures, bringing serious challenges to its sustainable development. Therefore, to continue to grow its papermaking enterprises, the industry is looking to save energy, reduce consumption in its processes, and make better use of its resources and papermaking wastewater.

Using sewage gas to power paper mill processes

To meet this need, INNIO Group's authorized Jenbacher distributor YUMON INTERNATIONAL TRADE (SHANGHAI) CO., LTD. in China was chosen to provide three Jenbacher J616 gensets. The Type 6 gensets would run on sewage gas for a combined power generation and waste heat recovery biogas project at the paper mill's wastewater treatment plant.

Widely used in many types of gas-fueled power generation projects in China, Jenbacher Type 6 gensets have won significant trust and praise in the country. Operators recognize the technology's power generation efficiency, and its environmental adaptability, as well as the complete technical service offering, all of which enable dependable performance, reliability, and low emissions.

For this project, the organic wastewater in the production process of the paper mill is anaerobically fermented to generate sewage gas, which enters into the gensets for combustion and power generation through the pre-treatment process of desulfurization, filtration, and de-watering. In addition, the waste heat from the high-temperature flue gas generated by the sewage gas gensets is used to produce steam. Because all power and heat produced are used by the paper mill, the system operates in grid parallel mode with no power fed into the grid.



Results

The anaerobic fermentation process effectively removes the organic matter in the wastewater and reduces the chemical oxygen demand (COD) index, meeting the sewage treatment standards for good environmental benefits. At the same time, the sewage gas produced by anaerobic fermentation is converted into electricity and heat through the Jenbacher gensets for use in the production process, which significantly reduces the cost of energy for the enterprise and generates considerable economic benefits.

This comprehensive use of resources integrates waste-to-energy, environmental protection, clean energy, and recycling. The application of Jenbacher sewage gas energy solutions in this project will help the enterprise actively explore a development path for clean energy, improve its comprehensive competitiveness, and participate in the circular economy.

Key technical data

Installed engines	3 x J616
Electrical output	8,028 kW
Thermal output	7,562 kW
Electrical efficiency	44.6%
Total efficiency	86.6%
Energy source	Sewage gas
Commissioning	2023

Customer benefits

The Chinese paper mill industry is greatly benefiting from INNIO Group's Jenbacher Type 6 gensets, which provide:

- Use of a waste gas to renewably power the paper mill's processes
- Cost savings, with the gensets' ability to efficiently supply both electricity and heat for operations
- Reduced energy usage with Jenbacher gensets running on sewage gas to fully power the paper mill
- Low emissions from the efficient Jenbacher Type 6 engines



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