# Tenor Small And Medium Sized Garbage Incineration System



统一社会信用代码
91210211MA117E4T92

营业执照
（副本）
（副本号：1-1）

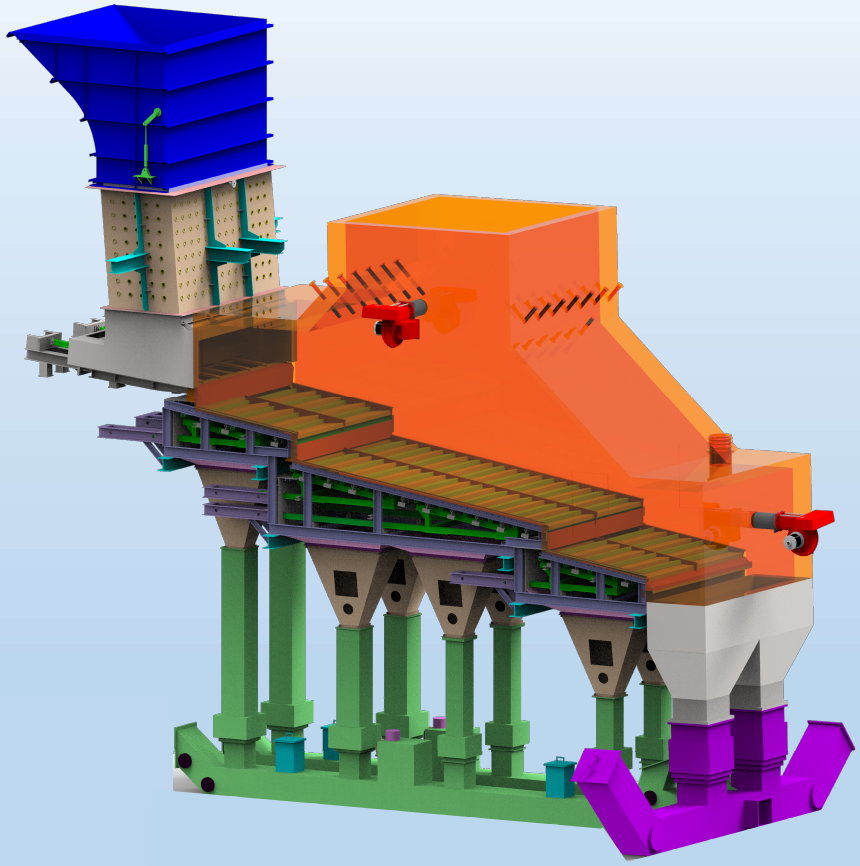
名　　称　天韵低碳新能源科技（辽宁）有限责任公司
类　　型　有限责任公司
法定代表人　谢源波
经营范围　许可项目：危险废物经营，各类工程建设活动，餐厨垃圾处理，城市生活垃圾经营性服务（依法须经批准的项目，经相关部门批准后方可开展经营活动，具体经营项目以审批结果为准）一般项目：技术服务、技术开发、技术咨询、技术交流、技术转让、技术推广，生活垃圾处理装备销售，环境保护专用设备销售（除依法须经批准的项目外，凭营业执照依法自主开展经营活动）

注册资本　人民币伍佰万元整
成立日期　2021年07月14日
住　　所　辽宁省大连市甘井子区虹港路2号2层205室0020号

登记机关　大连市甘井子区市场监督管理局
2022年10月31日

国家企业信用信息公示系统网址：http://www.gsxt.gov.cn　市场主体应当于每年1月1日至6月30日通过国家企业信用信息公示系统报送公示年度报告。　国家市场监督管理总局监制

