Turn Green into Gold: Domestic Waste Recycling and Disposal Technologies

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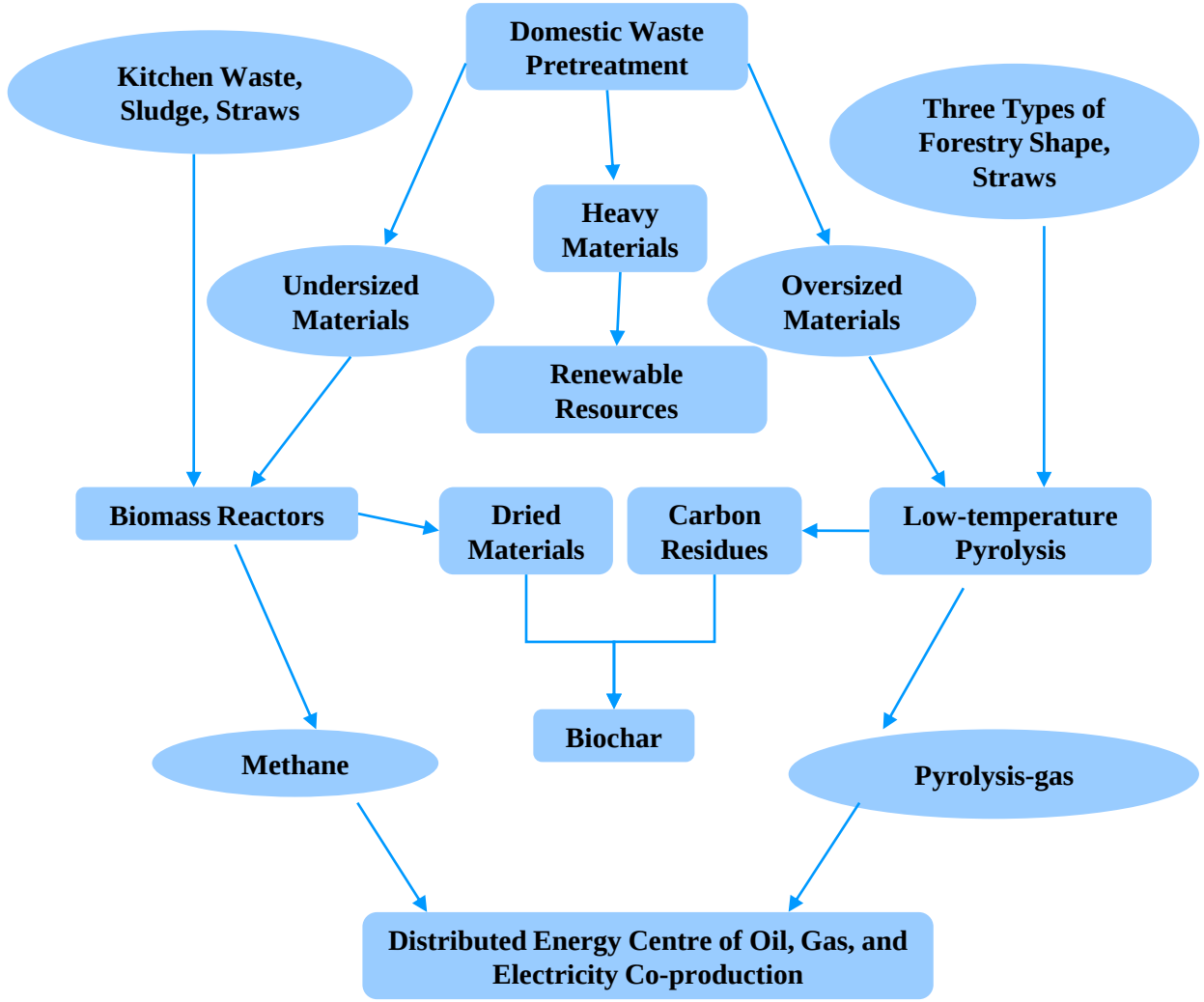
An landfill site in Hong Kong

Domestic Wastes Disposal Technology: Electricity Generation via waste incineration (HK, 2017)

The third Generation Domestic Waste Recycling and Disposal Technologies and Devices

