

Energy Flow in Thermal Vortex Energy Recovery System

This document reflects updated efficiency settings for the energy recovery process using a thermal vortex combustion system, a waste heat boiler, and a steam turbine generator. It assumes combustion of 4 tons of Municipal Solid Waste (MSW) with an energy content of 4,000 BTU/lb.

1. Input Energy from Waste

- 4 tons of MSW = 8,000 lbs
- Energy content = 4,000 BTU/lb
- Total Input Energy = 32,000,000 BTU

2. Conversion Efficiencies

- Thermal Vortex Combustion Efficiency: 98%
→ Energy after vortex: 31,360,000 BTU
- Waste Heat Boiler Efficiency: 85%
→ Steam Energy: 26,656,000 BTU
- Steam Turbine Generator Efficiency: 60%
→ Electric Energy Output: 15,993,600 BTU

3. Final Output

- Electric Output = 15,993,600 BTU
- Converted to kWh: 4,687 kWh (kilowatts per hour)
- Equivalent to: 4.687 MW hours of electricity
- Each kWh = 3,412.142 BTUs
- 6 MW = 6,000 kWh
- Example: 6 MW = 20,472,852

Note: These values are based on standard efficiency assumptions as shown above. Actual system performance may vary depending on operating conditions, waste moisture content, and equipment tuning.