



W O I M A

CORPORATION

BROCHURE



*waste*WOIMA® EXT  
WASTE-TO-ENERGY POWER PLANT  
WITH EXTERNAL SUPERHEATER



## **wasteWOIMA<sup>®</sup> EXT**

### **THE MODULAR WASTE-TO-ENERGY POWER PLANT WITH EXTERNAL SUPERHEATER**

Municipal Solid Waste (MSW) is a highly heterogeneous fuel that sets technical limitations to its incineration process. The combination of high temperature and pressure with harmful waste compounds can cause corrosion and thus render the power plant obsolete. On the other hand, lower temperature and pressure limit the power plant's power generation capacity. This limitation can be overcome with the help of an external superheater utilizing liquid or gaseous support fuels to enhance the power plant's energy balance.

WOIMA Ecosystem is the perfect solution in optimizing raw material recycling and power generation from solid waste streams. The biogas (CBG) produced by means of anaerobic digestion is utilized in the external superheater to boost the energy output of the *wasteWOIMA<sup>®</sup>* power plant. Other methane-based fuels, such as LNG, CNG, LPG, LFO and HFO, as well as landfill gas (LFG) are also well-suited for use at the superheater. Naturally, a combination of the above also works.

The same support fuel can be used to incinerate high-moisture or otherwise low-calorific-value waste fuels, such as organic waste and different types of sludges. The waste mix can also include semi-toxic industrial solid and liquid wastes, as well as hazardous hospital wastes. The high incineration temperature will render the ashes safe.

The *wasteWOIMA<sup>®</sup> EXT* power plant presents all the same benefits of robustness, modularity and scalability as does the standard *wasteWOIMA<sup>®</sup>* plant, but with improved power generation capacity. The external superheater improves the power plant's gross electricity generation by over 50% by allowing the use of higher temperature and pressure than the standard *wasteWOIMA<sup>®</sup>* plant. In Combined Heat and Power (CHP) mode the improvement is even higher.

The *wasteWOIMA<sup>®</sup> EXT* power plant is also designed for a 30-year lifespan in the harshest of conditions. The design is based on 20' and 40' sea-container-sized modules that are easy, fast and secure to transport to virtually any destination. And they also form part of the power plant's protective casing on site.

The *wasteWOIMA*® EXT power plant's modularity is based on a *WOIMAline* (boiler island) ideology. The plant consists of one to four *WOIMAlines* each with the following parameters

- thermal efficiency 89%
- electrical efficiency 33%
- CHP efficiency 25% electricity / 60% thermal

The plant can also generate a combination of saturated steam, thermal energy and electricity, and switch flexibly between the commodities.

The *wasteWOIMA*® EXT is capable of handling a wide range of solid waste fuels, such as

- municipal solid waste (MSW)
- refined waste fuels (REF, RDF or SRF)
- industrial and commercial waste (ICI)
- construction and demolition waste (CDW)
- agricultural waste (AW)
- waste wood and
- different biomasses

The waste fuel calorific value range is 7 – 24 MJ/kg with moisture up to 55%. The plant automatically adjusts itself to the variations in fuel quality and quantity to deliver a constant stream of energy.

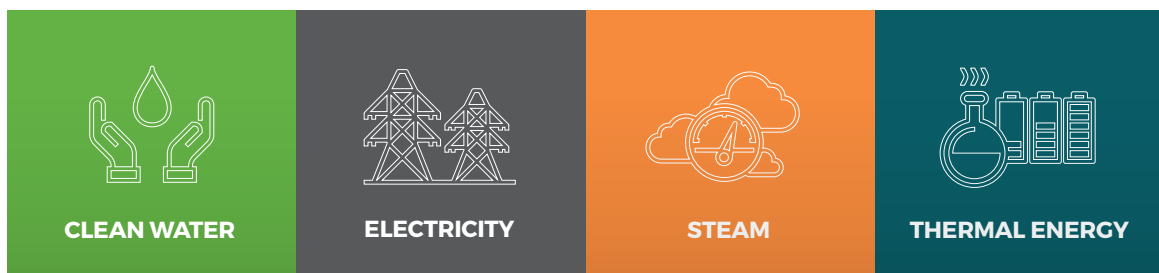
The basic plant design can be complemented with several different standardized auxiliary systems. They are also designed to fit into the modular plant approach. An additional system could be

- an evaporator to produce boiler water and/or safe potable water
- a reverse osmosis installation for demineralized water production
- a landfill leachate treatment system
- a flue gas scrubber to utilize the latent heat otherwise lost through the stack
- an Organic Rankine Cycle (ORC) electricity generation module instead of the steam turbine



## KEY FACTS

- Easy to build; established on a concrete slab of 1,500 - 5,000 m<sup>2</sup>
- Erection and commissioning within 4 months of delivery
- Simple operation; robust and proven technology
- Safe operation under any conditions
- Easy exchange of broken or worn-out plant components
- Remote monitoring of plant performance
- Capable of producing electricity, thermal energy and potable water
- Complies with the EU Emission Standards





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