

Solutions for Municipal Solid Waste Transfer and Treatment

—Dezhou Qunfeng Heavy
Industries



Website: www.peaks-eco.com

Brief Introduction:



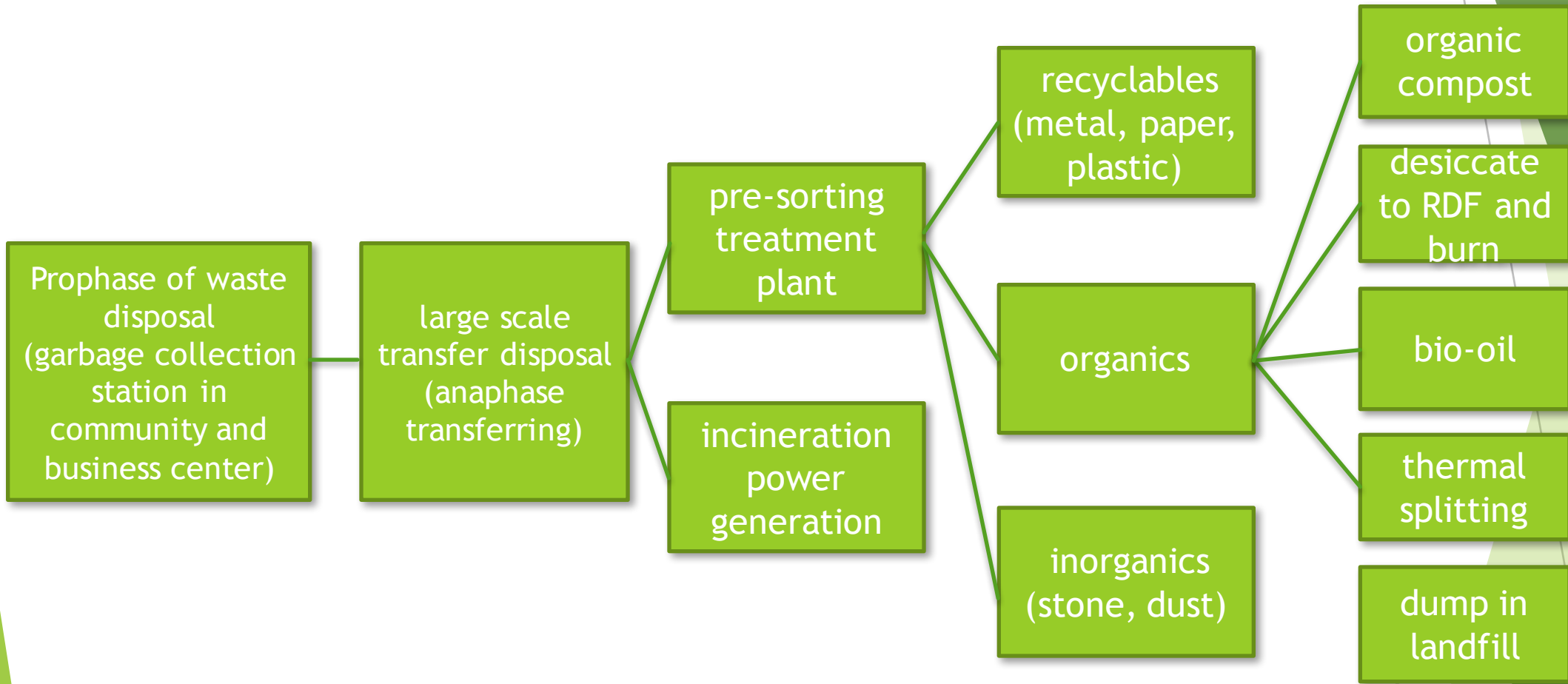
Dezhou Qunfeng Machinery Manufacturing CO., Ltd is a large high-tech enterprise that produces and operates the weighing and sanitation equipment, which is located at the west of Dezhou Ningjin economic development zone. The environmental industry is mainly engaged in the research, production, sales and solutions of waste transfer equipment and other hydraulic products.

Our company locates the geographical position superiorly, transportation convenient, the environment is exquisite. The first company was founded in 2005, Qunfeng Machinery has one hundred million yuan of registered capital, fixed assets of five million yuan, and covering area of 88000 square meters, 560 employees, of whom have senior professional titles account for 130b staff, also owns a team of highly qualified technical backbones for 85 workers.

Its environmental industry is a production enterprise which specialized in designing and producing waste compression equipment, this firm has a strong technical force and capacity of comprehensive disciplines, including engineering machinery, automatic control, machine designing, hydraulic structures and manufacture technics. Besides, we are strongly capable of designing a professional overall solution of urban waste.

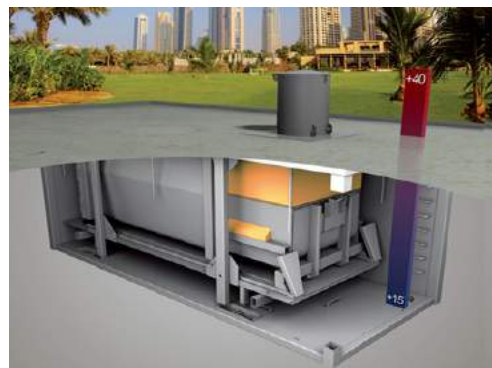
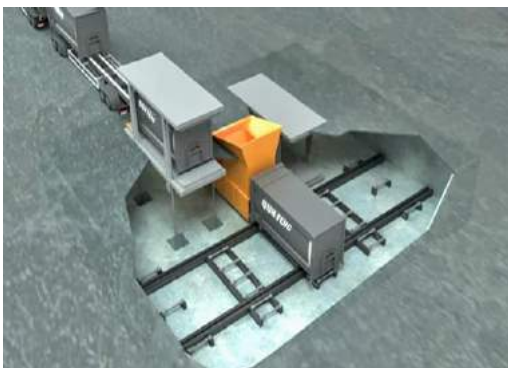


Process Analysis of Urban Garbage Treatment



Pre-collect and transfer programme

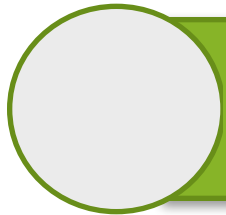
— Product Show



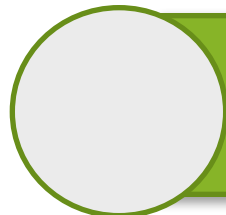
Pre-collect and transfer programme

— Product Characteristics

- ▶ This series of products can provide a comprehensive solution for all kinds of ecological sanitation and waste management, and offer our citizens a safer and healthier living environment. From small tanks to large containers, our products are appropriate for all geographical environments.
- ▶ Generally, it would be set around business centers, residences and tourist attractions, those where people gathered.



Some of products are equipped with elevator system, which makes the collecting more sanitary.

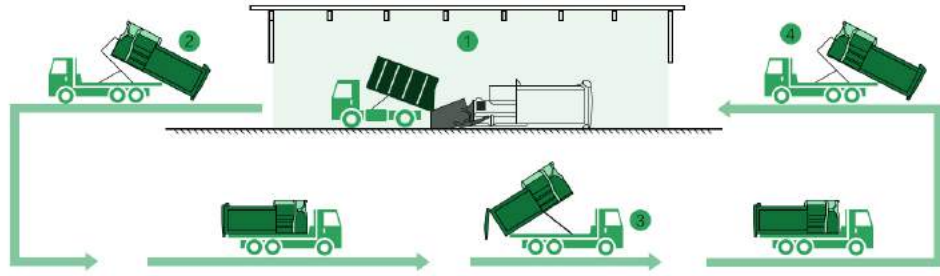


Whether the large public places or narrow, converging streets, machines are all available.

Pre-collect and transfer programme

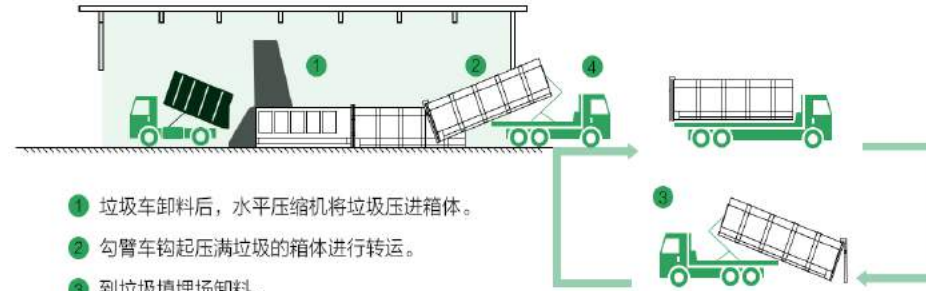
— Prophase of transferring

垃圾站运转流程



- 1 垃圾车卸料后，压缩机进行压缩。
- 2 勾臂车勾起箱体运往垃圾填埋场。
- 3 到垃圾填埋场直接卸料。
- 4 勾臂车将设备送回。

垃圾站运转流程



- 1 垃圾车卸料后，水平压缩机将垃圾压进箱体。
- 2 勾臂车勾起压满垃圾的箱体进行转运。
- 3 到垃圾填埋场卸料。
- 4 勾臂车将箱体送回。

Prophase of transferring



Large scale transferring
(anaphase)

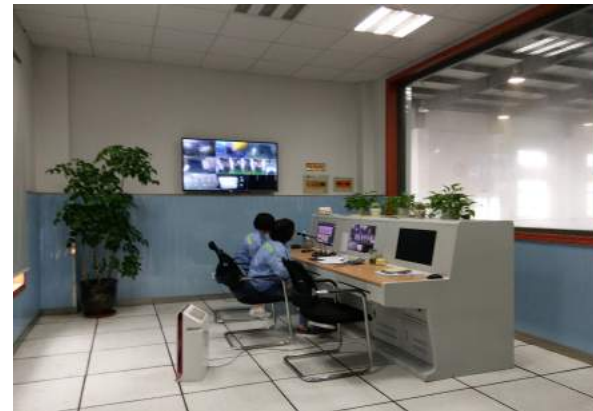
Large-scale transfer programme of city waste

