Facts about the WE Station –
Hong Kong's Largest Landfill Gas Power Generation Project

CLP Power Hong Kong Limited (CLP Power) has adopted a holistic decarbonisation strategy in support of the Hong Kong's goal of achieving carbon neutrality by 2050. We endeavour to increase low-carbon electricity supply and support our customers in lowering their carbon footprint.

CLP Power strives to explore practical local renewable energy opportunities despite limited renewable energy resources and land scarcity in Hong Kong. One of CLP Power's key renewable energy projects is the **WE Station** at the West New Territories (WENT) Landfill at Nim Wan in Tuen Mun – Hong Kong's largest facility using landfill gas for electricity generation. The first phase of the project comprises five units connected to the CLP Power electricity grid with a total generation capacity of 10 megawatts (MW). The facility converts waste to energy, and reduces carbon emissions.

Landfill Gas Treatment

The WENT landfill has been in operation since 1993. At 110 hectares, it is Hong Kong's largest landfill and handles up to 6,400 tonnes of municipal waste a day.[1]

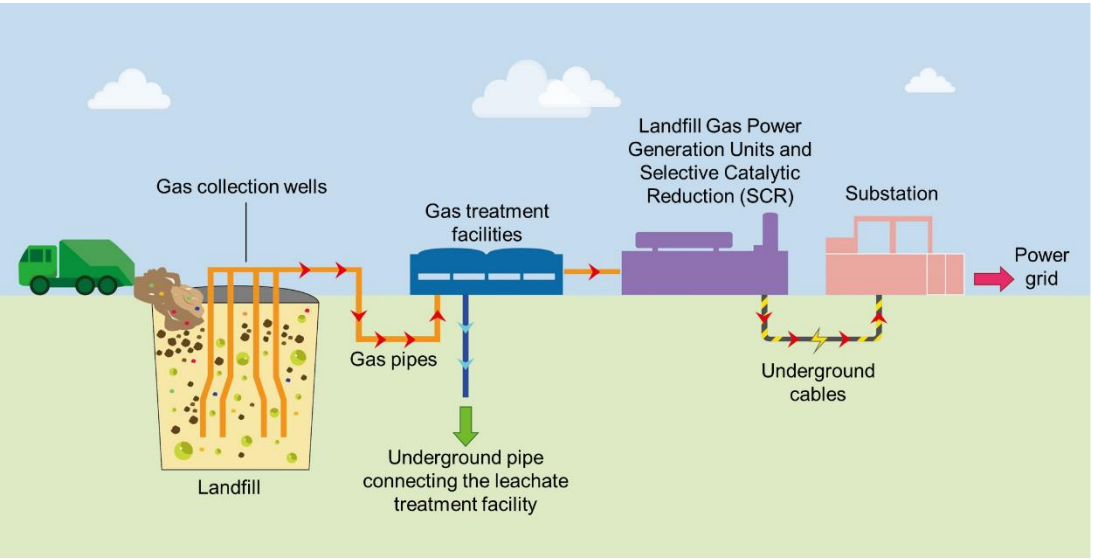
Landfill gas consists of methane, carbon dioxide, and trace amounts of nitrogen, hydrogen, ammonia, sulphur dioxide, and carbon monoxide produced from the decomposition of solid waste. It is flammable, making it a suitable fuel for power generation, and is a valuable renewable energy source.

[1] 2020 figure from Environmental Protection Department's website

Landfill Gas Power Generation Process

The operator of the WENT landfill site previously converted some of the landfill gas to generate electricity for on-site facilities and waste water treatment, while the remaining gas was burnt off to comply with regulations. The **WE Station** is able to use that excess landfill gas for power generation.

The waste-to-energy process is simple. Landfill gas is collected through underground gas pipes and sucked into a gas treatment facility. Impurities in the gas are removed. The landfill gas is then turned into fuel to generate electricity for the power grid, reducing overall carbon emissions from electricity generation in Hong Kong.



Environmental Benefits

The **WE Station** uses an Internal Combustion Engine Generator (ICEG) system, a technology widely used worldwide for landfill gas power generation. Advantages of the ICEG system include its high efficiency and the small operating area required. The first phase of the **WE Station** comprises five generation units with a total generation capacity of 10 MW. Since the project went into operation in the first quarter of 2020, it has generated more than 54 million kilowatt hours (kWh) of electricity, equivalent to the annual electricity consumption of over 12,000 households.

The **WE Station** allows CLP Power to turn landfill gas into a renewable energy source to generate electricity, reducing the proportion of coal from the generation mix. This waste-to-energy project helps cut carbon emissions by some 34,680 tonnes a year, equivalent to planting more than 1.45 million trees. Selective Catalytic Reduction (SCR) facilities have also been were installed to further reduce nitrogen oxides emissions, improving Hong Kong's air quality and combating the impact of climate change.

Information about the WE Station

Location	West New Territories (WENT) Landfill in Tuen Mun
Plant Performance Information	The first phase comprises five 2 MW landfill gas generator units which use excess landfill gas at a rate of around 4,500m^3/hour for electricity generation, supporting the development of local renewable energy sources
Installed Capacity	10 MW
Year of Commissioning	First quarter of 2020

Public Affairs Department
CLP Power Hong Kong Limited
October 2021