



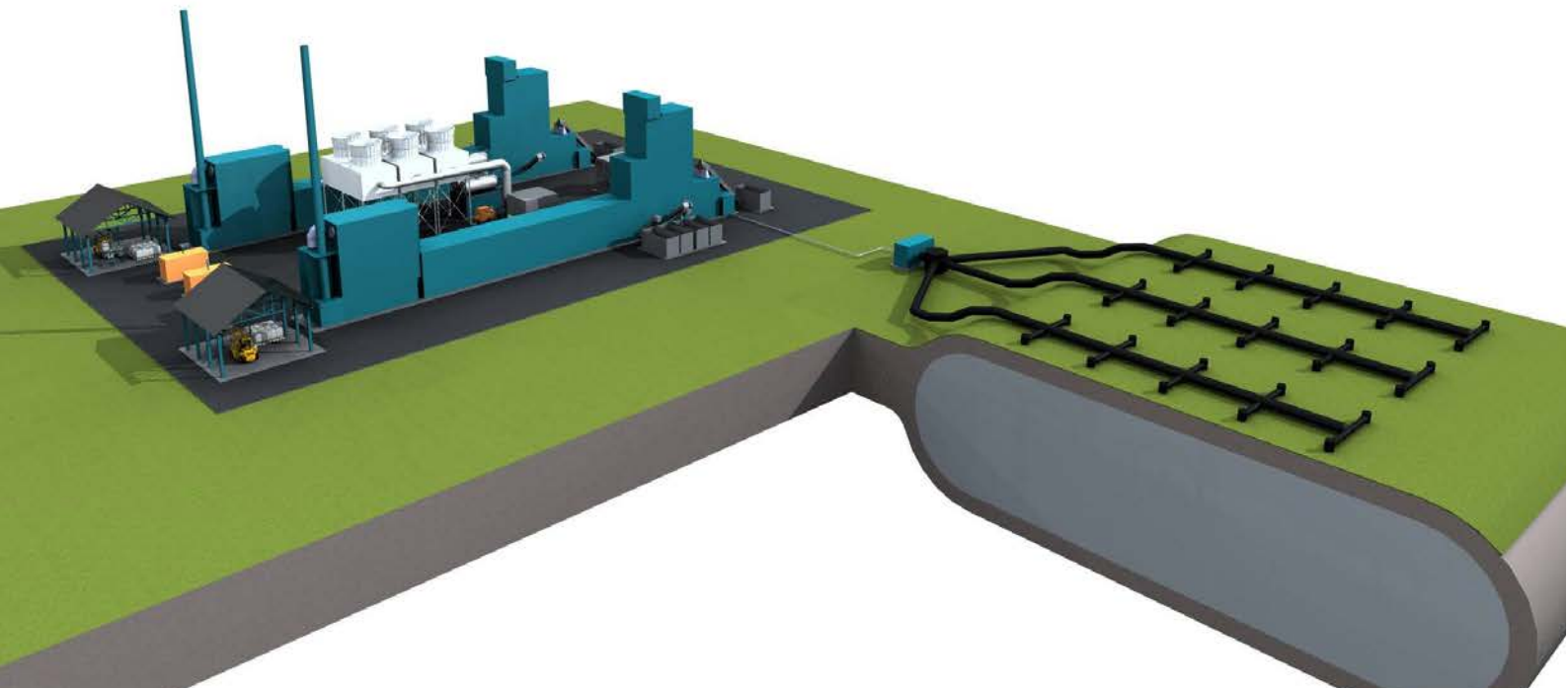
W O I M A

CORPORATION

USE CASE



MORE POWER WITH
LANDFILL AND BIOGAS



MORE POWER WITH LANDFILL AND BIOGAS

Municipal Solid Waste (MSW) is a challenging fuel that often requires support fuel for incineration. A logical location for a waste incineration plant is the landfill, where support fuel; methane forms naturally. Or biomass is sorted out of the in-coming waste streams and utilized in biogas generation. Both gases work perfectly with the *wasteWOIMA*® power plant improving its ability to use low calorific value waste fuels and generating power cost-efficiently.

Landfill gas is an under-utilized resource in most of the landfills around the globe. This is mainly due to the complicated way of turning it into power. Collecting the gas is relatively simple; drilling methane collection wells into the landfill and connecting the collection piping network. But energy generation requires pumping stations, washing units, combustion engines etc., which are CAPEX-intensive. Thus, even if the collection pipes have been installed, gas is typically just burnt in a torch to prevent methane leakages and potential explosions.

The *wasteWOIMA*® power plant offers a novel and efficient way of utilizing the landfill gas; co-combustion with the waste fuels. This will enhance the calorific value of the fuel feed and enable the power plant to incinerate solid fuels with low calorific value and/or high moisture content. Furthermore, the landfill will act as a gas fuel buffer storage that can even out fluctuations in the waste fuel quality and quantity.

Biogas has the same main components as landfill gas does; methane and CO₂. Thus, it can easily substitute it as a support fuel in the incineration process. But both landfill and biogas can be utilized in an even more efficient way. While the waste-to-energy power plant's steam super-heating is limited to 40bar/400°C for technical reasons, a gas-fired super-heater can reach much higher pressure and temperature, which will naturally generate more power. Utilization of the low quality gases this way is much simpler than using traditional combustion engines.

Both solutions are effective in the abatement of CO₂ emissions. Reducing the amount methane discharge from decaying biowaste is 25 times more effective than fighting CO₂ emissions directly. This offers excellent potential for participating in carbon credit programs. The life cycles of *wasteWOIMA*®, biogas digestion process and landfill gas generation coincide nicely at 30 years.

The modular wasteWOIMA® power plant uses non-toxic municipal, institutional, commercial, industrial and/or agricultural waste streams to produce saturated steam, electricity, thermal energy and/or potable water. The required waste quantity is roughly 170 tons per day, which translates to 3.4 MWe of electrical power or 2.0 MW_e / 10 MW_{th} in co-generation. The plant is easily delivered, quick to install, cost-efficient to run and simple to maintain offering all stakeholders significant benefits.

BENEFITS:

WASTE MANAGEMENT

- Creating new business potential
- Simplifying waste logistics
- Reducing environmental impacts
- Matching future regulations
- Postponing landfill investments
- Green image benefits

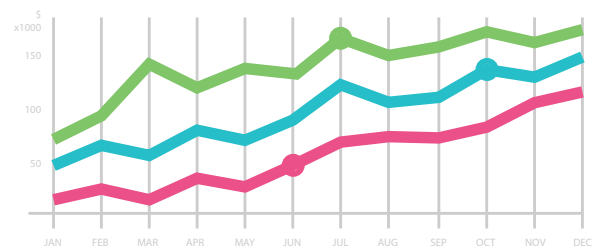


POWER & UTILITY

- Decentralizing power generation
- Enabling off-grid solutions
- Offering fuel & production flexibility
- Harnessing endless fuel source
- Utilizing carbon credit schemes
- Fast plant delivery

INVESTORS

- Excellent return on investment (ROI)
- Scalable business model
- Diversified investment portfolio
- Vendor arranged funding
- Fast project roll-out
- Plant relocation option



OTHER STAKEHOLDERS

- Turning waste into local welfare
- Health & environmental benefits
- Local reliable energy supply
- Educational & job opportunities
- Improving living conditions
- Implementing development funding



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