—Exhibition of vertical waste transfer



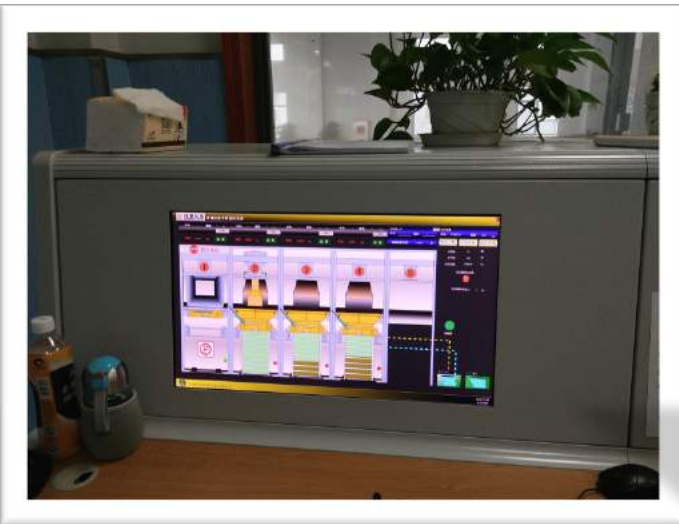
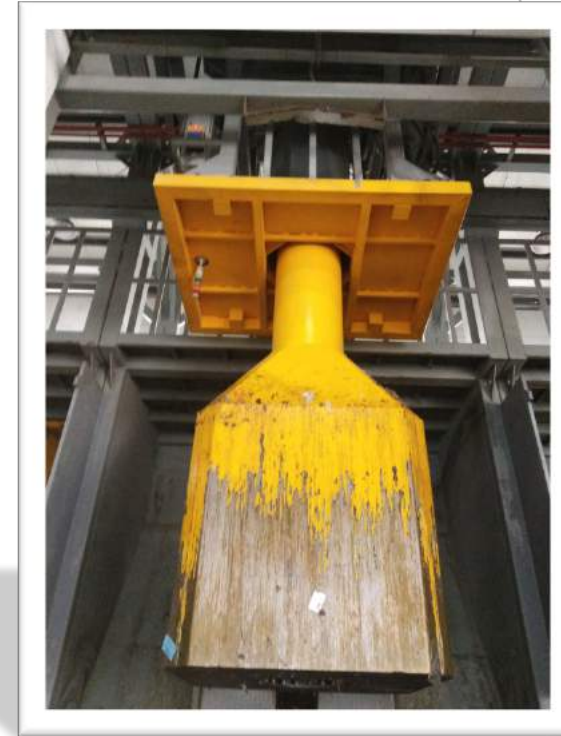
Large-scale transfer programme of city waste

—Exhibition of vertical waste transfer



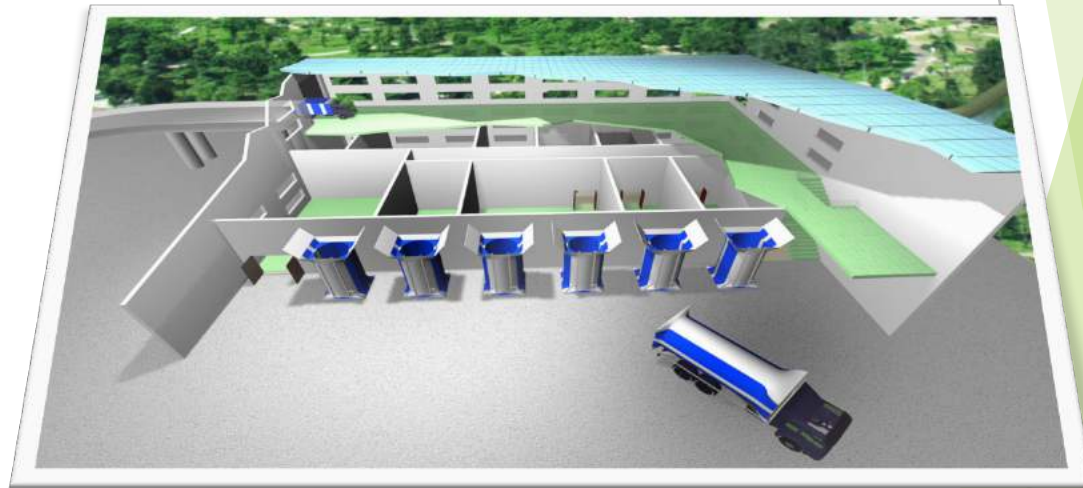
Large-scale transfer programme of city waste

—Exhibition of vertical waste transfer



Large-scale transfer programme of city waste

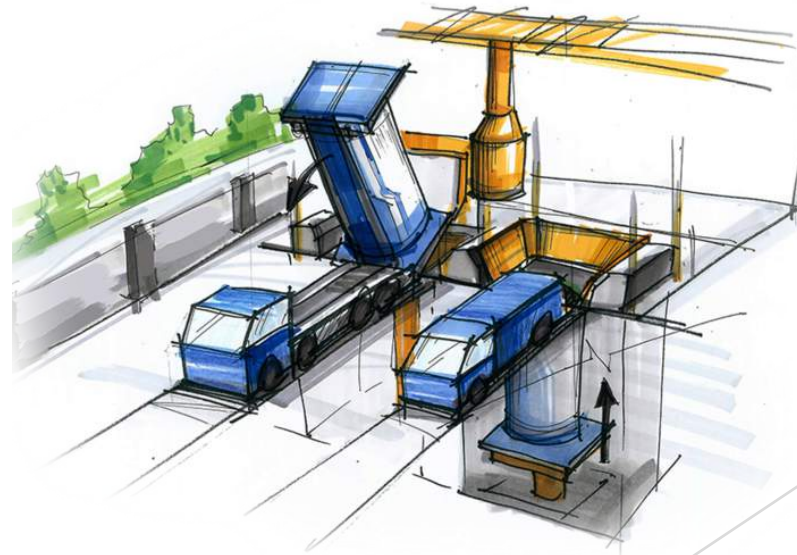
—Exhibition of vertical waste transfer



Large-scale transfer programme of city waste

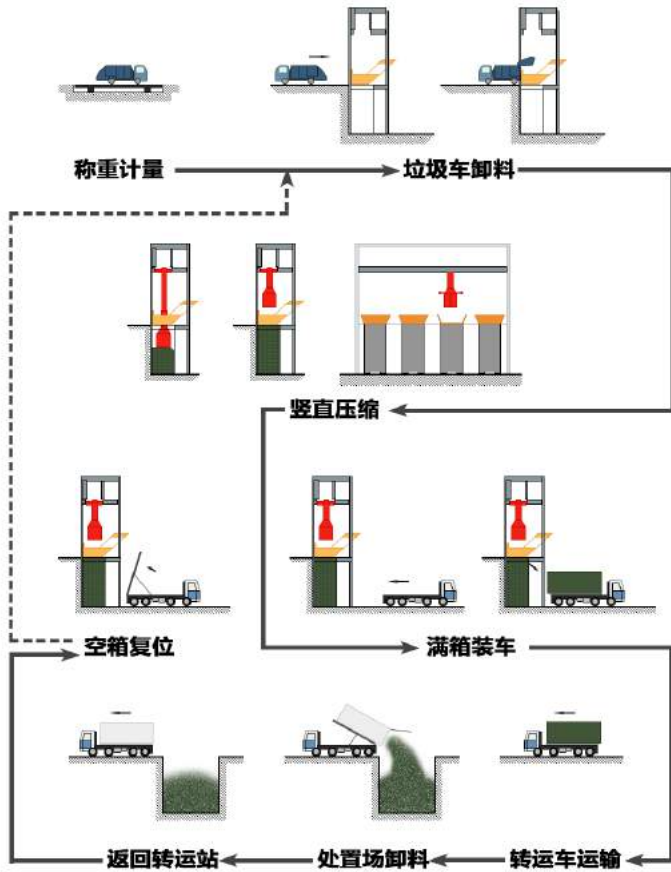
—Exhibition of vertical waste transfer

- ▶ We adopted the advanced vertical compression technics by using the force of gravity, which vastly simplifying the waste transferring, maximizing the efficient use of space, as easily as we toppling the waste into the dustbin.

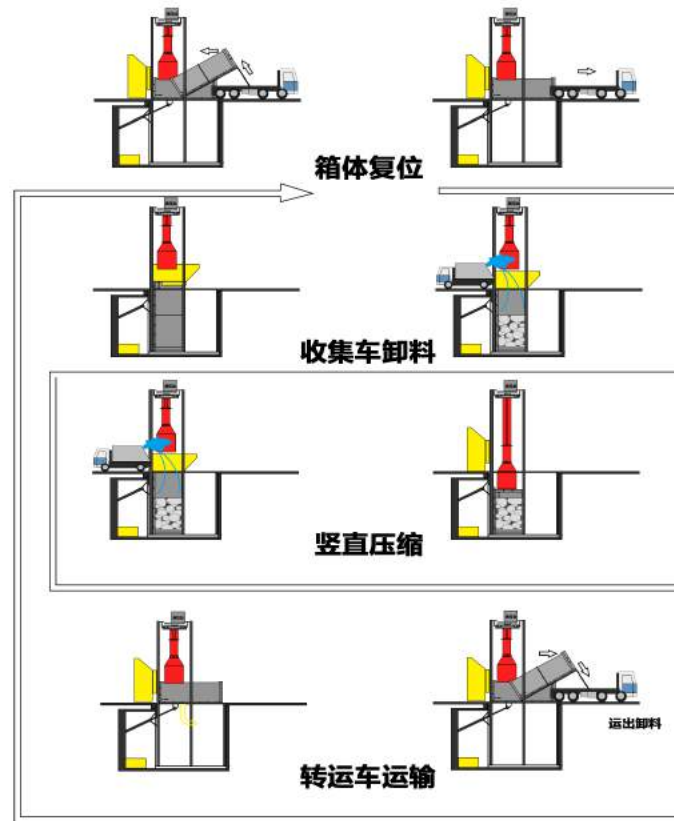


Large-scale transfer programme of city waste

—Exhibition of vertical waste transfer



Overground vertical waste transfer



Underground vertical waste transfer

Large-scale transfer programme of city waste

—Exhibition of horizontal trash transferring process



Large-scale transfer programme of city waste

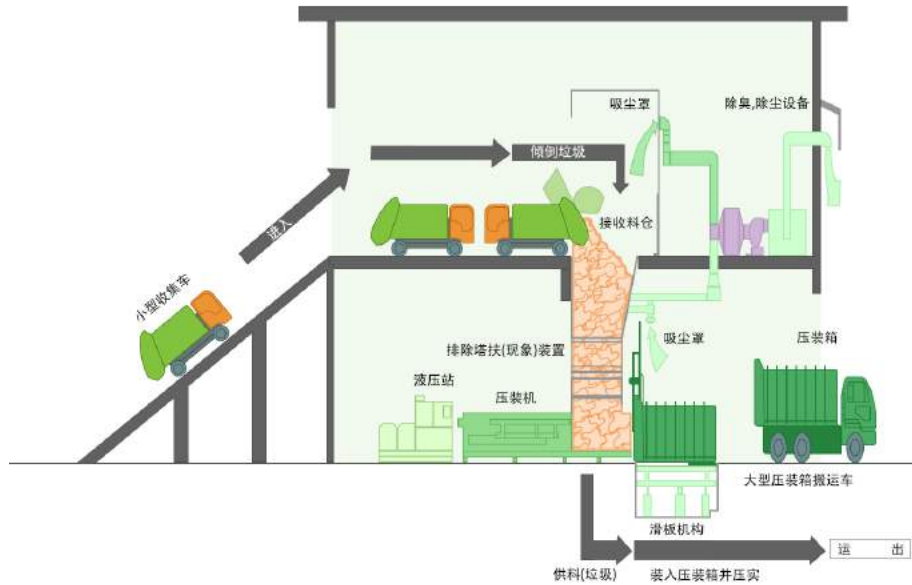
—Exhibition of horizontal trash transferring process

- ▶ The design scale of the equipment should be at least 200t/d, adopting a whole set of horizontal compressor machinery, including trash compressing system (contains compressor, pre-press device and hopper) , lift platform, movable container, garbage container, carrier vehicle, fast shutter door, monitor system, spray dedusting and deodorization system, interval spraying system, traffic direction system, negative-pressure deodorization system, IoT weighing system, PLC control system, large-screen indicator system.
- ▶ The overall trash transferring station has achieved a digital management and integrated service, people can do collecting, transferring, and handling even without leaving home.



