

Expert engineering and operating solutions
for your organic waste management challenges



HONG KONG ORGANIC WASTE RECYCLING FACILITY

Project: Anaerobic Digestion food waste plant

Client: Environmental Protection Department (EPD)

Location: Sha Ling, Hong Kong

Facility footprint: 2.5 hectares

Purpose: Design and build

Cost: £225m (HKD 2.1 bn)

Completion: December 2023

Contract type: EPC

Output: Gross output 45 GWh electricity



Agrivert is the lead joint venture partner contracted to the Government of the Hong Kong Special Administrative Region to design, build and operate a food waste Anaerobic Digestion facility known as O·PARK2. One of the world's most significant investments for an organic waste treatment facility, O.PARK2 will receive and process 300 tonnes of food waste per day. In addition, the facility will produce over 45 GWh of electricity annually by capturing the methane contained in waste food. The development site is located on 2.5 hectares near Sha Ling, in Hong Kong's northernmost district.

The development is on target to move into operations in late 2023. The project is undertaken through a Joint Venture between Agrivert and two well-established Hong Kong engineering companies, Alchmex and Jardine Engineering Corporation (JEC).

CHALLENGES

Hong Kong's landfills are being filled at an alarming rate. The city produces 5.67 million tonnes per year of municipal solid waste (MSW), of which food waste has been identified as a significant contributor. Only one-third of the waste is recycled, resulting in significant amounts deposited into Hong Kong's three large landfills. It is predicted that by the late 2020s, these landfills will be full.

Hong Kong is one of Asia's most densely populated regions, with over 7,000,000 people living on just 1,106 square kilometres. The territory's rapid population and economic growth, coupled with limited waste treatment infrastructure, have resulted in the need for a new approach to waste disposal.

The Environmental Protection Department (EPD), a department of the Government of Hong Kong, set out a policy for the management of MSW. These policies establish a long-term goal to move away from landfill by establishing sufficient waste-to-energy facilities to process the current and growing waste demand.

SOLUTION

EPD tendered for contractors to design and build an organic waste treatment facility that can treat 300 tonnes of organic waste daily through Anaerobic Digestion and operate that facility for 15 years before handing it back to the government.

The facility will include the following:

- Waste reception and waste pre-treatment system
- Anaerobic digesters
- Process to dewater the resultant digestate into a solid and liquid fraction
- Process to turn the solid fraction into a granulate fertiliser
- Wastewater treatment plant

SOLUTION CONTINUED

- Centralised air pollution control
- Biogas production and conditioning
- Heat and power cogeneration plant

Once finished, O-PARK2 will operate 24/7 and be available for waste deliveries seven days a week.

The facility has been designed to be energy efficient, minimise energy consumption and export surplus energy to the public electricity grid. The combined heat and power (CHP) units will use the biogas generated by the Anaerobic Digestion process to generate heat for process use and electricity to power the facility. As the quantity and quality of food waste deliveries are expected to vary, the treatment processes will be designed to treat changing volumes and rates of organic waste.

The residue from the Anaerobic Digestion process will be converted into solid, granulate fertiliser as a by-product for landscaping and agricultural application.

O-PARK2 has been designed to blend harmoniously with the surroundings. It is important that the facility produces the least visual impact on nearby communities.

CLIENT

Established in 1986, the Environmental Protection Department (EPD) is a government department responsible for environmental issues in Hong Kong. EPD is responsible for developing policies covering environmental protection and nature conservation; enforcing environmental legislation; monitoring environmental quality; providing collection, transfer, treatment and disposal facilities for many types of waste; advising on the environmental implications of town planning and new policies; handling pollution complaints and incidents; and raising awareness and support in the community for environmental initiatives.