ORGANIC WASTE POWER GENERATION SOLUTION

Mankind has utilized olive trees and oil palms for cooking oil for thousands of years. But during our modern era, the production by-products have become a major problem. Production quantities are so huge that the left-over material; empty fruit bunches, palm oil mill effluent and palm kernel shells from oil palms, as well as olive mill waste are threatening local ecosystems, polluting ground water, and eventually affecting people's health and livelihood.

Olive fruit processing produces large amount of by-products, including liquid and solid wastes arising from olive oil extraction and the production of table olives. The disposal without any treatment of the olive waste is known to cause serious environmental problems, especially prominent in the Mediterranean region. But, olive mill wastes are valuable by-products and could be used e.g. for energy generation.

The empty fruit bunches (EFB) and other bio wastes left over from the bio fuel raw material production from oil palms is a similar challenge affecting mainly South East Asia. It has quite a high moisture content and is therefore vulnerable to natural decay through fungi or bacterial processes. Due to its high potassium and sodium content, EFB is somewhat difficult to incinerate in traditional biomass power plants.

Both, the residual biomass from tree culture and the oil extraction residue have excellent heating values between 13 and 20 MJ/kg.

The *waste*WOIMA® modular waste-to-energy power plant has the right characteristics to utilize all types of organic waste fractions for power generation. It can produce the required thermal and electrical power to run the production facilities utilizing the freely available production by-products. At the same time, the power plant helps save the environment from the ill effects of the soluble effluents in the waste.

The power that is not used in the oil production can be sold to the grid, used in the waste water facility to treat the sewage and sludge generated in the production, or to produce potable water for local population. Process steam can also be offered to other nearby manufacturing facilities.

The fuel feed to the *waste*WOIMA® power plant can be a combination of all kinds of waste fractions, including municipal, industrial, commercial and institutional waste. Thus, the plant can serve both industries and municipalities alike.

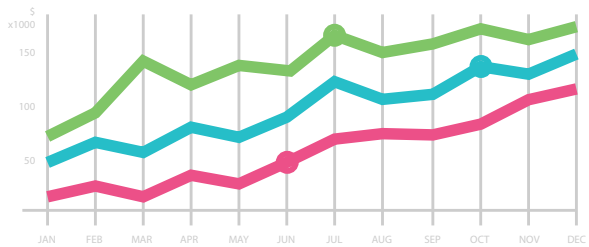
The modular *waste*WOIMA® power plant uses organic waste fractions, such as olive mill waste (OMW), empty fruit bunches (EFB), palm oil mill effluent (POME) and palm kernel shell (PKS) to generate super-heated steam, electricity, thermal energy and/or potable water. The required organic waste quantity is roughly 100 tons per day, which translates to 3.7 MW_e of electrical power or 2.4 MWe / 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

WOIMA

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