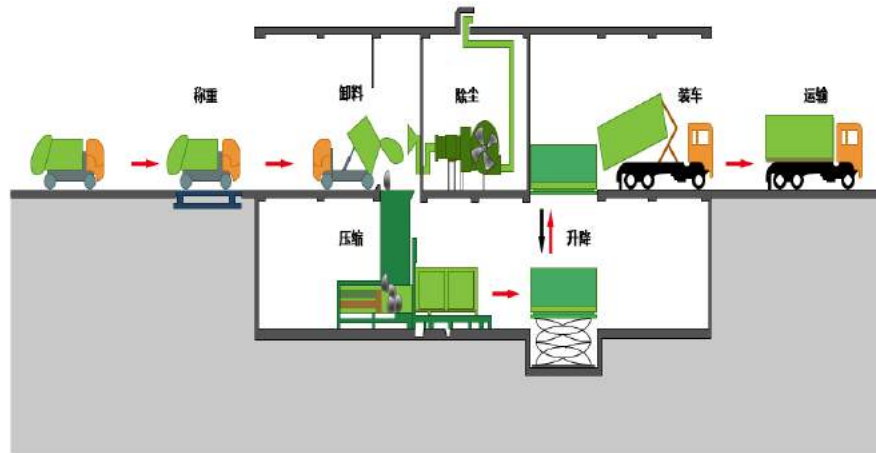
Large-scale transfer programme of city waste

—Exhibition of horizontal trash transferring process



Overground horizontal trash transferring

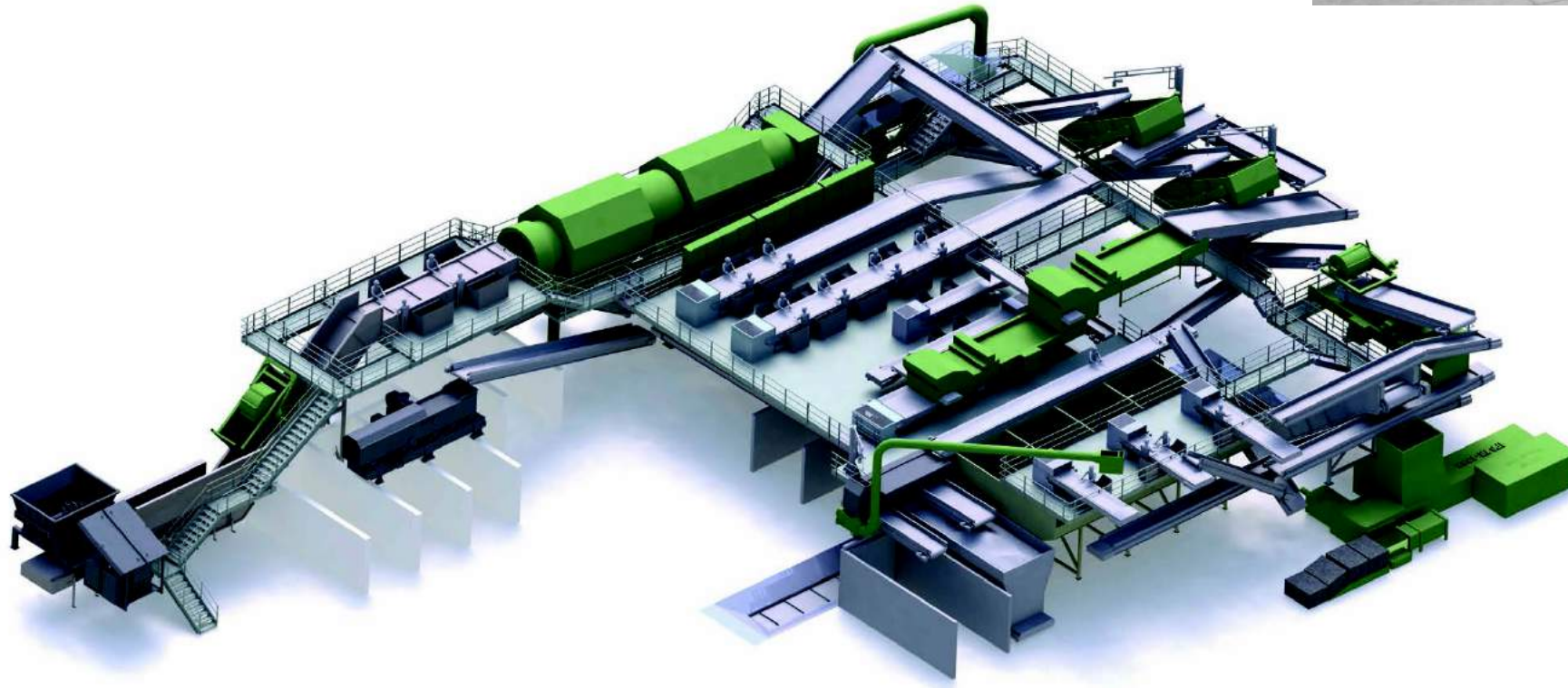
地埋式垃圾中转站转运流程图



Underground horizontal trash transferring

City waste transfer to sorting plant

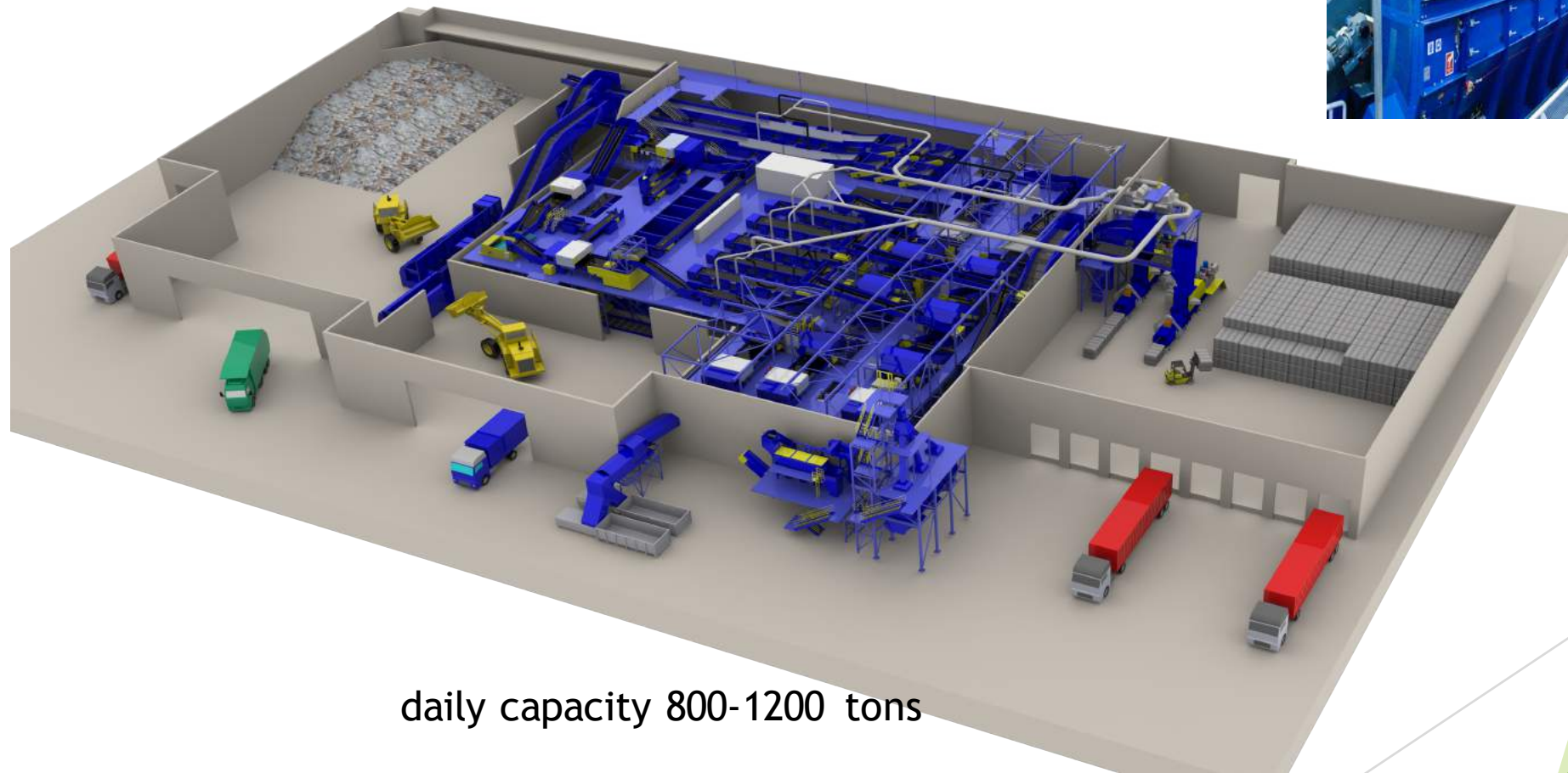
—Exhibition of waste sorting plant



daily capacity 500-800 tons

City waste transfer to sorting plant

—Exhibition of waste sorting plant



daily capacity 800-1200 tons

City waste transfer to sorting plant

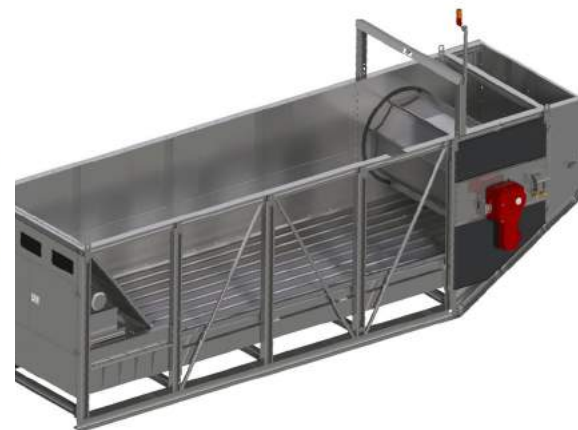
—Exhibition of waste sorting plant



City waste transfer to sorting plant

—Exhibition of waste sorting plant

- ▶ Feeding machine (metering drum)



