

Turn Green into Gold: Domestic Waste Recycling and Disposal Technologies

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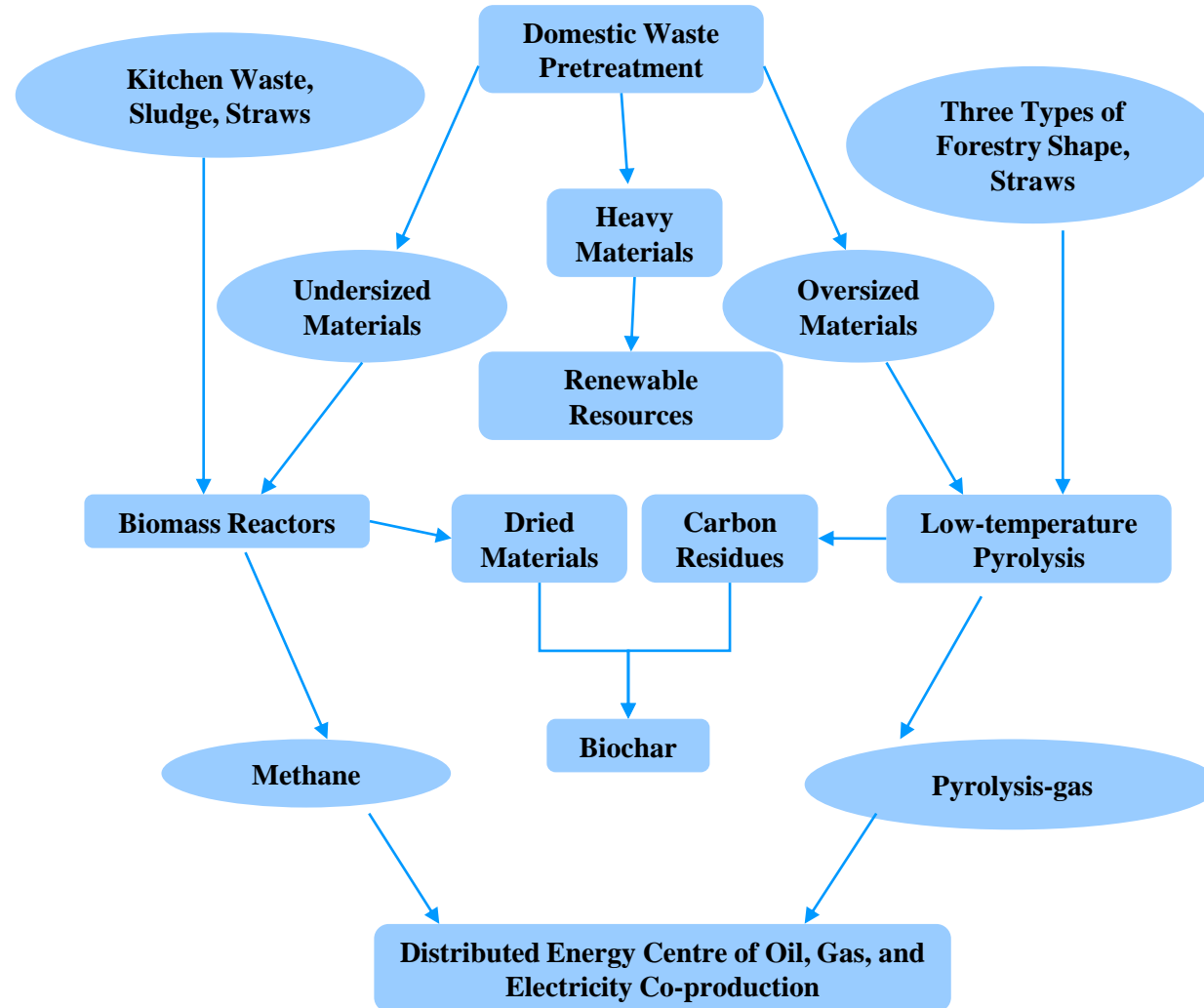
An landfill site in Hong Kong



