



# **BESTECH**

CLEAN ENERGY

## **Providing Clean Renewable Energy & Waste Management**





# ABOUT US

Bestech Clean Energy LLC is a USA based Waste to Energy (WTE) company specializing in municipal solid waste (MSW) recycling and electrical power generation through the use of incineration and biomass gasification technology.

Bestech Clean Energy LLC was formed in response to the need for a better more efficient green method of recycling and capturing the energy content within MSW.

Hundreds of thousands of tons of MSW are produced each year. In municipalities with ongoing recycling programs, only a portion of the recyclable municipal waste material is sorted for reuse. The majority of the remaining waste is either landfilled or incinerated. Bestech Clean Energy's WTE incineration process converts the heat contained in MSW through incineration of the waste. Any emissions resulting from the incineration process are neutralized by passing the emissions through multiple cleaning processes.

The methodology utilized by Bestech begins with the thorough sorting of all waste materials. Recyclable items are removed for recycling. The remaining waste is processed through an Incinerator. The incinerator combusts the waste materials. The heat from the combusted waste materials is used to power steam boiler or organic rankine cycle turbine electrical generators. The electricity produced will be added to the local power grid under long term agreement.





## Bestech Clean Energy

CONSTRUCTING RENEWABLE AND RECOVERED ENERGY POWER PLANTS

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### Executive Summary

Bestech Clean Energy designs, constructs and operates **Municipal Solid Waste to energy facilities**. Each **Waste-To-Energy** facility can be scaled to meet the waste disposal and energy needs of the local communities. The plant will take in approximately 20,000 tons of municipal solid waste annually for every megawatt of power produced. For example, a large city produces enough waste to support a 2,000 ton per day incineration Plant. That sized plant could generate 46 megawatts of electricity per hour depending upon Btu content of the waste materials.

The WTE plant will earn revenue primarily from tipping fees from the waste delivered to the facility and sales of the electrical power generated by the plant. Additional revenues could be earned from the sales of the recyclable materials which are removed from the MSW, if so desired, as part of the solid waste processing. The ash material can be used in concrete manufacturing or as landfill cover.

BCE incineration systems are designed for continuous operation which offer 24 hours a day power generation. We offer incineration systems designed to suit your needs. As part of the development process, BCE will analyze your current MSW volumes and trash makeup. From there, we can design a WTE plant specifically to meet your waste processing needs. The plant size and power output are only limited by the volumes of MSW that can be provided to run the plant.

A 350 tpd plant with a fully automated sorting/shredding system would provide permanent jobs for 40-to-50 workers. A 2,000 tpd plant with limited sorting automation could provide multiple benefits to the area it serves in the form of 400 to 500 permanent jobs for a 2,000 Mw plant. It would take in waste that might otherwise be sent to a landfill. The solid waste materials are used as feedstock for the process. Incinerating the solid waste diverts it from going to a landfill, thereby eliminating potential landfill methane gas production, Incineration of the MSW takes place in 1 to 5 days and allows revenue realization within a short period of time rather than a wait of two years or more for landfill gas production. The process uses more of the MSW solid waste materials than are possible with anaerobic decomposition and landfill gas production.

Electricity produced from incineration of MSW is a renewable resource that will contribute in meeting energy goals.

Strategically placed WTE incineration plants and locally generated power can reduce transmission line losses and distribution system congestion making the system more efficient. Local companies and labor will participate the construction of the facility. For its operation, a 46-Megawatt plant will create approximately 400 to 500 permanent jobs and inject an equivalent amount of wages into the local economy. The plant ensures local municipal waste haulers remain in business and competitive against alternatives that would haul the waste to more distant disposal sites and increase hauling costs and carbon emissions from diesel trucks' exhaust.

The plant will deploy well established incineration and power generation technologies for the conversion of waste into electricity. Modern incineration is a proven technology that holds great promise for alternative energy. The front of the whole process is an efficient material sorting and shredding system that can remove valuable metal and glass resources that can be recycled rather than buried and lost forever.

Plants developed by Bestech Clean Energy will be state of the art in waste-to-energy incineration systems. Each installation of this incineration technology will extend landfill life by freeing up space, increase the recycling and recovery of valuable resources, and provide electrical of power from local renewable resources. Plants of this type are currently in operation.

The plant is simple, modular, rapidly constructed, and comprised of field proven components and technologies. Bestech Clean Energy's design could be in a fully enclosed facility, which keeps airborne and liquid emissions contained within the building. If odors are not a concern and the location has a moderate climate, the plant could be constructed without a building structure to reduce project costs.