City waste transfer to sorting plant

—Exhibition of waste sorting plant

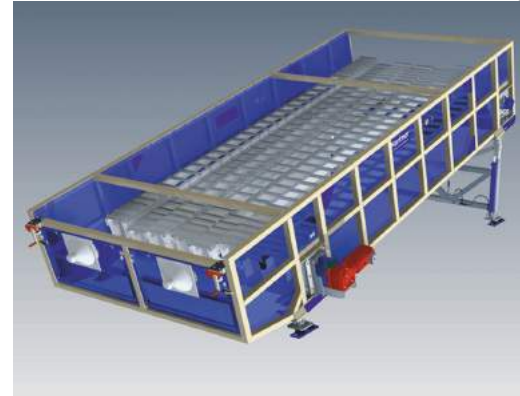
- ▶ Crusher (breaking screen machine)



City waste transfer to sorting plant

—Exhibition of waste sorting plant

► Ballistic separator



City waste transfer to sorting plant

—Exhibition of waste sorting plant

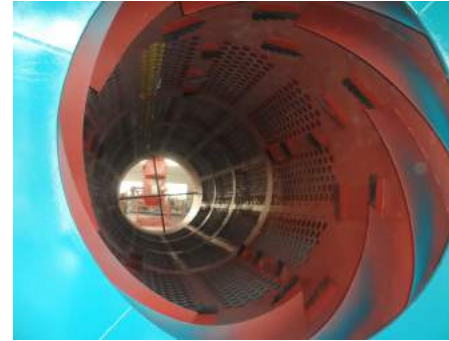
► Disco selection



City waste transfer to sorting plant

—Exhibition of waste sorting plant

► Rotary screen



City waste transfer to sorting plant

—Exhibition of waste sorting plant

► Magnetic separator



► Conveyor



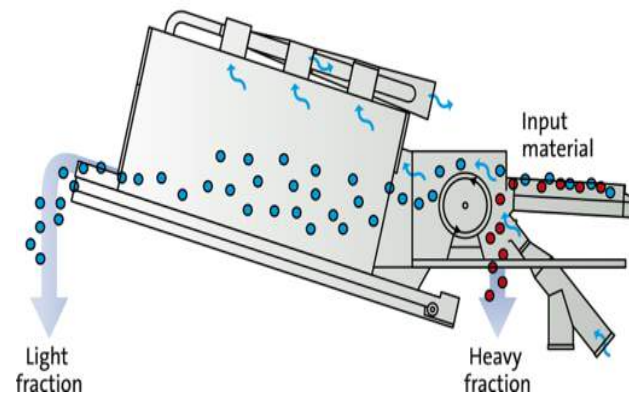
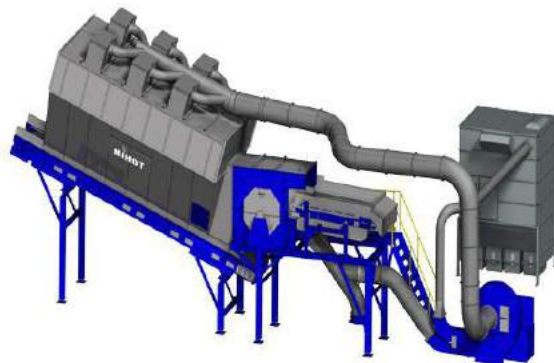
City waste transfer to sorting plant

—Exhibition of waste sorting plant

- ▶ Pneumatic separator system (Made in China)

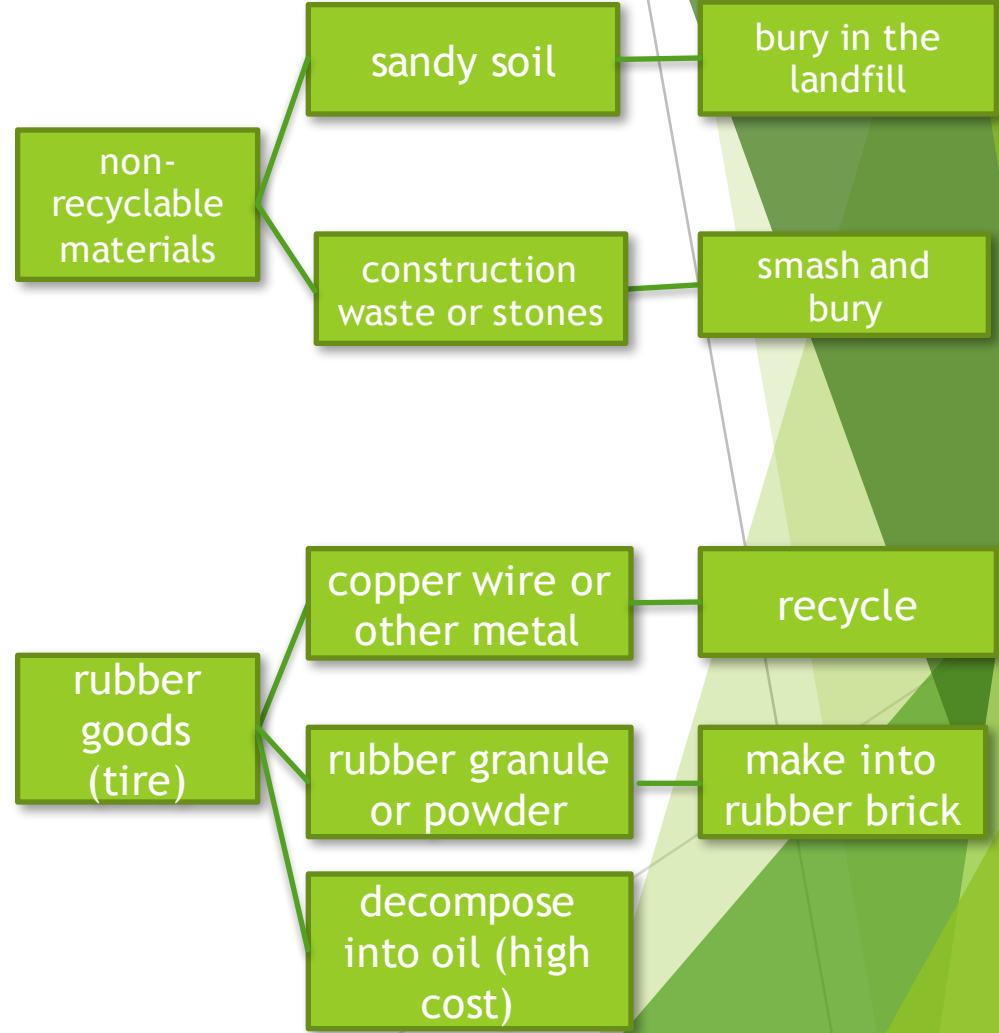
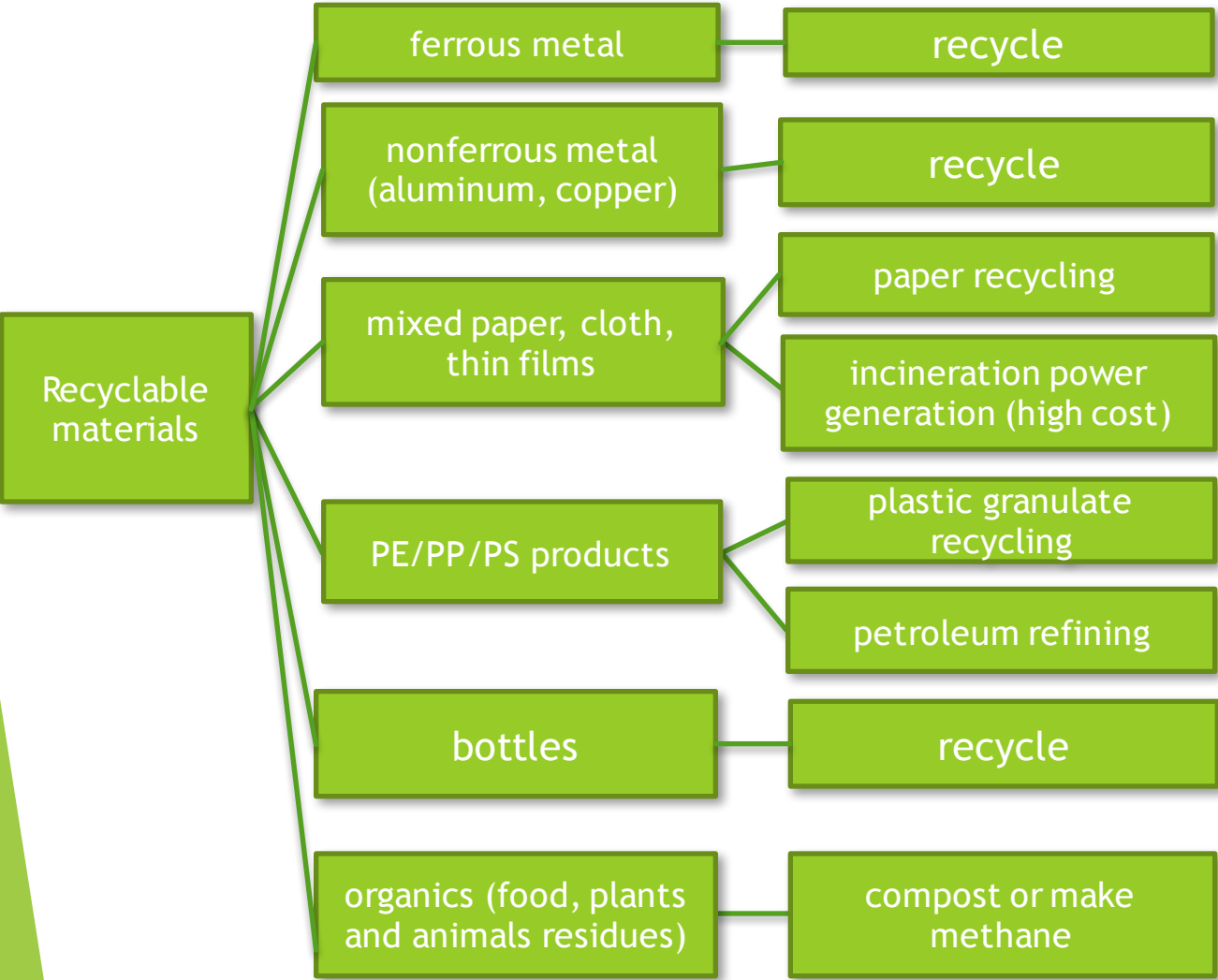