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



The third Generation Domestic Waste Recycling and Disposal Technologies and Devices

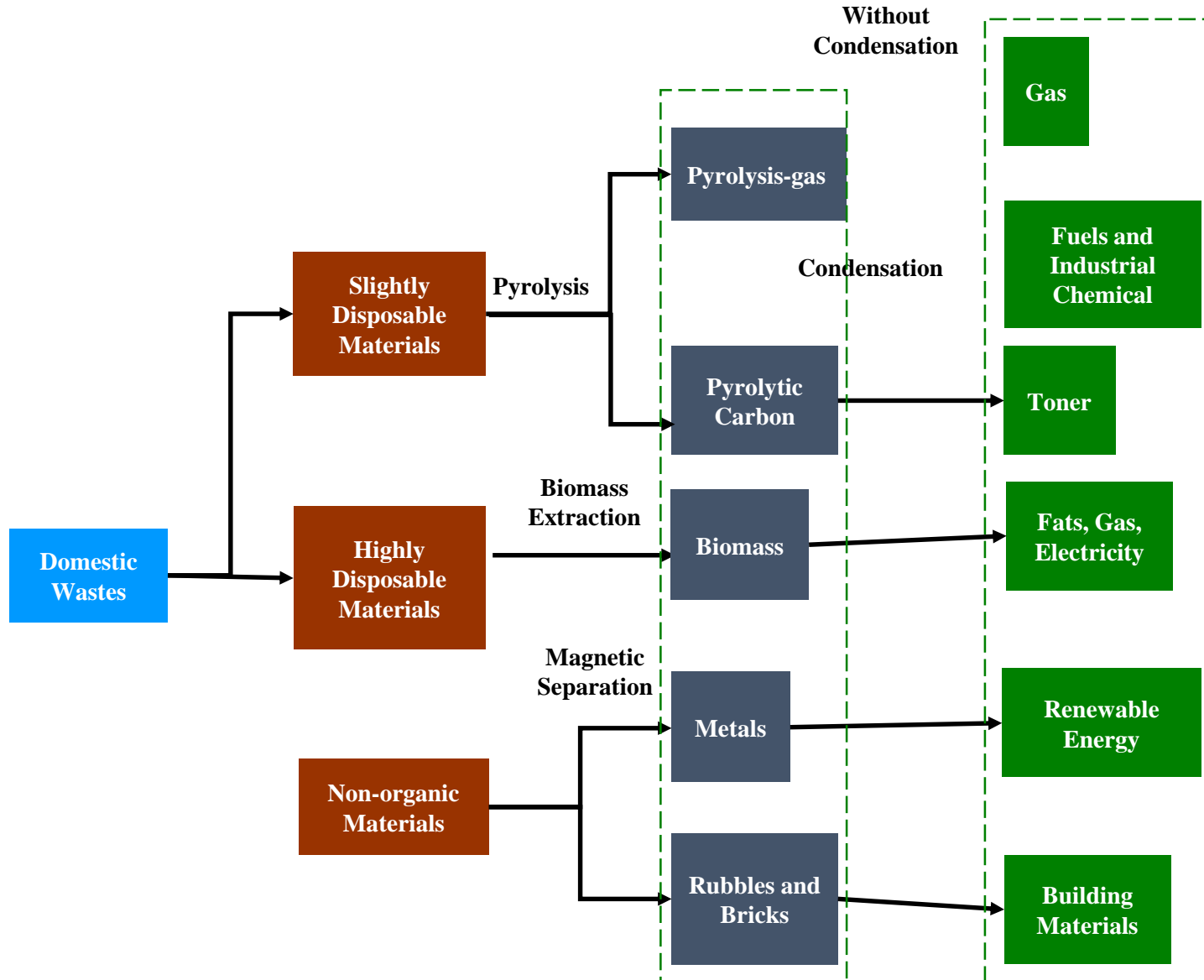


The third Generation Domestic Waste Recycling and Disposal Technologies and Devices

(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.