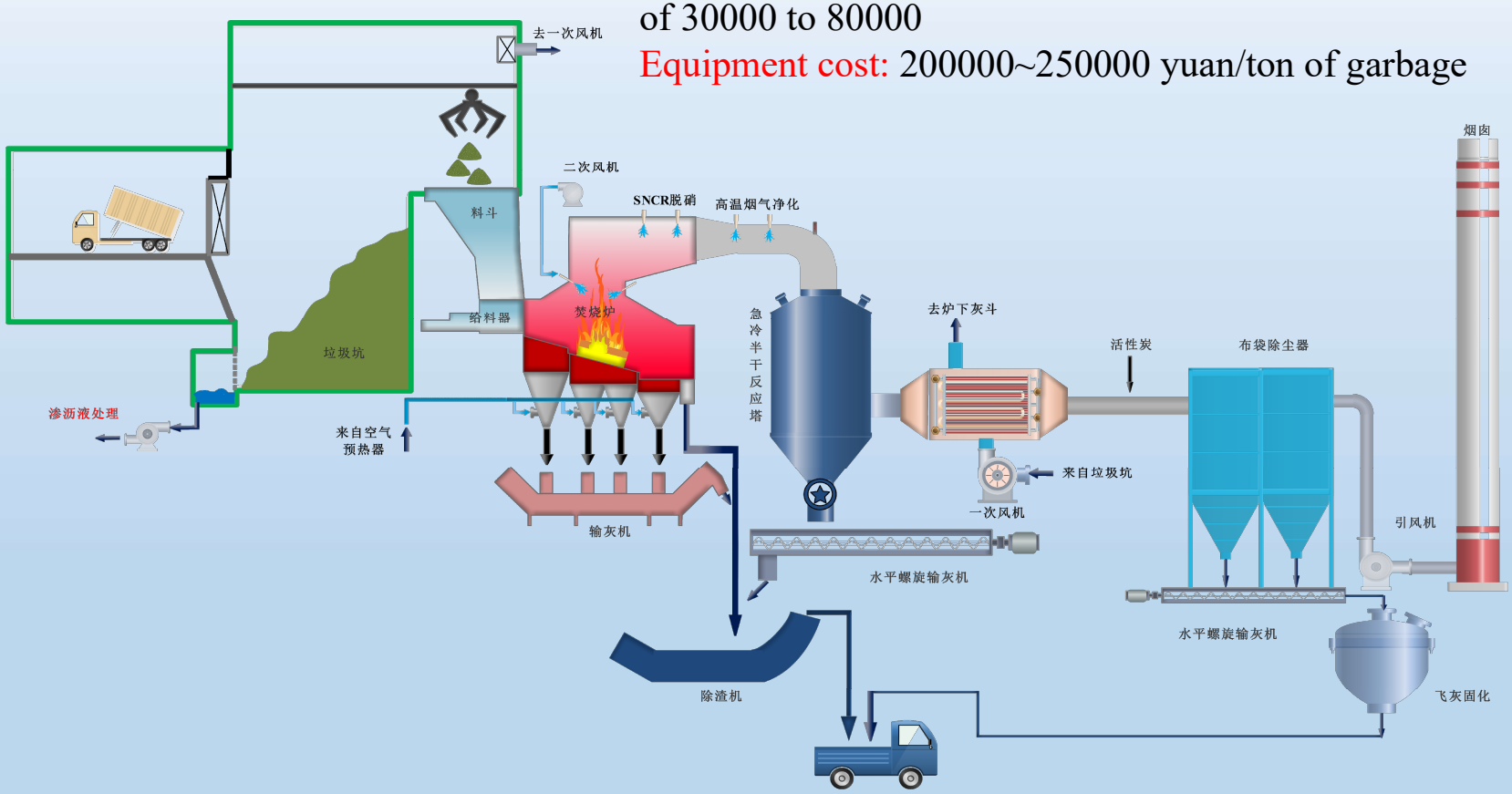
**The Tenor small and medium-sized garbage incineration system is developed and designed by Tenor Company, Dalian University of Technology, and Dalian Institute of Chemical Physics, Chinese Academy of Sciences. Its main components include feeding system, grate system, combustion system, and slag removal system. Suitable for small and medium-sized domestic waste incineration projects in towns and counties with a daily processing capacity of 30-300 tons.**