- ▶ Pneumatic separator system (Import cooperation products)



City waste transfer to sorting plant

—Separated materials



Terminal treatment of waste sorting

—Baling of the waste paper, scrap metal and other recyclable materials



Terminal treatment of waste sorting

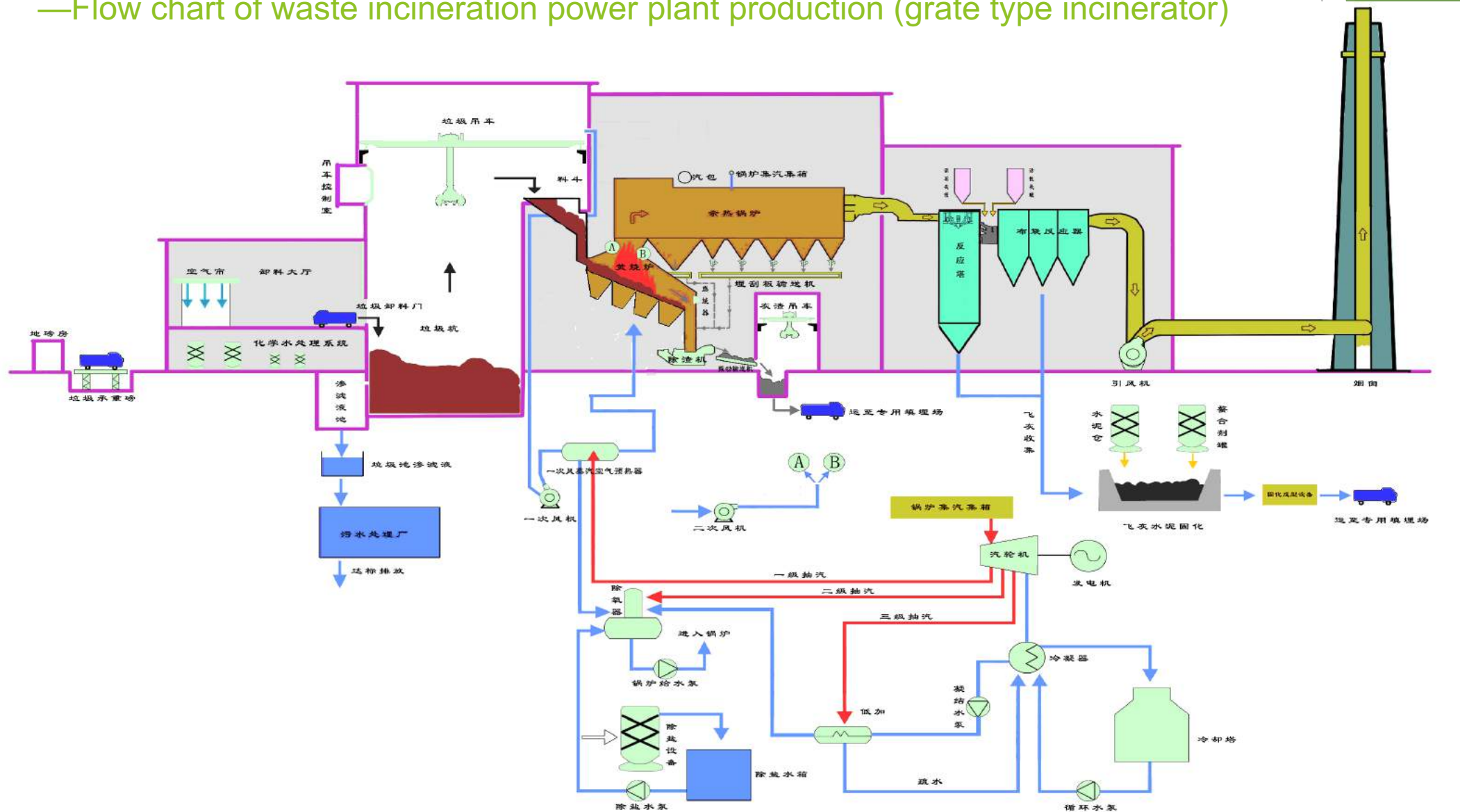
—Incineration power generation (refuse burning)



- ▶ The waste incineration power plant is an environmentally friendly facility that uses advanced waste incineration technology to carry out harmless, dequantification and resource-processing of urban life garbage.
- ▶ Garbage incineration power plant is mainly composed of production, auxiliary engineering, utilities, including waste receiving, storage and transportation system, incineration system, flue gas treatment system, waste heat utilization system, etc.

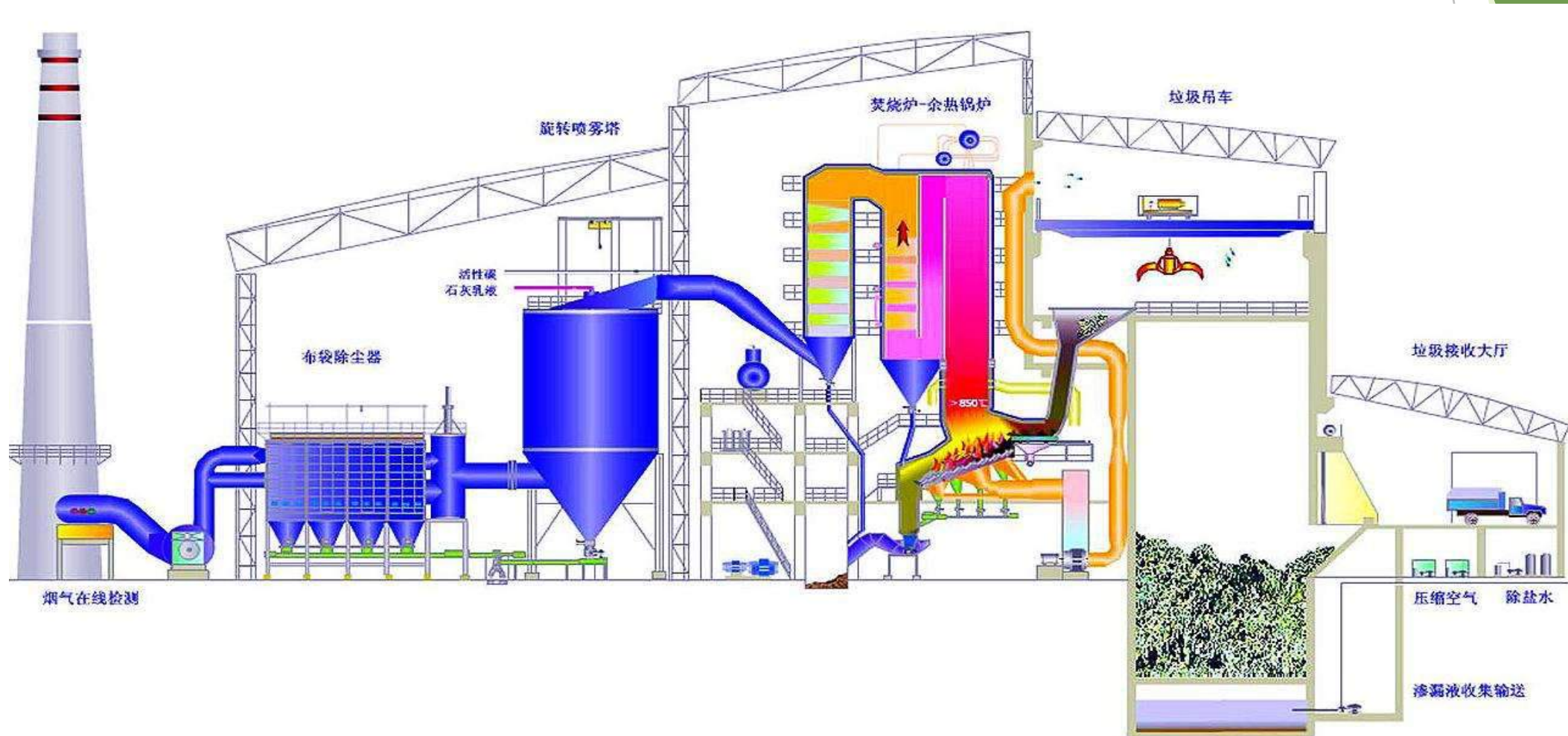
Terminal treatment of waste sorting

—Flow chart of waste incineration power plant production (grate type incinerator)