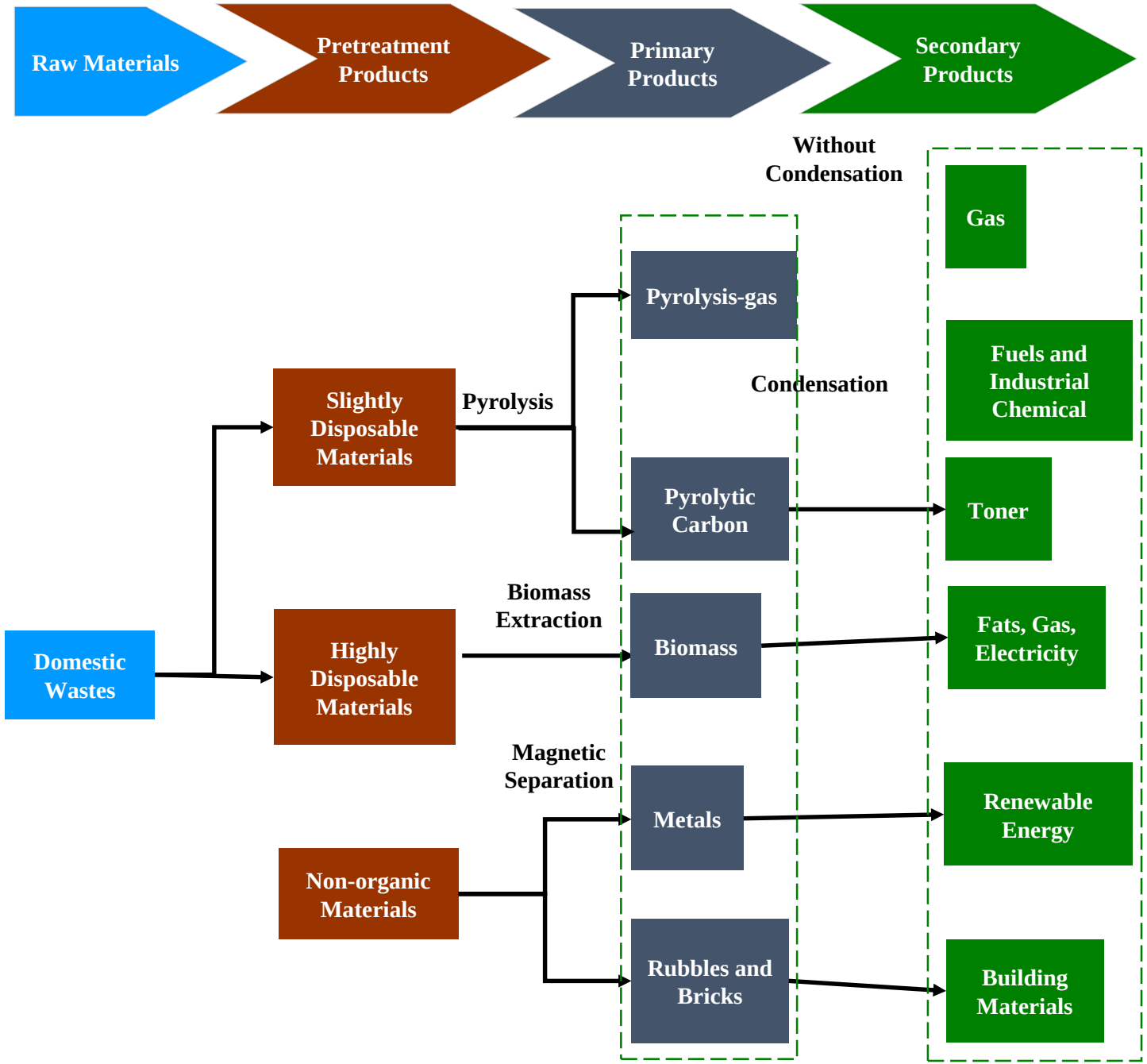


The third Generation Domestic Waste Recycling and Disposal Technologies and Devices

(1) using mechanical separation of waste pretreatment, i.e., broken bag classification and

(2) using individual process to collect the respective targeted materials.

- Pretreatment System,
- Biological Reactor System,
- Low-temperature Pyrolysis System,
- Distributed Energy Centre.
- The useful by-products are: Biochar, Methane, Pyrolysis-gas, which form a Distributed Energy Centre of Oil, Gas, and Electricity Co-production.