# Technological Process

30-50t/d生活垃圾焚烧处理工程
工艺流程图

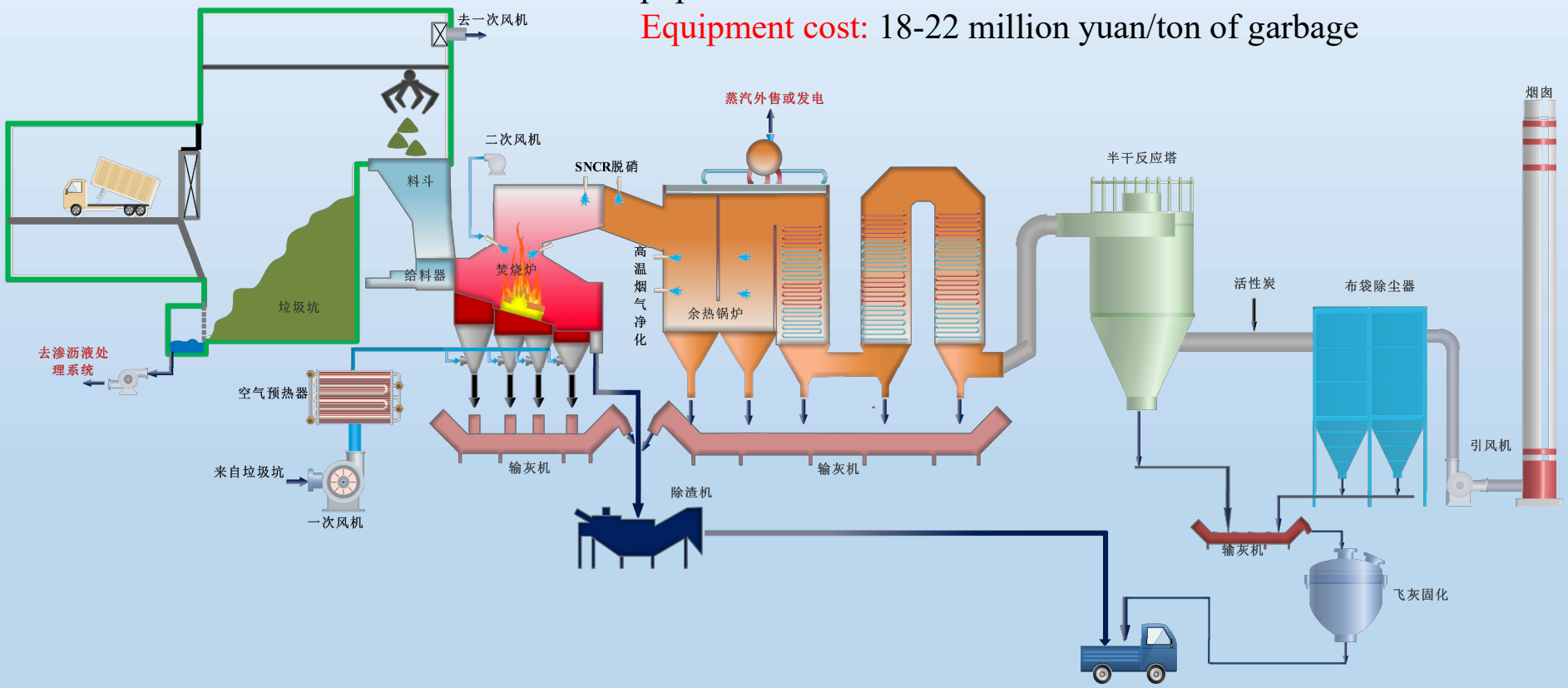
Processing scale: 30-50 tons/day
Applicable scenario: Only dealing with household waste
Applicable area: Townships and parks with a population of 30000 to 80000
Equipment cost: 200000~250000 yuan/ton of garbage



# Technological Process

Processing scale: 50~150 tons/day
Applicable scenarios: Processing household waste while utilizing resources and balancing economic benefits
Applicable area: Townships and counties with a population of 50000 to 200000
Equipment cost: 18-22 million yuan/ton of garbage