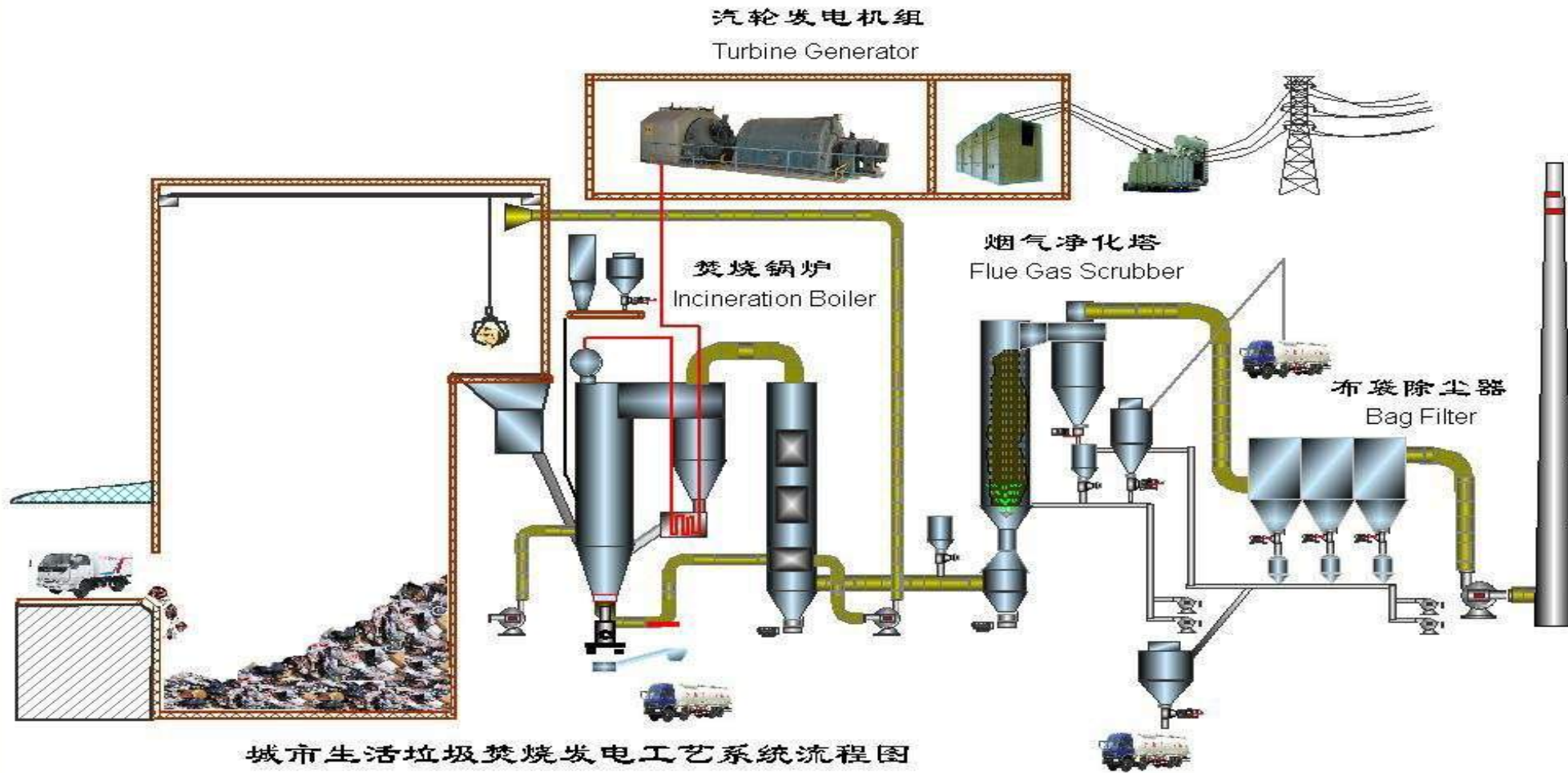
Terminal treatment of waste sorting

—Flow chart of waste incineration power plant production (grate type incinerator)



Terminal treatment of waste sorting

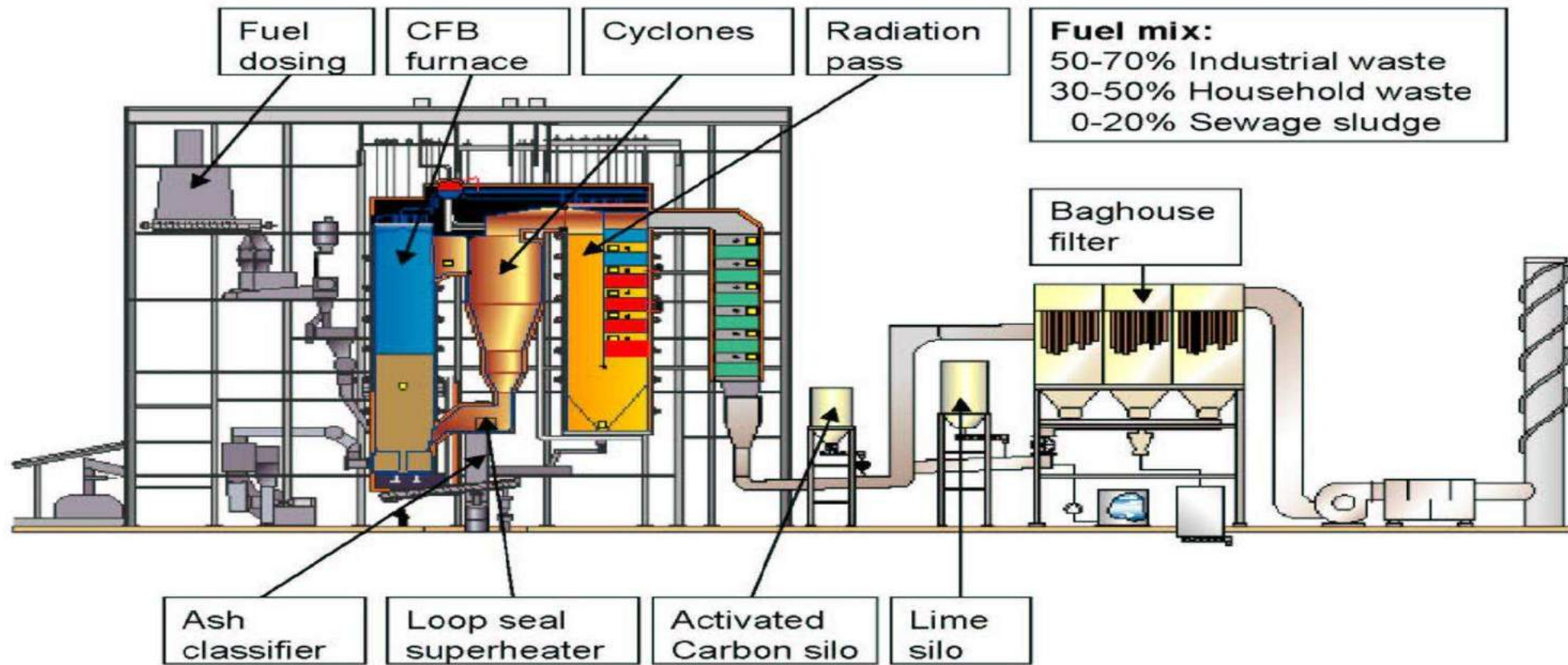
—Waste incineration power plant (circulating fluidized bed incineration)



城市生活垃圾焚烧发电工艺系统流程图
Waste-to-Energy Process Flow Chart

Terminal treatment of waste sorting

—Waste incineration power plant (circulating fluidized bed incineration)



Terminal treatment of waste sorting

—Waste incineration power plant (waste incineration)



Suitable for mixed waste.

Space-saving (volume is reduced by 95% and the weight is reduced by 75%).

化Significant dequantification.

Harmless.

High utilization of waste resources (recycle electricity and heat).



Huge investment.

Produce doxin (TCDD, tetrachlorodibenz o-p-dioxin).

High requirement for waste heat value.

Terminal treatment of waste sorting

—Thermal hydrolysis process of waste (cooperating with Aero Thermal, and cited the method)



