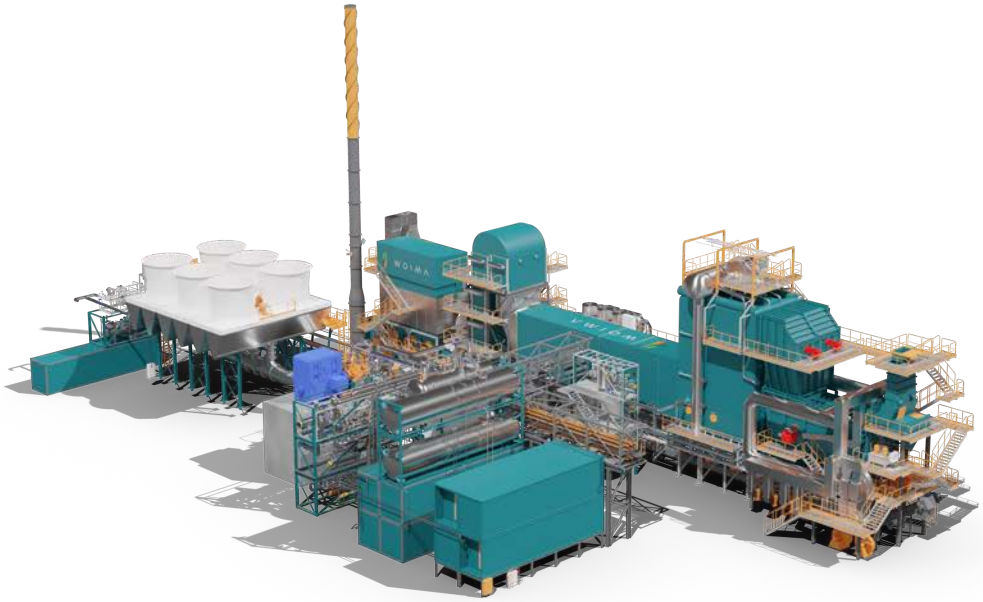
WOIMA

CORPORATION

USE CASE

PULP AND PAPER MILL
WASTE-TO-ENERGY



PULP AND PAPER MILL WASTE TO ENERGY

Pulp and paper mills are generating millions of tons of solid waste fractions across the globe annually. These waste streams are difficult to recycle as raw materials or utilize in the mill process. The next best thing is recycling them into energy. The mix of the different wastes is a perfect fuel for the *waste*WOIMA® waste-to-energy power plant. The robust grate incineration allows for large variations in the fuel mix generating energy for the mill processes. For sites, where the paper machines or pulp equipment have been decommissioned, dismantled and facilities sit idle, the modular WOIMA*line* boiler island can be installed in the vacant space.

The pulp and paper mills' production residues consist of pulper rejects, paper and bio sludges that are utilized most efficiently by recycling them into energy on site. This way their environmental impact is minimized, while meeting the site's energy requirements. The *waste*WOIMA® power plant can generate electricity and thermal energy, mainly saturated steam, for the mill processes. The output can increase significantly, if support fuel, such as biogas or LNG is available. Any excess energy can be sold to the grid or district heating network.

A large number of pulp and paper mill units are closed each year due to production over-capacity creating room for other investments. The size of a seven-meter-wide paper machine coincides nicely with our WOIMA*line*. The existing overhead crane is used during the installation process, and to support maintenance activities. The maintenance platforms already exist and the building difficult to utilize otherwise is put to good use protecting the plant from the elements ensuring long lifespan.

The *waste*WOIMA® power plant design is based on standard 20’ and 40’ container-sized modules, which simultaneously act as

- easily transportable units
- secure enclosures
- installation platform for technical solutions
- protective housing on-site

There is no power plant building causing additional costs or slowing down the erection process. The modules are simply bolted together to form the operational power plant. All the modules have been designed with efficient and fast transportation, erection, dismantling and relocation in mind.

The *waste*WOIMA® power plant project can also be planned as a temporary solution. Once there are more efficient recycling processes in place the facility can be dismantled and relocated, or assigned for new waste streams. Relocating the plant protects some 90% of the original investment. Only the concrete foundations are left behind.

One WOIMA*line* uses some 30,000 to 50,000 tons of pulp and paper mill wastes per annum. These wastes can be complemented with e.g. REF, RDF, SRF or liquid/gaseous support fuels for higher output. The outputs per 15 MW_{fuel} WOIMA*line* are

- 3.7 MW_e of electrical power or
- 2.4 MW_e / 10 MW_{th} in heating mode or
- 2.4 MW_e / 6 MW_{th} in cooling mode

Up to four WOIMA*lines* can be interconnected to form a larger *waste*WOIMA® power plant.
The plant is easily delivered, quick to install, cost-efficient to run and simple to maintain offering all stakeholders significant benefits. Relocation to a close-by site can be done within four-to-six months.

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 wellbeing
- Health & environmental benefits
- Local reliable energy supply
- Educational & job opportunities
- Improving living conditions
- Implementing development funding

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