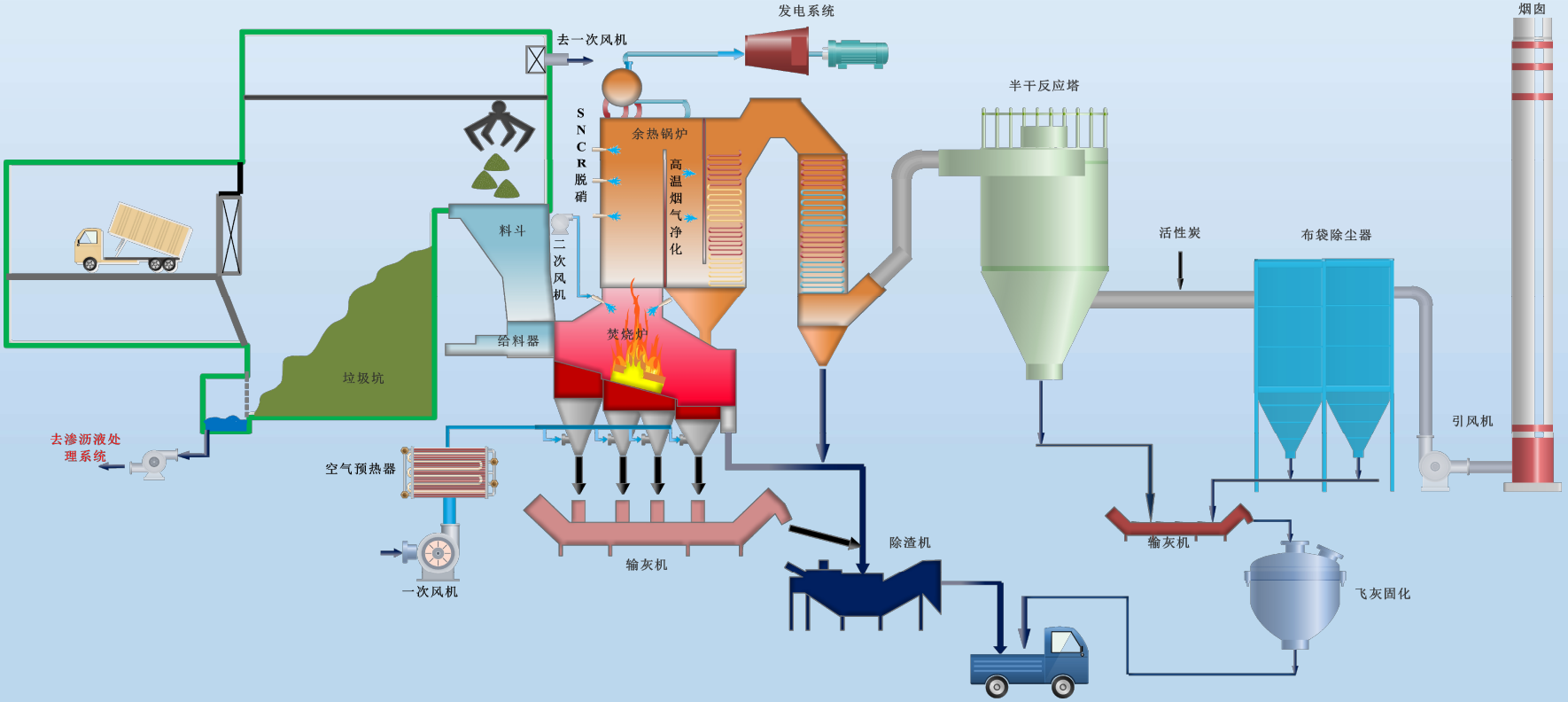
垃圾焚烧工艺流程图
(50t/d~150t/d)



# Technological Process

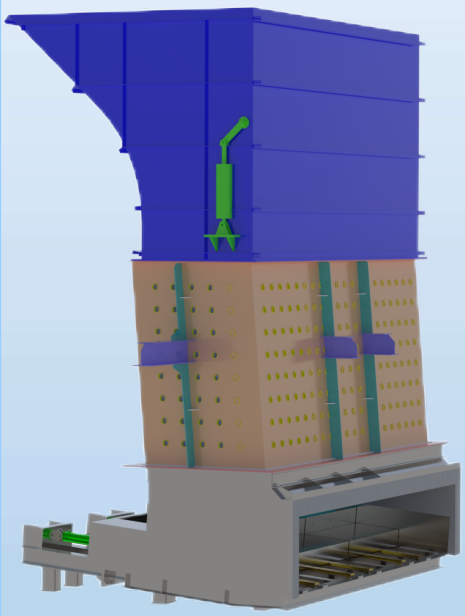
垃圾焚烧发电工艺流程图
(200t/d~300t/d)

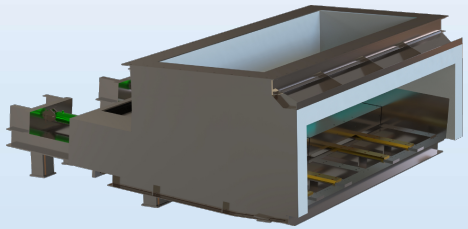
Processing scale: over 200 tons/day
Applicable scenarios: Processing household waste while utilizing resources and balancing economic benefits
Applicable area: Counties with a population of over 200000
Equipment cost: 150000 to 200000 yuan/ton of garbage