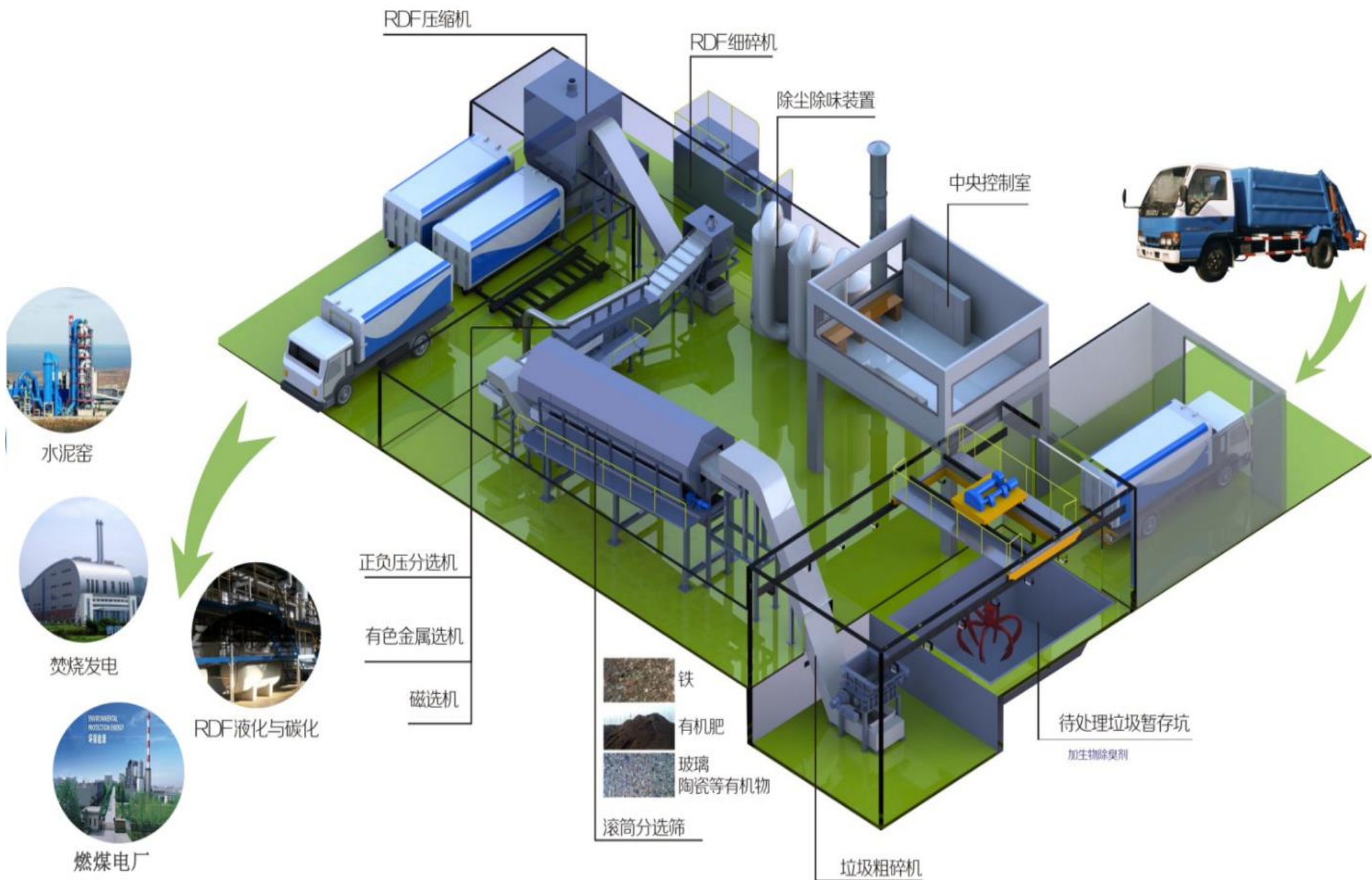


Core Techniques

- (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



RDF液化与碳化




燃煤电厂

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



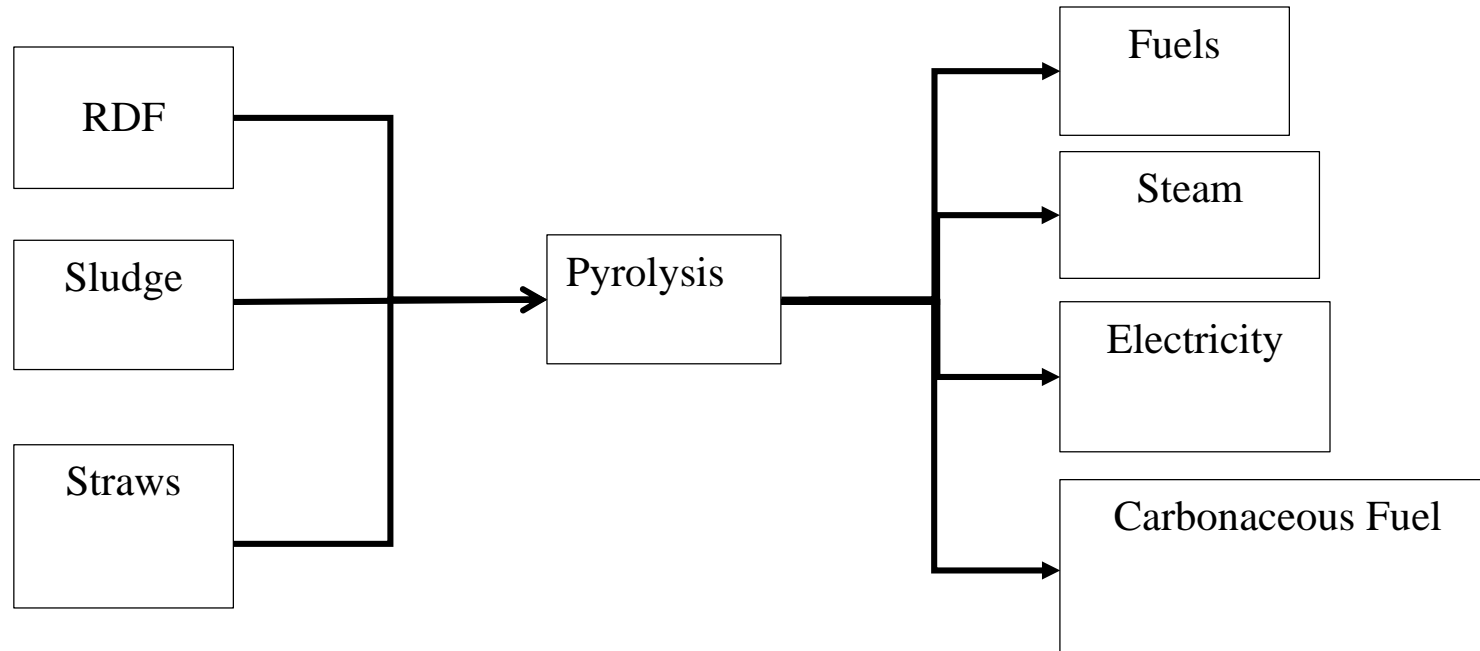
Pyrolysis Technique

Low temperature Pyrolysis process $\sim 400\text{C}$ to prevent the formation of Dioxin requiring $\uparrow 600\text{oC} + \text{oxygen} + \text{plastic}$. The technique ensures that:

