

Case Study

Biogas units generate power for palm oil mill

Siemens engines and gen-sets

The Opportunity

Palm oil mill effluent (POME) and the subsequent release of methane gas are harmful to the environment. PKS Tandun and PKS Sei Tapung are two projects in Riau province, Samatra, Indonesia that are introducing methane recovery and combustion into an existing anaerobic lagoon wastewater system.

The lagoon will be covered with high density polyethylene plastic to recover the biogas / methane released from the anaerobic digestion of organic matter within the POME that is discharged from palm oil processing.

The methane can then be repurposed, in this case for renewable electricity. The electricity generated from PKS Tandun will be exported to PTPN-V's palm kernel crushing plant which uses a Diesel generator for electricity generation.

As for PKS Sei Tapung, the electricity generated will be exported to PTPN-V for downstream activities (e.g., empty fruit bunches pelletizing plant or palm tree trunk plywood plant) that would otherwise use diesel generators to

generate electricity. Both systems will effectively reduce methane emissions into the atmosphere by converting the methane into carbon dioxide through combustion.

The Solution

This project will recover and combust the biogas (methane) released due to the decaying biogenic matter in the wastewater effluent stream of the palm oil mill by introducing biogas recovery and combustion to the existing anaerobic effluent treatment system.

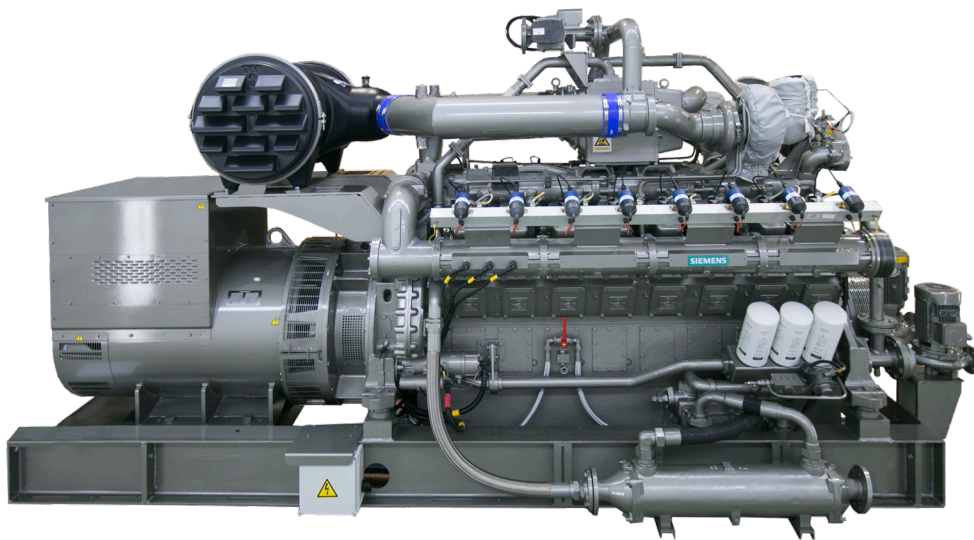
The project uses two Siemens generating sets, one of them is the SGE-56SM containerized generator set, operating in parallel with an existing Diesel generator set. and the second one, one SGE-36SL containerized model.

The system will supply an average of 1,500 kW per hour.

The PKS Tandun project activity is estimated to treat approximately 148,575 m³ of POME annually and reduce emissions by approximately 15,589 tCO₂ e. The PKS Sei Tapung



SGE-56SM containerized generator set.



SGE SL gas engine.

project activity is estimated to treat approximately 139,160 m³ of POME annually and reduce emissions by approximately 14,854 t CO₂e.

The combined sites are estimated to reduce total emissions by approximately 30,443 tCO₂e annually.

Benefits

- Improves air quality by reducing methane emissions
- Opens up new employment opportunities in the local community
- Provides a reliable, clean energy source
- Improves quality of life for the local population
- Contributes to sustainable palm oil production

The Business

Siemens is among the largest suppliers of rotating equipment solutions worldwide. The company offers some of the most efficient and environmentally friendly technology platforms, products and services in distributed power generation for oil and gas, industrial, institutional, and commercial clients and rural electrification programs.

Our solutions include combined heat and power (CHP) systems, biogas-fueled gen-sets, hybrid systems (solar photovoltaic and engine-based gen-sets), biomass and waste-to-energy steam turbine generators, compressed air energy storage (CAES), and more. We are also developing new technologies that use fossil fuels and renewable energy resources more efficiently, such as our wave energy-based HydroAir® turbine.

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