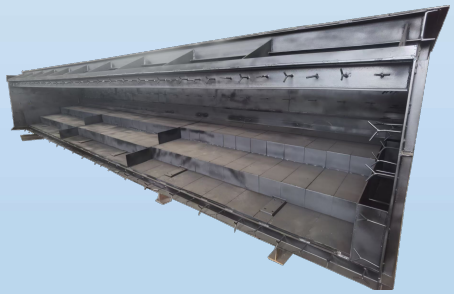


# Core Equipment

## Feeding system







## Major equipment

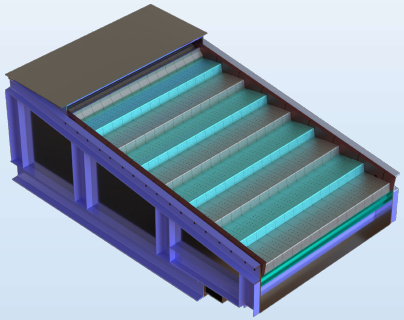
**The feeding system consists of a hopper, a water-cooled jacket, and a feeder.**

## Features

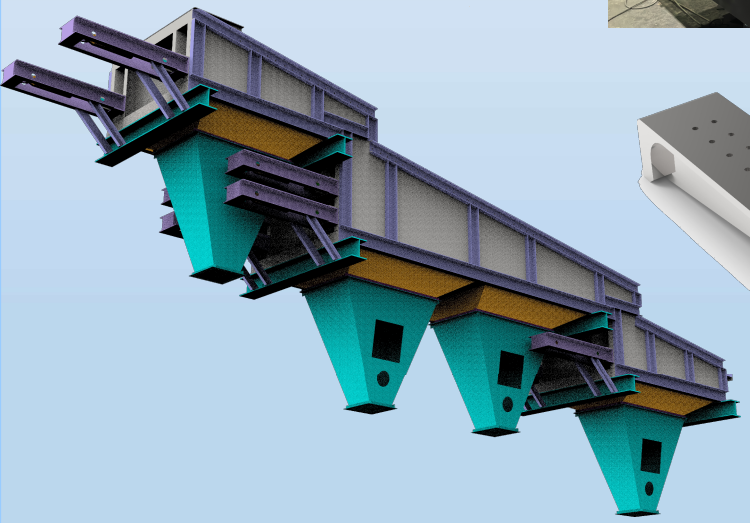
**The effective volume of the hopper meets the incineration capacity of the system for 1-1.5 hours. The hopper includes a gate device. During the start-up and shutdown stages, the gate is closed to ensure that the incinerator is isolated from the outside world. The gate also serves as a bridge breaking function. When the garbage bridge cannot be unloaded normally, the gate movement and compression are used to break the bridge and restore smooth unloading. Under the hopper, a water-cooled jacket and a dedicated feeder for household waste are sequentially installed. The water-cooled jacket can protect the feeding channel from high temperature burning during the start-up and shutdown stages and abnormal incineration situations inside the furnace. The feeder can feed household waste into the furnace according to the set cycle, and the gate and feeder are driven by hydraulic pressure.**

