

Energy Recovery From MSW

The 3rd 3RINC's 2016



YOKOSUKA CITY JAPAN



Sumitomo Heavy Industries Environment Co., Ltd.

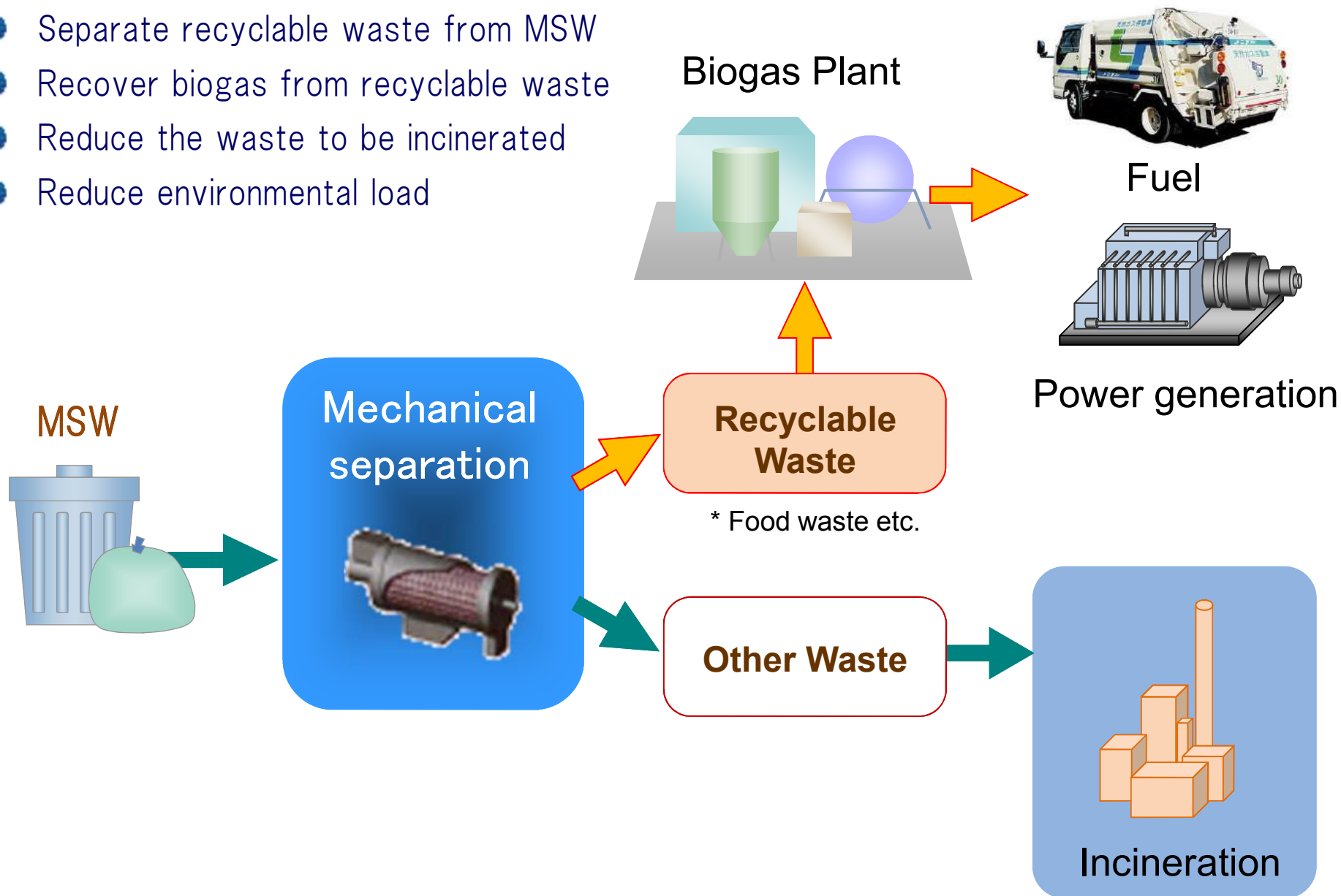


Sumiju Environmental Engineering Inc.

