



1 An operations associate retrieves a bag of food waste from a recycling point at East Coast Lagoon Food Village. The food waste is deposited at the recycling point by hawkers from the centre. ST PHOTOS: KEVIN LIM



2 The operations associate retrieves a sample – to be tested for methane levels – from the anaerobic digester in the self-sustaining anaerobic digestion system that converts the food waste to biogas and fertiliser.

Food waste powers up hawker centre

On-site system converts hawker stalls' food waste to biogas that can generate electricity

Tay Hong Yi

Food waste at East Coast Lagoon Food Village is being converted to biogas to generate electricity from this month, in a first for Singapore's hawker centres.

The hawker centre in East Coast Park has about 60 stalls, and they generate some 150kg of food waste daily. This translates to enough electricity to power two mobile phone charging stations for public use and up to 31 wall fans at the hawker centre.

The electricity generated is also used to power the anaerobic digestion system that converts the food waste to biogas and fertiliser, said the National Environment Agency, National University of Singapore

(NUS) and the National Parks Board (NParks) in a joint statement yesterday.

Anaerobic digestion is a biological process that breaks down organic materials – like those found in food waste – in the absence of oxygen to yield biogas for energy generation.

Anaerobic digesters are already being used in some hotels in Singapore, such as Marina Bay Sands, but the anaerobic digester at East Coast Lagoon Food Village is the first to be installed in a hawker centre.

The agencies said: "This pilot project... examines the feasibility of using anaerobic digestion as an on-site treatment solution to close the food waste loop at the source of food waste generation."

They also said that it is an established technology that has been

adopted in some countries, albeit mainly implemented off-site or at centralised facilities where food waste is aggregated from neighbouring premises.

The East Coast Lagoon project integrates sub-systems such as a waste bin loader, sorter, shredder and feeder to enhance the system's performance.

"This will automate the loading of food waste and minimise contamination of food waste fed into the anaerobic digestion system," the agencies said.

An NUS team, led by Associate Professor Tong Yen Wah from the Department of Chemical and Biomolecular Engineering, oversees the operation and maintenance of the anaerobic digestion system.

NUS is also working with NParks to study the potential for using nutrient-rich liquid residues from the digested food waste, known as digestate, as pathogen-free fertiliser around East Coast Park.



3 The biogas generates electricity that powers mobile phone charging stations (above) and wall fans at the hawker centre.

East Coast Lagoon Food Village was chosen as the pilot site because adjacent space was available to house the anaerobic digestion system, while the fertiliser could conveniently be used at nearby areas in East Coast Park.

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"We are identifying pilot sites at East Coast Park to test the efficacy of the digestate as fertiliser," said Mr Chia Seng Jiang, NParks' group director for the Parks East division.

The agencies noted that food waste is one of the priority waste streams identified under Singapore's Zero Waste Masterplan.

Last year, only 19 per cent of food waste was recycled, even though it accounted for about 11 per cent of the total waste generated in Singapore.

"Therefore, reducing food wastage, redistributing unsold or excess food, and recycling or treating food waste are important food waste management strategies," said the agencies.

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