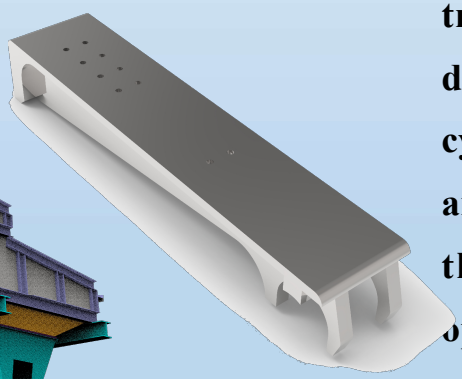
# Core Equipment

## Grate system









## Major equipment

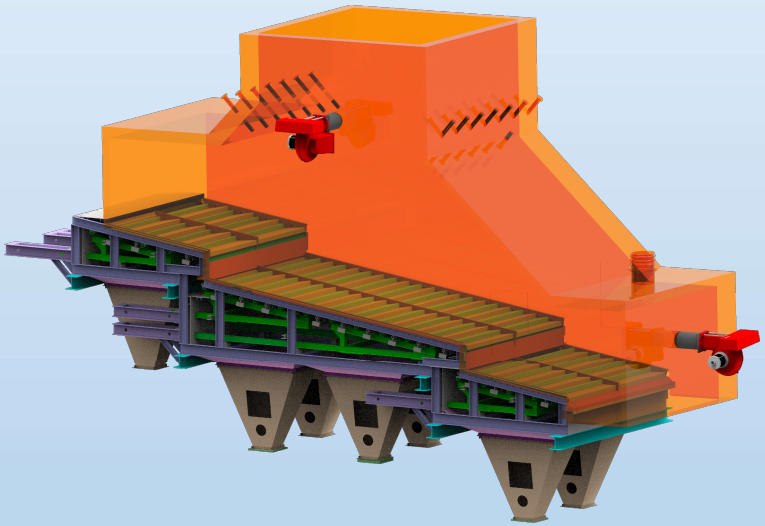
The grate system consists of reciprocating grate plates, grate frames, and driving components.

## Features

The movable grate plates and fixed grate plates are alternately arranged, and the whole is divided into three steps from front to back: drying, combustion, and burnout. A height difference is set between each step to fully flip and stir the garbage during the process of transportation, avoiding agglomeration and insufficient combustion during garbage transportation. The grate is driven by a hydraulic cylinder, and each section of the grate is equipped with an independent air chamber for air supply. The primary air is blown into the furnace through the gaps and surface air holes of the grate. The furnace operator can adjust the speed and air supply of each stage of the grate according to the actual operating situation in the furnace, achieving full combustion of domestic waste and stable operation of the incinerator.

# Core Equipment

## Combustion system



## Major equipment

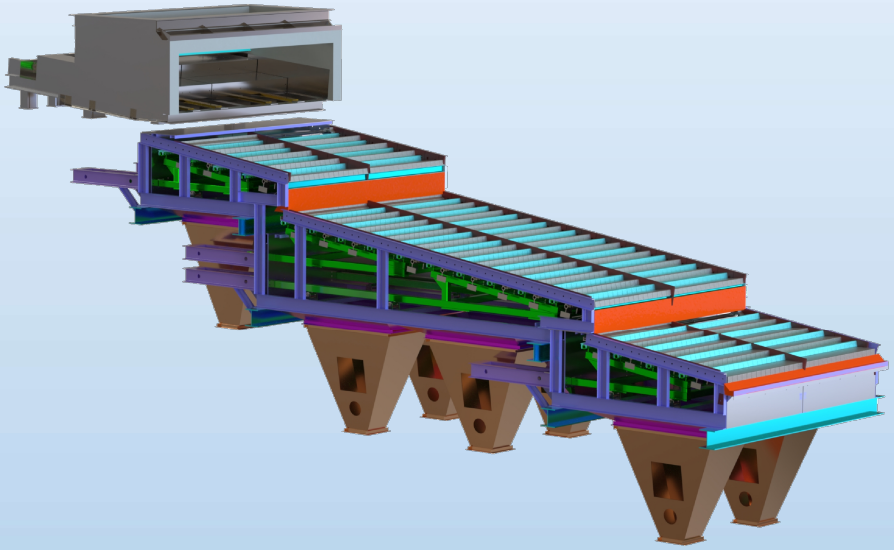
The combustion system consists of a combustion chamber, a main burner, and an auxiliary burner.

## Features

The combustion chamber is composed of a furnace wall, and the furnace wall and its supporting components are installed on a steel structure frame. The furnace wall adopts suitable wear-resistant furnace wall, refractory furnace wall and other structures according to different areas.The main burner is arranged behind the furnace and is mainly used to increase the temperature inside the furnace during the start-up stage, so that the furnace temperature reaches the feeding temperature required by environmental standards. The auxiliary burner is arranged at the outlet of the incinerator and is put into use when there is a large fluctuation in the calorific value of the garbage or abnormal combustion inside the furnace, resulting in a low furnace temperature. It maintains the furnace temperature to ensure sufficient combustion and that the flue gas meets the environmental protection requirements of staying at 850 ℃ for 2 seconds.