Raw Materials
Pretreatment Products
Primary Products
Secondary Products
Without Condensation
Gas
Pyrolysis-gas
Fuels and Industrial Chemical
Condensation
Slightly Disposable Materials
Pyrolysis
Pyrolytic Carbon
Toner
Domestic Wastes
Biomass Extraction
Highly Disposable Materials
Biomass
Fats, Gas, Electricity
Magnetic Separation
Metals
Renewable Energy
Non-organic Materials
Rubbles and Bricks
Building Materials

Core Techniques

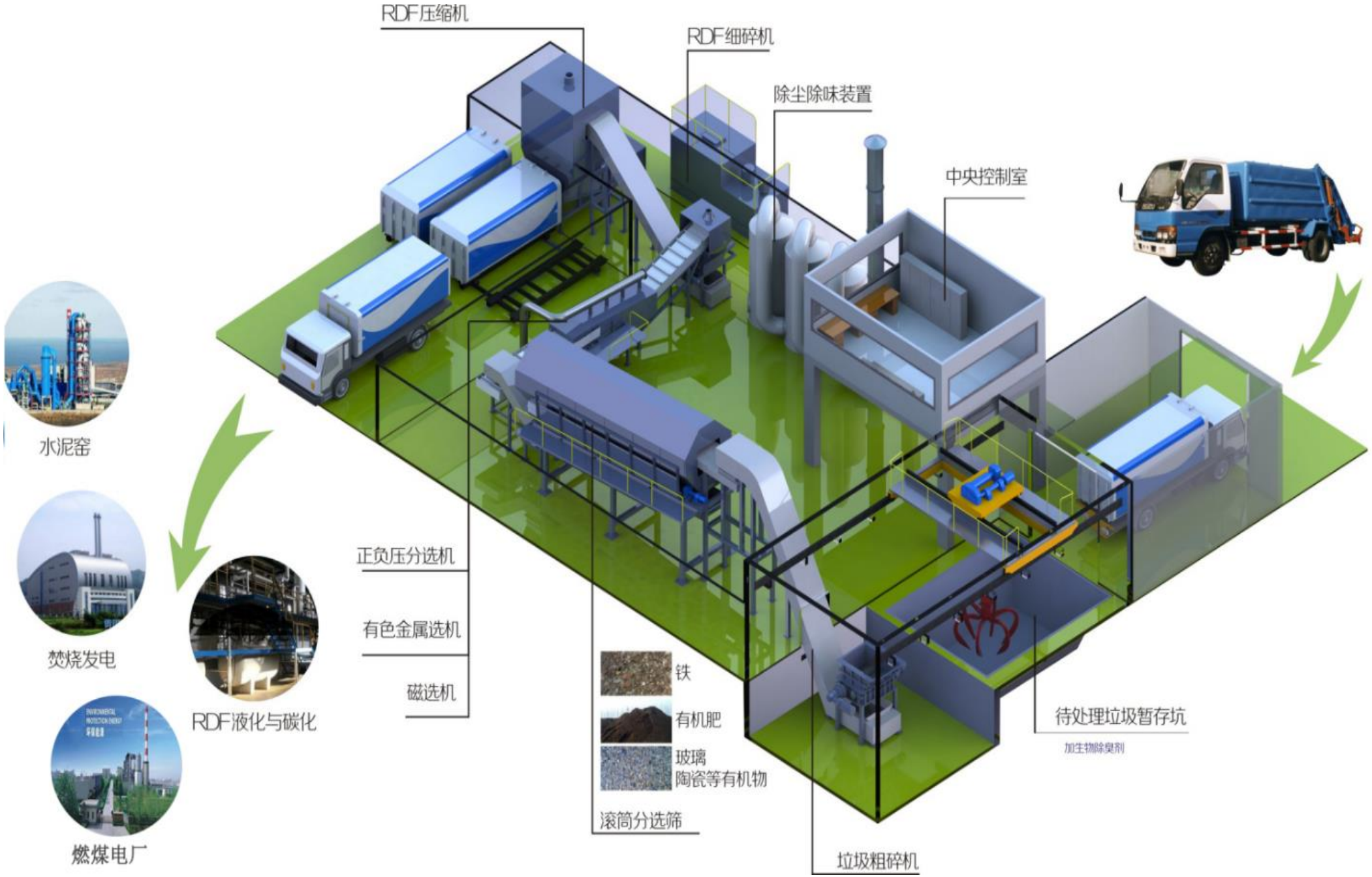
(1) High Efficiency Domestic Waste Preparation Technique

(2) Mummification Technique

(3) Compost Technique and

(4) Pyrolysis Technique.