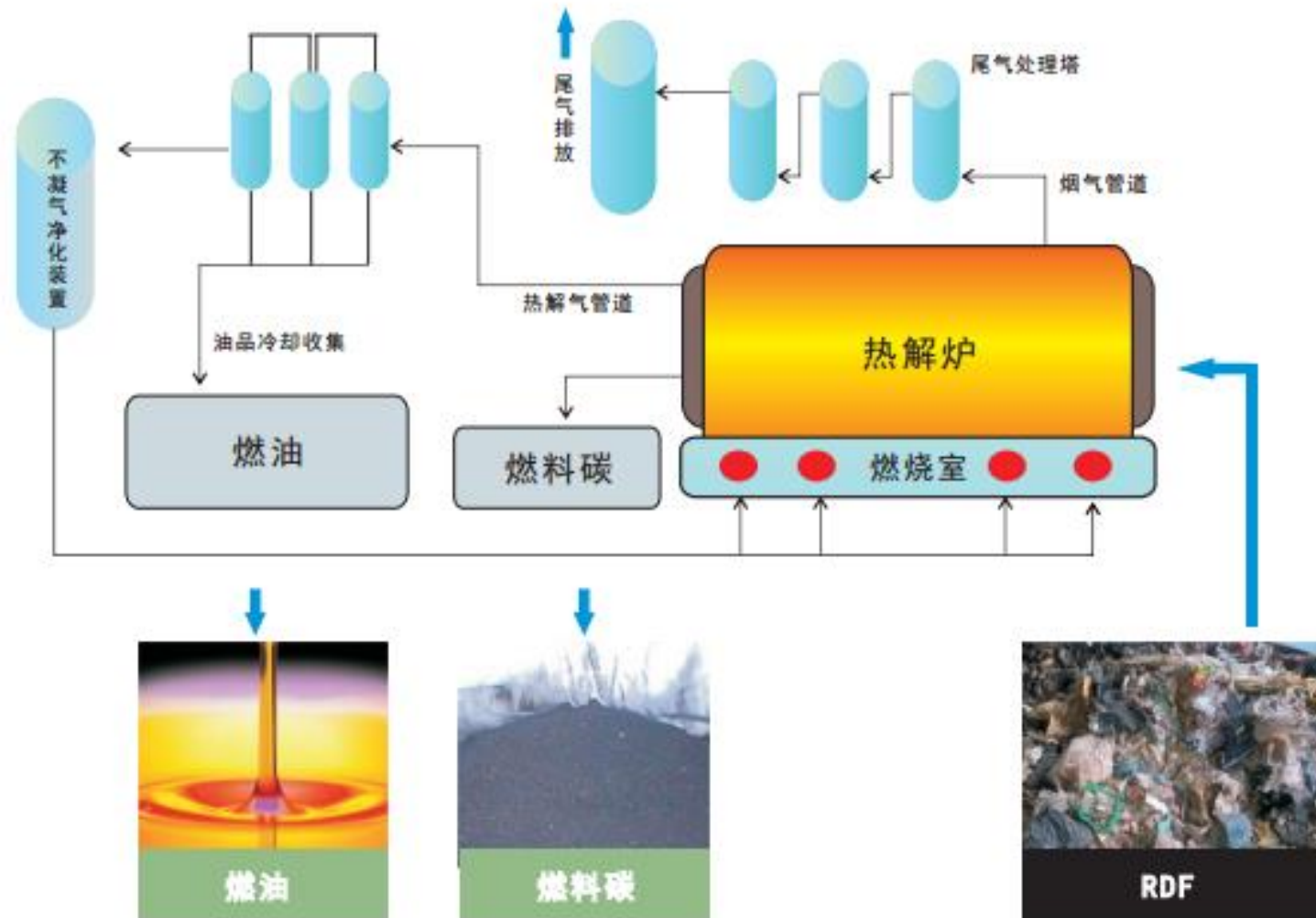
- a. Prevent tar sticks to the walls via tar removal system
- b. Capable for solid and semisolid materials in different shapes
- c. Well-sealed system with high heat transfer rate
- d. Run 24 hours a day , start and terminate the operation easily
- e. Assembly in factory, need simple installation and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







Preventing the formation of dioxins



Thank you