# Core Technology

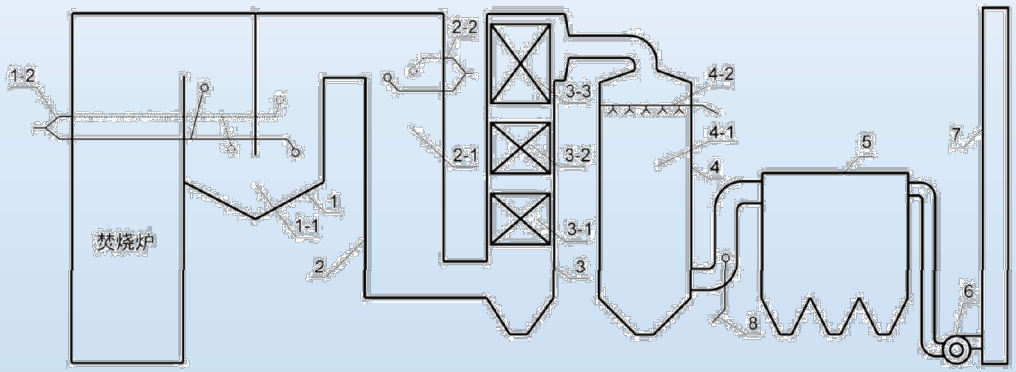
## Efficient and Stable Combustion Technology



- Three step inclined reciprocating grate with smooth feeding;
- Segmented design of grate, suitable for low calorific value waste in towns and counties;
- Each section of the grate is independently supplied with air and controlled, with precise regulation;
- High velocity primary air effectively penetrates the material layer, promoting combustion;
- The synergistic effect of primary and secondary air, oxygen gradient supply, control of furnace temperature and oxygen content, and reduction of nitrogen oxide generation;
- Garbage is fully burned, with a thermal burn reduction rate of ≤ 5%;
- The "3T+E" principle ensures complete combustion and complete decomposition of dioxins.

# Core Technology

## 烟气超低排放技术




高温还原脱硝单元(1)、高温脱酸单元(2)、余热回收单元(3)、增湿降温单元(4)、布袋除尘器(5)、引风机(6)、烟囱(7)

**The ultra-low emission technology for flue gas includes processes such as furnace SNCR, high-temperature flue gas purification, semi dry reaction tower, activated carbon, and bag filter. The flue gas generated from incineration is treated with denitrification, desulfurization, and dust removal, and finally discharged into the atmosphere through the chimney. The flue gas emissions meet the requirements of the Comprehensive Emission Standard for Pollution Control of Municipal Solid Waste Incineration (GB18485-2014)/European standards and meet the ultra-low emission standards.**