High Efficiency Domestic Waste Preparation Technique


RDF压缩机
RDF细碎机
除尘除味装置
中央控制室
水泥窑
焚烧发电
燃煤电厂
RDF液化与碳化
正负压分选机
有色金属选机
磁选机
铁
有机肥
玻璃
陶瓷等有机物
滚筒分选筛
垃圾粗碎机
待处理垃圾暂存坑
加生物除臭剂

Breaking bag classification

- coarse crusher
- trommel screen for sieving
- sorted by screening
- perishable organic matter such as rice, food, peel, and fruit kernels.
- decomposed and sifted,
- light material/heavy material /humus.
- light :plastic. , cloth, rubber, etc.;
- Heavy: ceramics, stones and metals,
- metals :magnetic separation;
- Humus :molding fuel
- turfgrass cultivation and landscaping organic fertilizer.

Mummification Technique

a. Reduce the water content of waste with low energy consumption

b. Eliminate the odour from waste with efficient energy use

c. Classification and sampling

d. Provide a protected, hygienic environment by pasteurization (deactivate the majority of virus, germs and eggs)

e. Make distributed process of domestic waste more approachable

- heavy materials (glass slag, iron filings, etc.)
- light materials (plastics, etc.)
- humus (matrix fertilizer)

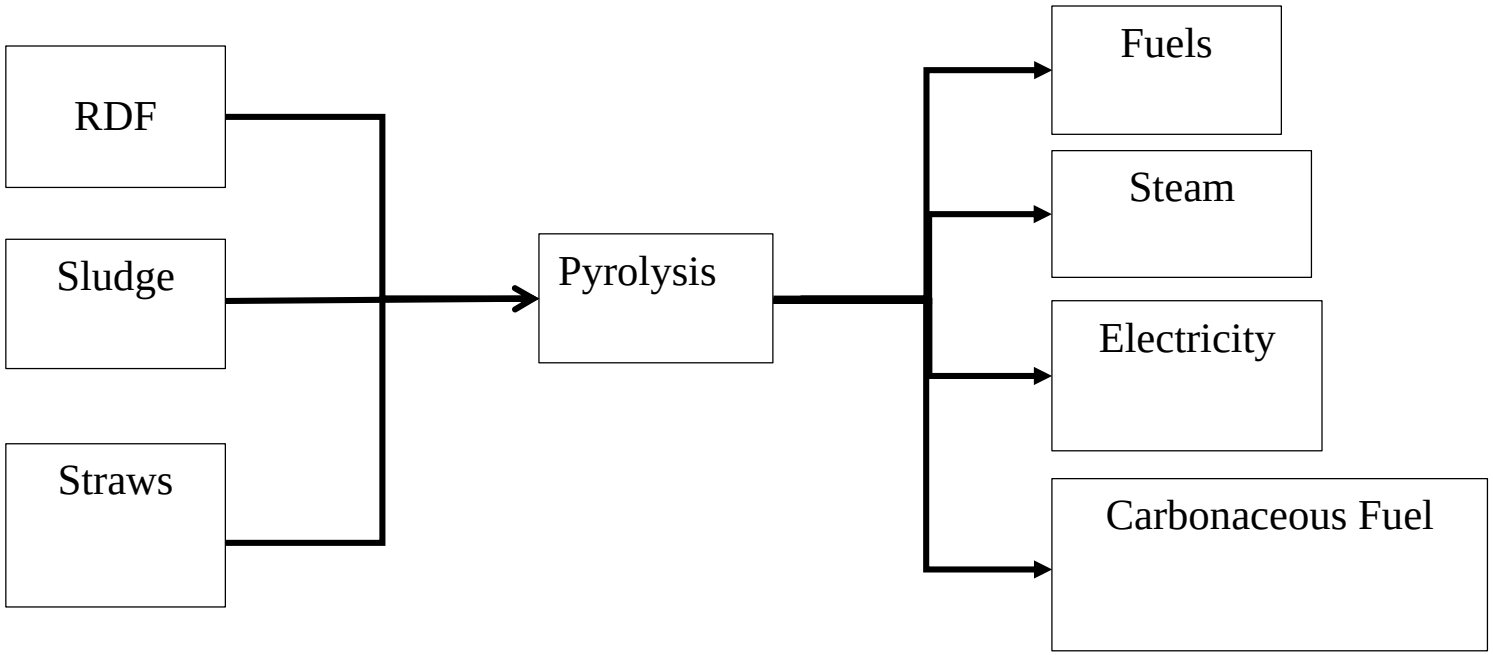
Compost Technique

- Raw Materials: Organic Waste, Kitchen Waste, Straws, Sludge, and Feces.
- Process :Film Treatment, Fermentation and Maturation.
- Products : Organic Fertilizers

