Electrical Generator System by Compact Thermolysis Plant

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Abstract

Batch type pyrolysis is the most conventional system.This system has some problems that low thermal efficiency and low operating rate due to take a considerable amount of time to heat up and cool down the reactor.
Compared to it, our continuous system can keep the high efficiency and high operation rate. And, we use only PE, PP, PS as feedstock, we can produce high quality oil.
We are proud to announce that our system have been already running without trouble for seven years. In addition, the quality of oil made by plastics feed stocks is very high, so we can control quality of this oil between heavy oil and diesel oil. Keep utilizing this high quality oil for seven years.

1. Introduction

Batch type pyrolysis is the most conventional system. This system has some problems that low thermal efficiency and low operation rate due to take a considerable amount of time to heat up and cool down the reactor.

Compared to it, our continuous system can keep the high efficiency and high operation rate.

2. Materials and Methods

1)Main features

Table1.Main features

Feed	Thermoplastics waste
Processes	(excluding chlorine-containing plastics PVC and PET)
Main equipment	Pyrolysis
Special features	Tank reactor Continuous feeding of scrap film by using an extruder.
Main product	Hydrocarbon oil

Image of a typical commercial plant.

Figure 1.Fuel Oil Production Plant at a packaging manufacturer in Gunma Prefecture.

2)Technical description

A schematic diagram of a typical plant is shown in Figure2.

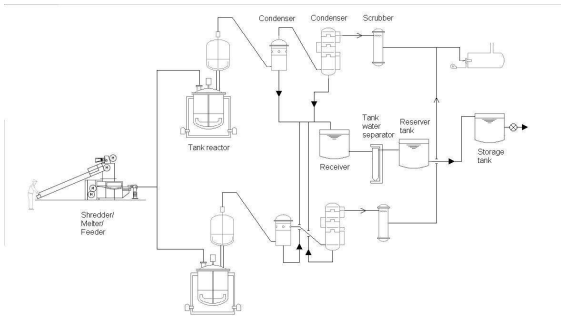

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Figure 2: Schematic diagram of a typical plant[1]

3) Specification of oil production plant

A standard specification is shown in Table 2.
Table 2: Specification of oil production plant [2]

Type	EST-1500SC	EST-3000DC
Processing Method	Continuous input Plant	Continuous input Plant
Reactor Volume	3.3 m^3	3.3 m^3×2
Max. Processing Capacity *1	300Kg/h	600Kg/h
Quantity of Produce Oil	3KL/day	6KL/day
Power Input	AC 200V 20Kw/h	AC 200V 40Kw/h
Control Panel	Self-Contained device	Self-Contained device
Electrical Motor	Explosion-proof or Increased	Explosion-proof or Increased safety

	safety type	type
Total Weight	15,000Kg	28,000Kg
Law and Regulations *2	Fire Defense Law, Vibration /Noise abatement regulation	Fire Defense Law, Vibration /Noise abatement regulation
Utility	Nitrogen gas, Water	Nitrogen gas, Water
Materia		

*1 It depends on material and operation.
*2 It depends on your country's low.

4)Technical description

Figure 2 shows a flow diagram of the fuel production plant at Environment Technology Ltd. in Gunma Prefecture. The primary treatment, the reactor temperature is raised to 400 ℃and thermal decomposition is performed accordingly.

Mixed plastic containers and packaging from household waste are thermally decomposed to produce around 90 wt% of hydrocarbon oil. Typical results are shown in Table 3.

Table 3: Typical results of mixed plastics pyrolysis*
Component Amount : kg (Yield: wt%)

	Component	Amout:Kg (Yield wt%)
Feed	Used mulching film (PE)	205
	Used flexible container (PP)	410
Product	Hydrocarbon oil	553.5(90)
	Solid residue	61.5(1)
	Off-gas	55.35(9)

*Yield of individual products will vary depending on composition of waste plastics

3. Results and Discussion

We have described our continuous system, it can keep the high efficiency and high operating rate comperard to conventional system.

Additinally, we can only use PP, PE, PS as materials in this system. So, we can produce a high quality of oil. And we can use it for electrical generator in our factory.

4. Conclusions

Compared to conventional system, our continuous system can keep the high efficiency and high operation rate.

And, we use only PE, PP, PS as feedstock, we can produce high quality oil.

We are proud to announce that our system have been already running without trouble for seven years.

In addition, the quality of oil made by plastics feed stocks is very high, so we can control quality of this oil between heavy oil and diesel oil. Keep utilizing this high quality oil for seven years.

References

[1] Technical brochure by Environment Technology.
[2] Technical brochure by Environment Technology.