Terminal treatment of waste sorting

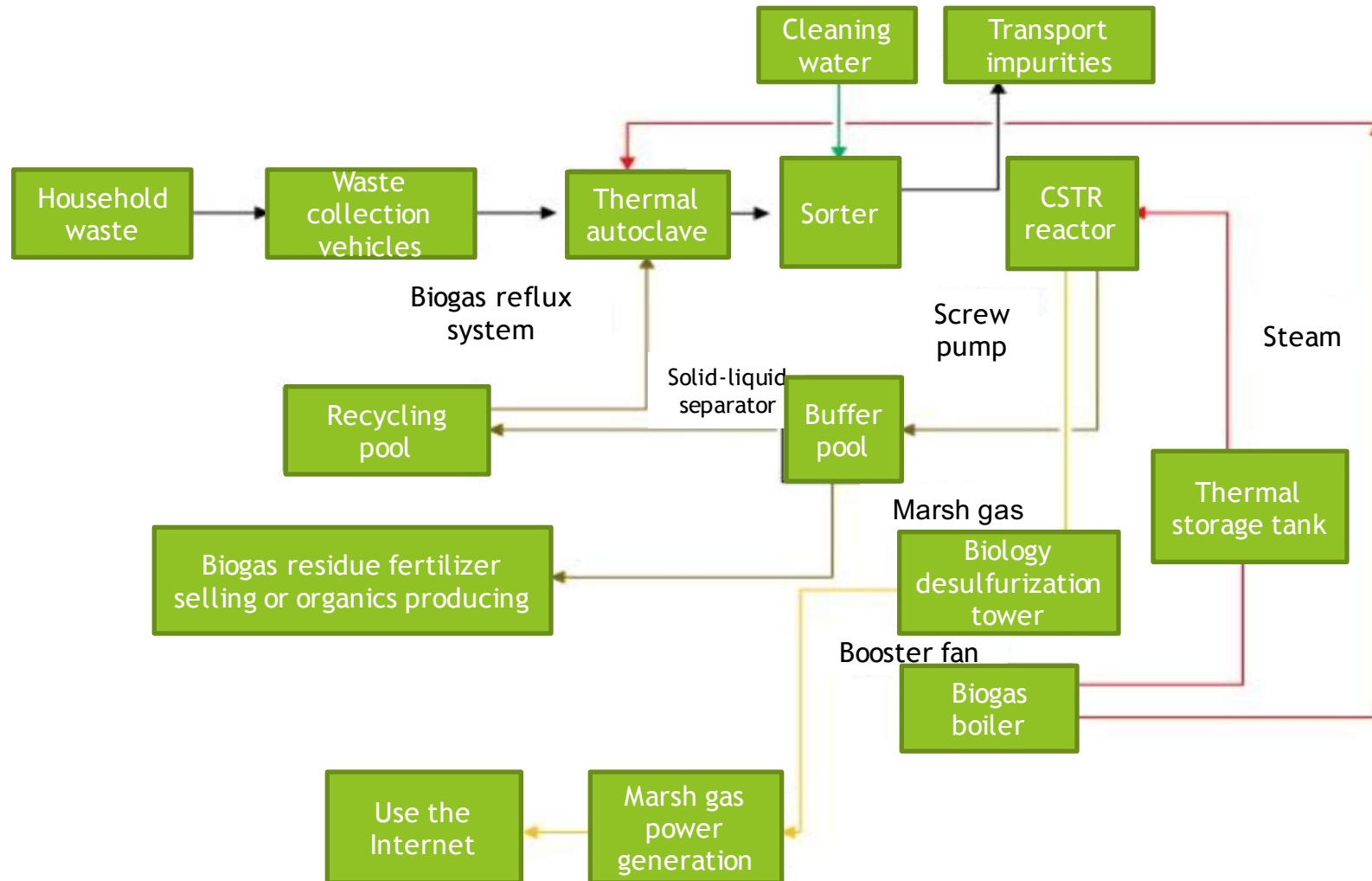
—Thermal hydrolysis process of waste



Terminal treatment of waste sorting

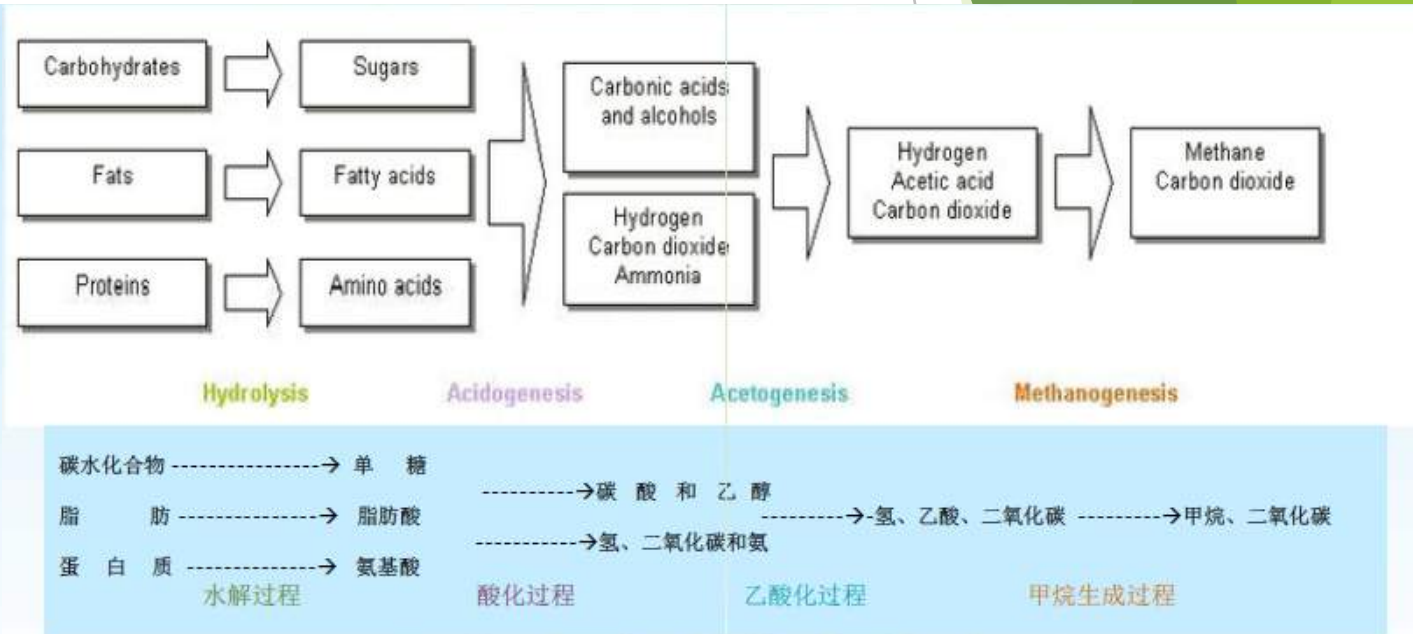
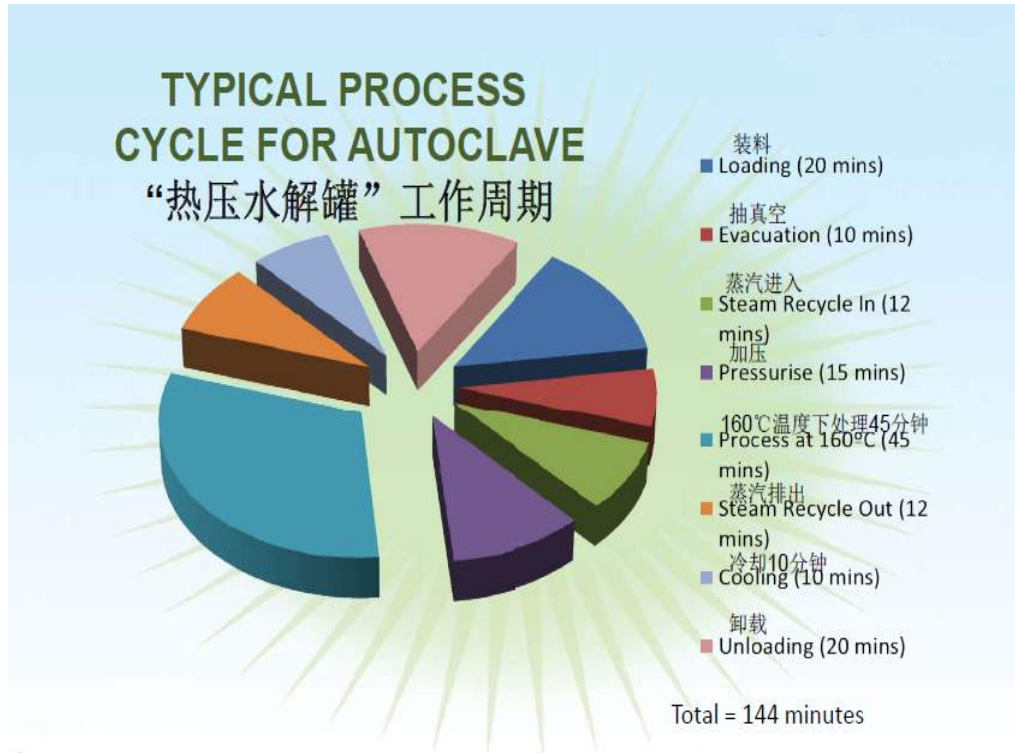
—Thermal hydrolysis process of waste

The production process flow of methane



Terminal treatment of waste sorting

—Thermal hydrolysis process of waste



The thermal hydrolysis process of waste can produce carbon dioxide and methane, as we called the marsh gas, which can be used directly in biogas power or automobile fuel.

Terminal treatment of waste sorting

—Fermentation leftovers (biogas) treatment after the thermal hydrolysis process

- ▶ Soil repair and treatment
- ▶ The waste biogas treated by the 'autoclaves', through centrifugation, is dehydrated to a dried solid, which is about 25% of before, and forms a stable and safe organic soil that full of nitrogen, phosphorus and potassium. These basic elements are beneficial to the growth of plants. Most of these nutrients are retained in organic form and are released in soil over several years. The effect of synchronization with plant growth is very different from that of non-organic fertilizers.



Terminal treatment of waste sorting

— Waste tires recycling



Terminal treatment of waste sorting

— Waste tire recycling

- ▶ • Feed conveyor belt - Metal conveyor belts are usually used for conveying tires to a double-axe shredder
- ▶ • Double-axe shredder No.1 - shred pieces
- ▶ • Conveyor - convey tires debris
- ▶ • Double-axe shredder No.2 - Further cut the tire pieces to a smaller, uniform size
- ▶ • material return system - return the large tire pieces back to the double-axe shredder and then chop them up again
- ▶ • Wire separator - Crush the tire debris to 15-20mm granules, leaving the rubber with wire
- ▶ • Vibrating screen - The rubber and steel wire are distributed evenly in the screen to improve the separation effect of the wire
- ▶ • Magnetic separator - separate the wire in the rubber
- ▶ • Crusher - Crush rubber particles to 1-4mm, separate rubber and fiber, remove some fiber out
- ▶ • Vibrating screen - Select the rubber granules according to the particle size and remove some fibers out
- ▶ • Fiber separation system - separate residual fiber
- ▶ • Magnetic separator - remove tiny wires that may left
- ▶ • Bagging system
- ▶ • Central duster - Collect dust and fiber from the production line
- ▶ • Control panel

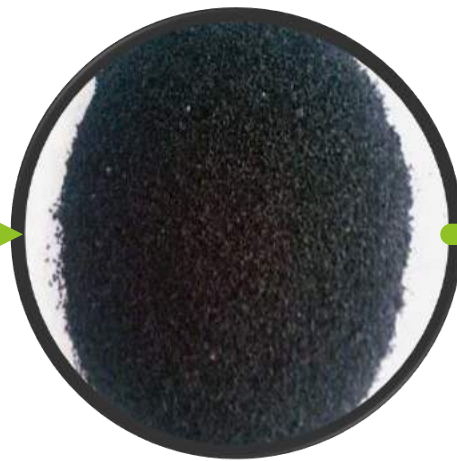
Terminal treatment of waste sorting — Waste tires recycling



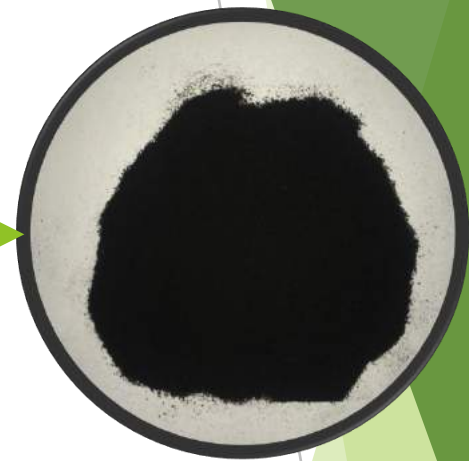
Waste tire



Tire chunk



Tire pieces



Rubber powder



Waste wire in tire



Rubber racetrack



New rubber goods

Terminal treatment of waste sorting

— PE (plastic products) oil extraction (Anaerobic dry distillation)

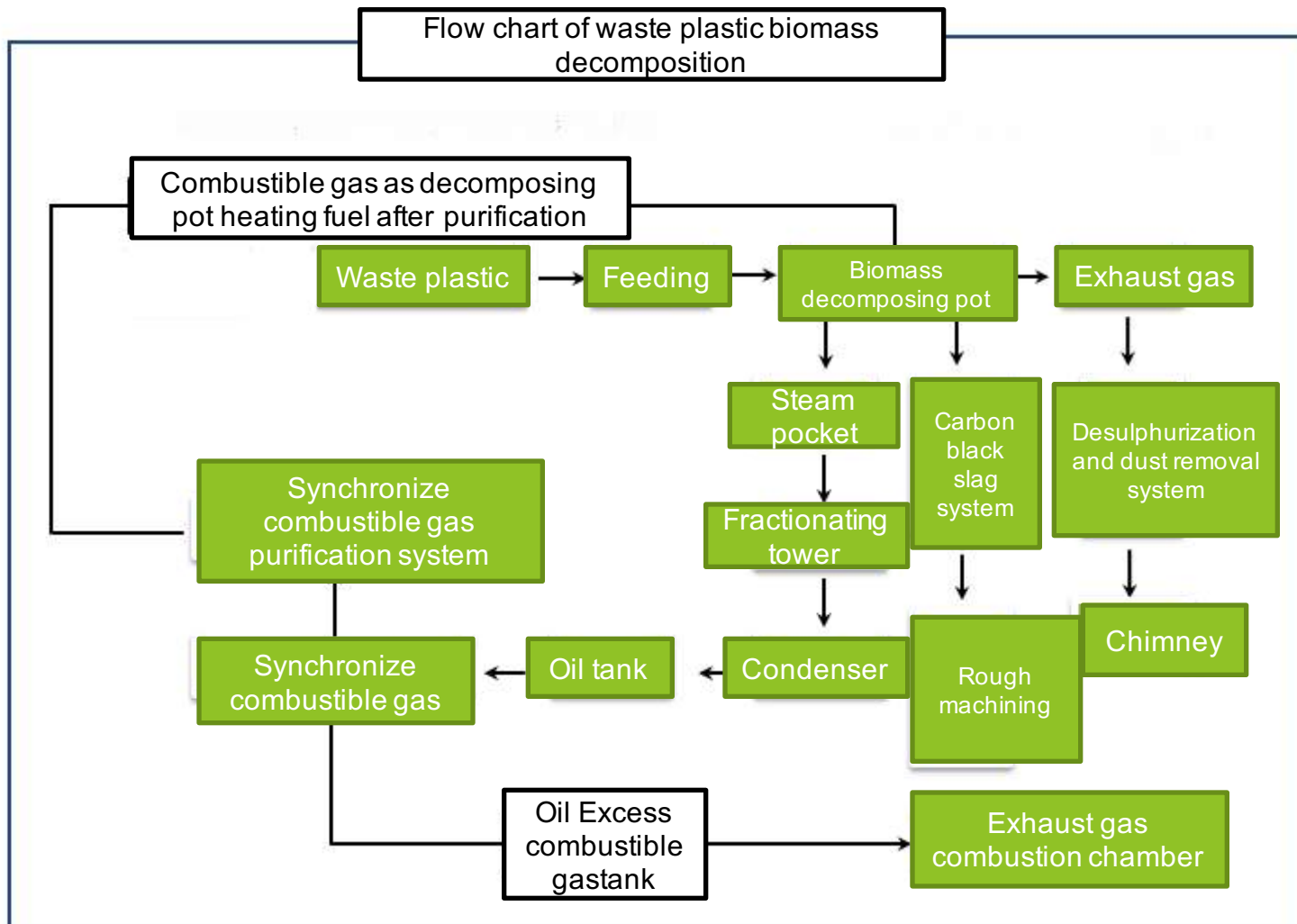
Waste plastic treatment projects: collecting the waste plastic and decompose with high temperature into fuel oil and carbon black.