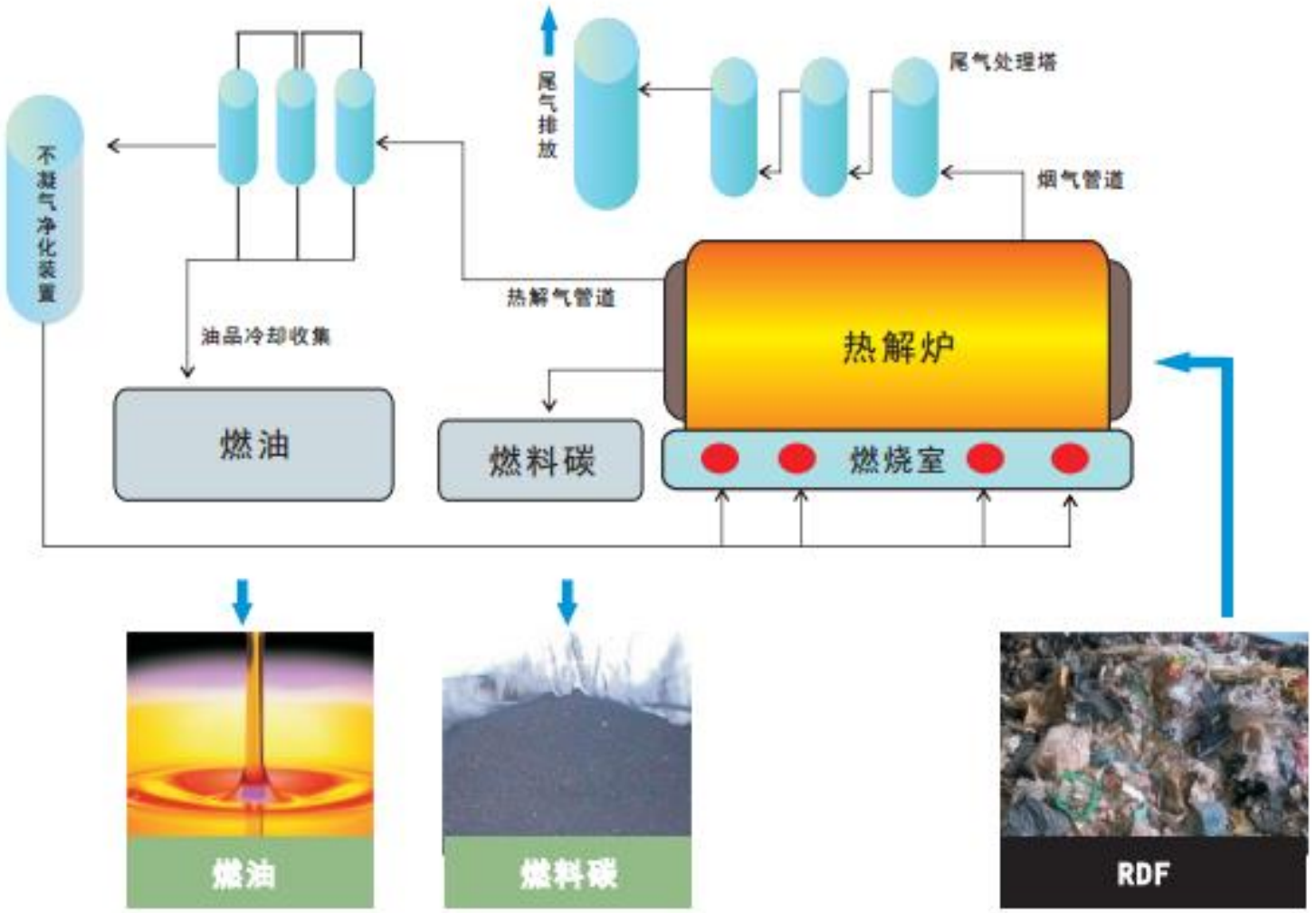
Pyrolysis Technique

Low temperature Pyrolysis process ~400C to prevent the formation of Dioxin requiring ⇧600oC+oxygen+ plastic. The technique ensures that:

a. Prevent tar sticks to the walls via tar removal system
b. Capable for solid and semisolid materials in different shapes
c. Well-sealed system with high heat transfer rate
d. Run 24 hours a day , start and terminate the operation easily
e. Assembly in factory, need simple installation and maintenance
f. Temperature adjustment through Distributed Control System


RDF
Sludge
Straws
Pyrolysis
Fuels
Steam
Electricity
Carbonaceous Fuel

Preventing the formation of dioxins



Thank you