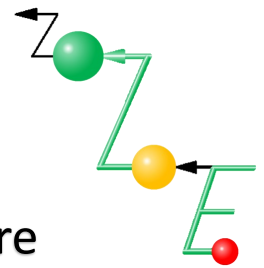


# Case Study

## ORC on Biogas Engine at a Sustainable Energy Centre



Based on a site for the development of sustainable energy in Germany. The site houses biomass, landfill sourced methane gas, biogas digesters and solar PV. The ZE ORC was used to provide an enhancement to the efficiency of the gas engines. These engines run on the methane produced by the landfill site, which as a finite resource is augmented with gas from bio digestors on site.



Thermal energy in the form of waste heat from the gas engine is harvested from its exhaust stack into a thermal oil circuit. This thermal energy is fed into the ZE130 ORC , producing 130kWe gross.

The ORC is designed to operate 24/7 with minimal maintenance. With a high efficiency of 17.5% in operation this can be taken higher if a use is found for the heat in cooling water that exits at 64°C . When CHP (Combined Heat and power) is utilised for example in space heating or hot water, efficiency can be up to 98.5%.

The harvesting of the waste heat is non invasive, which means that the operation of the ORC does not affect the operation of the gas engine. When the ORC is not running e.g for maintenance, the exhaust gasses bypass the heat exchanger and continue uninterrupted up the flue.

The ORC control system is monitored on site and remotely as well as being integrated into the site safety system. The ORC will shut down in response