# Solution of Waste-To-Energy

Collection and Transportation System

Receiving and Storage System

Incineration System

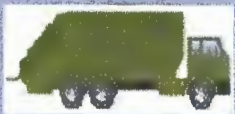
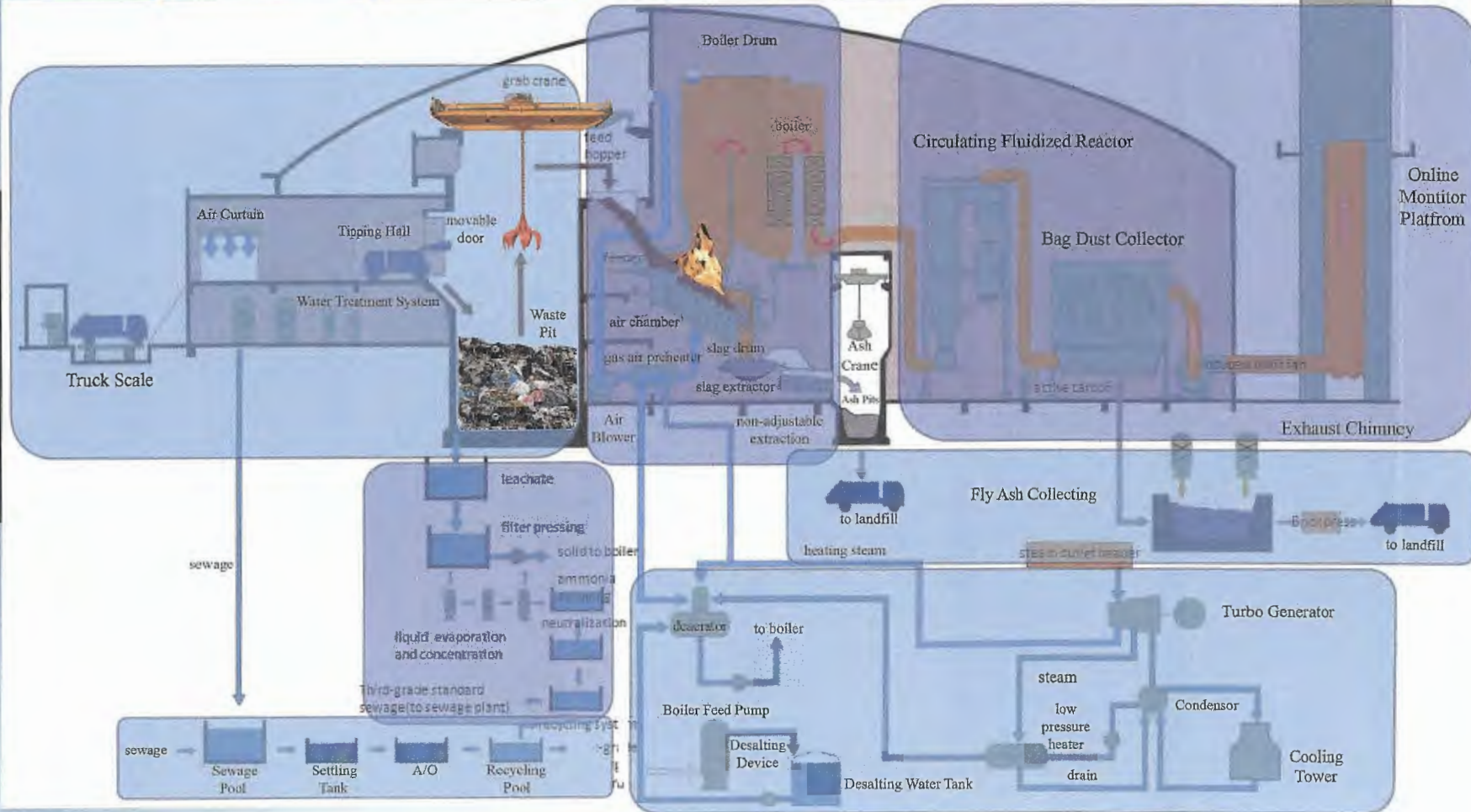
Heat Utilization System

Flue gas Treatment system

Ash Heating system

Leachate treatment System

Sewage Treatment System



## Flue Gas Treatment System (including ultra-clean emissions)



"3T+E"  
Dioxins Control  
Technology

Semi-dry Spray  
Reactor(De-Acidification)

Bag Filter

Low Temperature  
SCR Reactor(Optional)

Wet Scrubbing  
Reactor(De-  
Acidification,  
Optional)

Stack

The comparison of Ultra Clean Emission, CN2014, and EU2000 for WTE (Unit: mg/Nm<sup>3</sup>)

Standard	Dust	HCl	SO <sub>2</sub>	Heavy metal	NO <sub>x</sub>	CO	Cd + Tl	Hg	Dioxins ng TEQ/Nm <sup>3</sup>
CN ( 2014 )	20	50	80	1.0	250	80	0.1	0.05	0.1
EU ( 2000 )	10	10	50	1.0	200	50	0.05	0.05	0.1
Ultra clean emission	5	5	10	0.5	40	50	0.03	0.03	<0.05



## INCINERATION OF MUNICIPAL SOLID WASTE

- WTE incineration diverts solid waste that would otherwise go into a landfill.
- Incineration is a well establish and proven technology in use around the world.
- WTE incineration of the municipal solid waste can be used to both generate electricity and provide heat.
- The incineration of the waste process actually uses the solid waste materials as fuel for the process. The exhaust from incineration is thoroughly treated or scrubbed in multiple cleaning processes to assure that any emissions are neutralized, and any hazardous materials are removed before being released into the atmosphere.
- The remaining ash materials from the incineration process can be used to make concrete. Or, the ash can be used as landfill cover to provide a barrier in solid waste dumps.
- The heat is used to power electrical turbine generators. This can be used to create steam in a boiler, which powers steam turbine/generators to make electricity.
- As an alternative method of electrical power generation, the heat from the incineration process can be used with heat exchangers and ORC (Organic Rankine Cycle) turbine/generators to make electricity.
- Since the incineration process uses municipal solid waste materials as fuel for the process and MSW is being produced continuously, the incineration process is a renewable energy process.





Electricity added to local power grid



Waste is collected



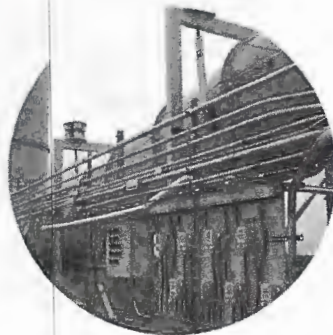
Waste is sorted



Recyclables separated and removed from process



Materials are shredded



Incineration of shredded feedstock materials



Heat from Process used to power electrical generators



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