**This technology is provided by the Dalian Institute of Chemical Physics, Chinese Academy of Sciences.**

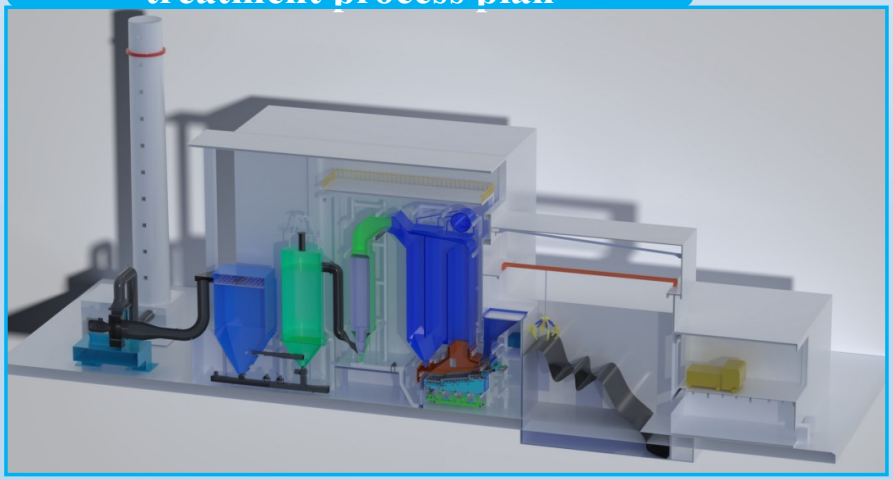
# Application Scenarios

Tenor

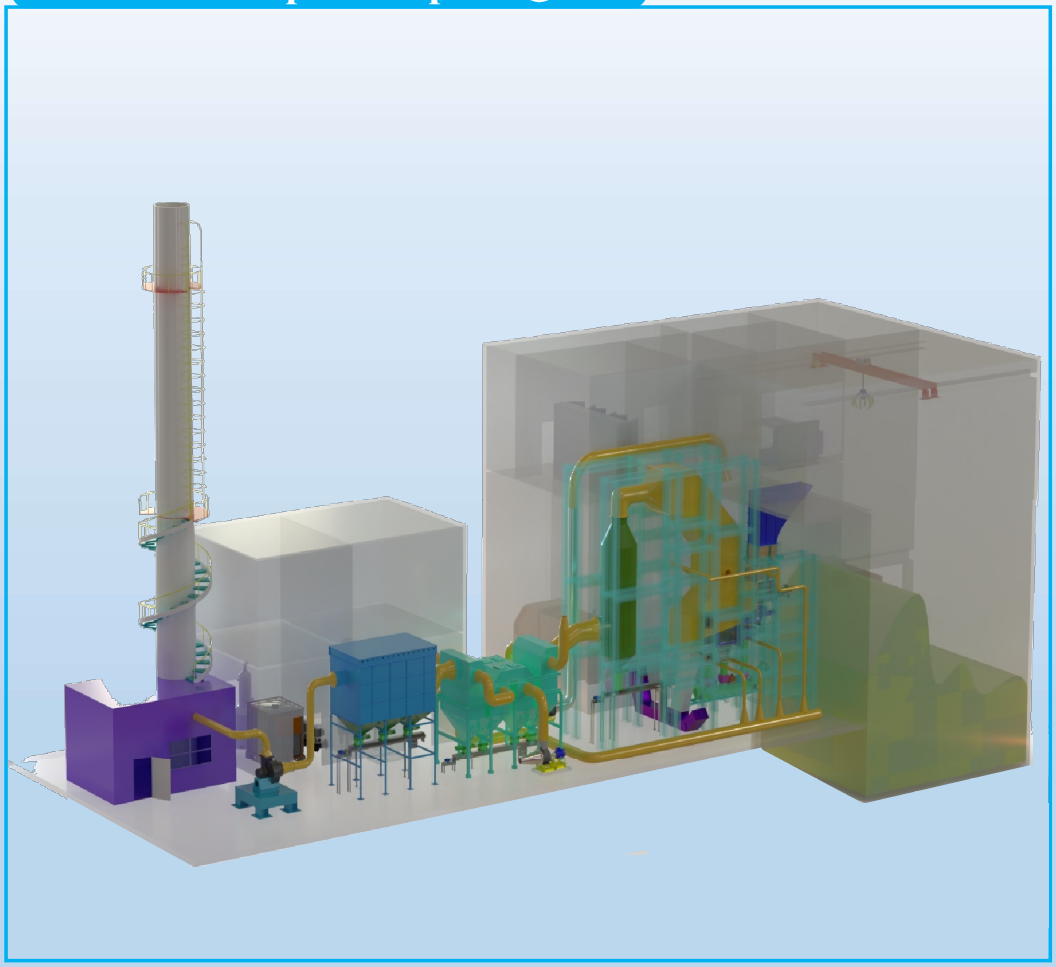
**Small scale garbage incineration treatment process plan ①**



**Medium scale garbage incineration treatment process plan**



**Small scale garbage incineration treatment process plan ②**



# Comprehensive advantages

**Comparison between Tenor Small and Medium scale Garbage Incineration System and Other Domestic Waste Treatment Methods**

| | Landfill treatment | Ggasification | Tenor Garbage Incineration System |
|---|---|---|---|
| **Cover an area** | Huge land occupation | Small footprint | **Small footprint** |
| **Construction cost** | Higher (occupying space) | Higher | **Low (500000~700000/t garbage)** |
| **construction period** | Long construction period | Short construction period | **Short construction period** |
| **Operating cost** | Lower | High (350-500 yuan/t) | **Low (120-150 yuan/t)** |
| **Environmental pollution** | Serious | Serious (not up to standard) | **Small (ultra-low emissions)** |
| **Reduction rate** | The reduction rate is very low | 80% | **80%** |
| **Return on investment** | / | 14~20year | **6~10year（Diversified ways of utilizing thermal energy）** |