In order to better adapt the environment requirements in developing countries, which is more stringent in the Euramerican developed countries, Qunfeng company has launched "the continuous decomposition of biomass equipment" , with high temperature decomposition of waste plastics, through different physical temperature, which can separate the water, oil, gas, and slag. Oil gas can be recycled by cooling system, and at the same time, waste emissions also can meet the national standards, left the environmental protection free from contamination in the whole production process.



Terminal treatment of waste sorting

— PE (plastic products) oil extraction (Anaerobic dry distillation)



Waste disposal after classification

—Liquid fuel recovery with PE(plastic products) by anaerobic distillation

Process of decomposition of biomass

1. Feed plastic waste to pyrolyzer with conveyor. During the process of pyrolysis, plastic wastes will be converted into fuel gas.
2. After passing the steam drum to lose pressure, the fuel gas will enter the condensator and then convert into liquid fuel.
3. Other gases that aren't liquefiable will enter the purifier to remove acid gases and dust from it, and then be recycled as gas fuel in the combustion chamber. A small part of combustible gases will be drawn into the special combustion chamber for unwanted gases.
4. According the environmental protection standards, acid gases and dust that are produced in the combustion will be removed by the purifier system before discharging to outdoor.
5. Carbon black will automatically discharge through the slag collection system.



Advantages of the equipment:

1. Fully automatic system guarantees a continuous production of excellent quality fuel with highly advanced technology.
2. Slag collection system is fully automatic and sealed off from the outside.
3. Special anti-sticking design permits a continuous production.
4. 50~100 tons of daily plastic wastes disposed. No fuel input needed. Combustible gases produced in the pyrolysis can be recycled as fuel resource for equipment.
5. Desulfurization and dust purifier system has been patented in China. No environmental pollution caused.
6. Simple operation with less labor needed.



Waste disposal after classification

—Composting

- ▶ Composting
 - ▶ Composting is a closely monitored process that involves the decomposition of organic matter in solid waste into stable humus, taking advantage of the micro-organisms in the natural world.
 - ▶ In Europe, composting is defined as an aerobic process of decomposition for solid or semisolid organic wastes by micro-organisms at moderate or high temperature, which produces humus.
- ▶ Fertilizer: produced in the process of decomposition of solid wastes taking advantage of micro-organisms.
- ▶ Material of composting:
 - ▶ Urban waste
 - ▶ Mud: mainly come from domestic and industrial sewage
 - ▶ Animal waste
 - ▶ Food scraps
 - ▶ Agricultural and forestry waste

Waste disposal after classification

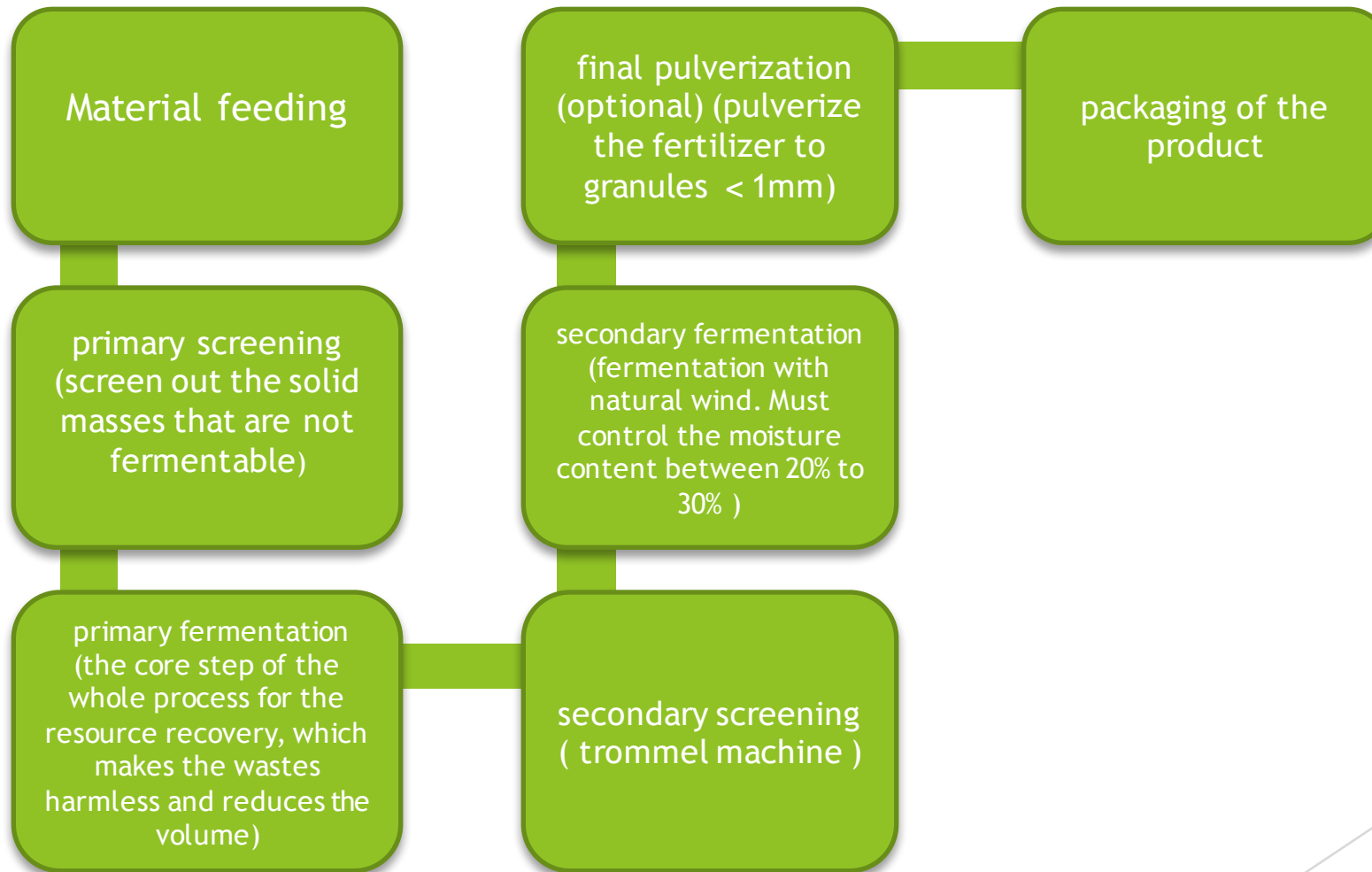
— Using site of refusing compost



Waste disposal after classification

— Technical Process for Fertilizer Composting

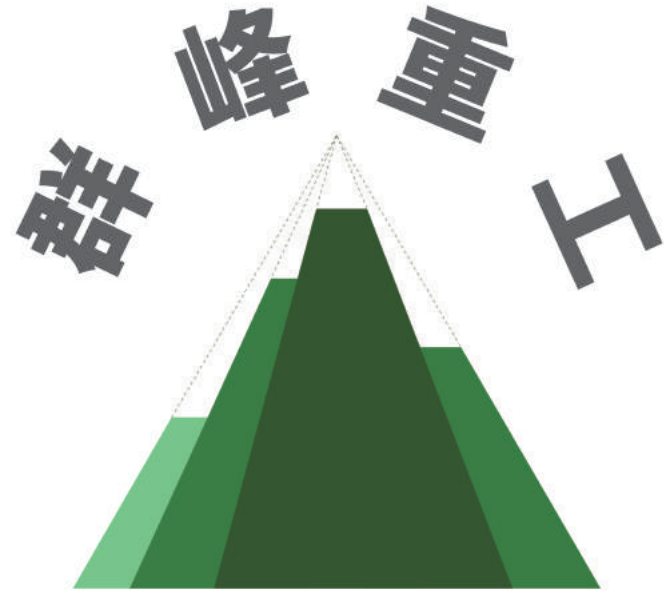
There are 7 steps for composting: Waste feeding, primary screening, primary fermentation, secondary screening, secondary fermentation, final pulverization and packaging of the organic fertilizer product.



Analysis of waste treatment method

—Landfill, incineration and composting

	Advantages	Disadvantages	Application area
Sanitary Landfill	Simple operation; Cost efficient.	<ol style="list-style-type: none"> 1. Large open space for landfill site needed; 2. Odour pollution caused; 3. Impervious membrane needed over large area; 4. Landfill gas and leachate treatment needed; 5. Possible pollution to earth and ground water. 	Low density of population with large open space available, such as cities in the central and west parts of China
Incineration power generation	<ol style="list-style-type: none"> 1. No large area needed for incineration facility; 2. Reduction of volume for original waste (volume by 95%, weight by 75%) ; 3. Thorough treatment for wastes 4. Energy recovery (electricity and heat power) 	<ol style="list-style-type: none"> 1. High economic investment needed; 2. Dioxin emissions; 3. High temperature needed for incineration 	High density of population with limited land resources, such as cities in the east parts of China
Composting	Fertilizer production.	<ol style="list-style-type: none"> 1. Only applicable for wastes with high content of organic matter. 2. Heavy metal in fertilizer may cause pollution to earth. 3. Low selling-radius and competition of fertilizer. 	Only applicable for zones with acceptable transportation radius for fertilizer where the selling can be guaranteed.



PEAKS-ECO

For a more lovely environment, we will provide you with the most perfect garbage collection disposal solution.

– Dezhou Qunfeng Machinery