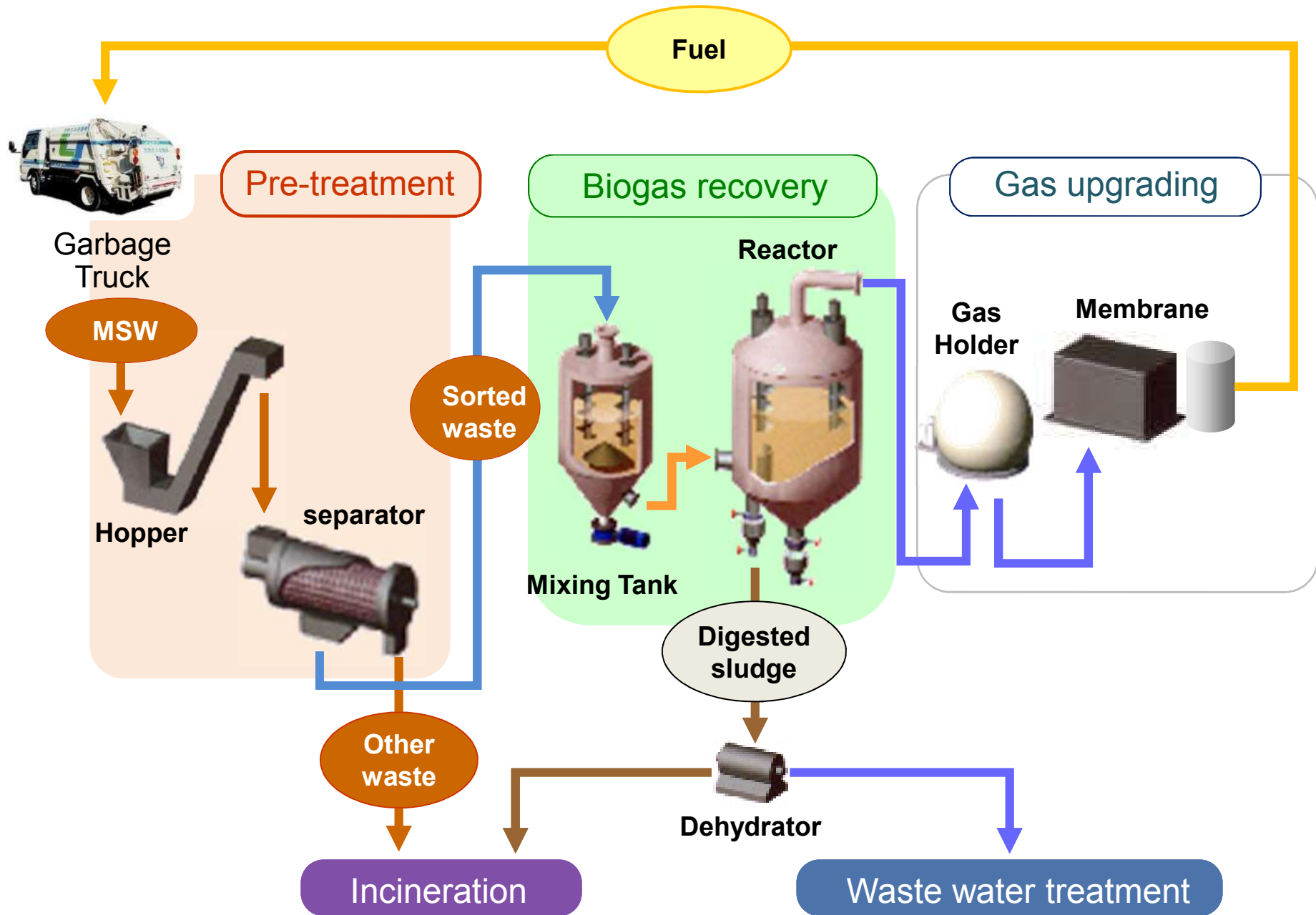


1. Concept

- Separate recyclable waste from MSW
- Recover biogas from recyclable waste
- Reduce the waste to be incinerated
- Reduce environmental load

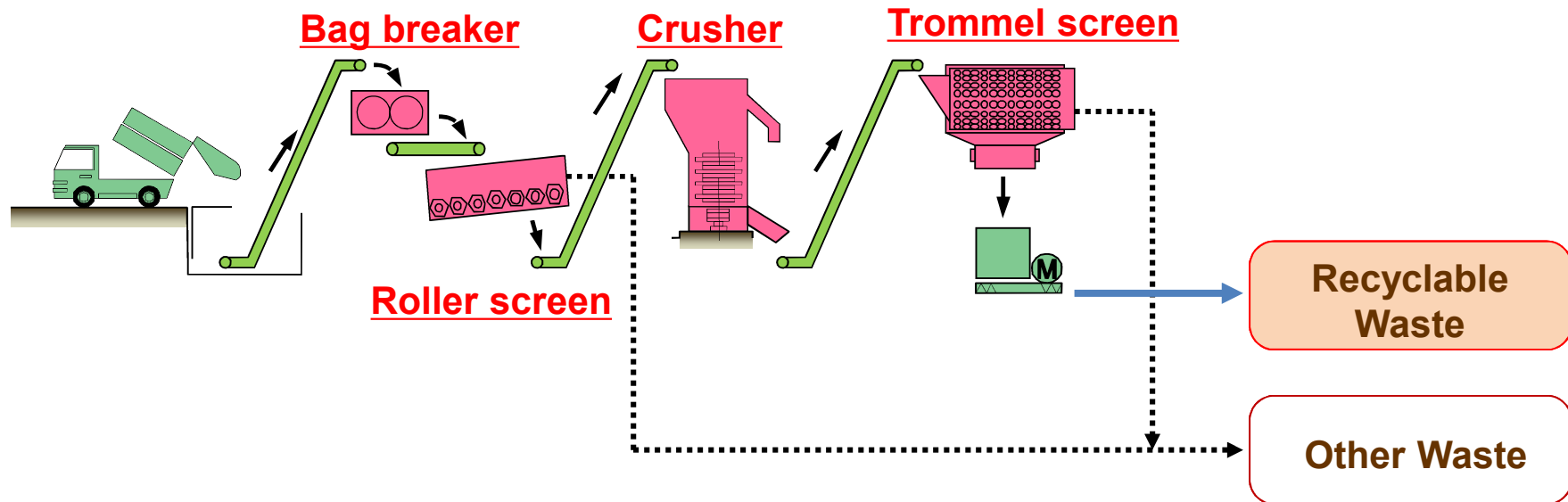


2.1. System Flow



2.2. Key point of pre-treatment

- Selection of equipments and those operating condition considering the composition and characteristics



Bag breaker



Roller screen



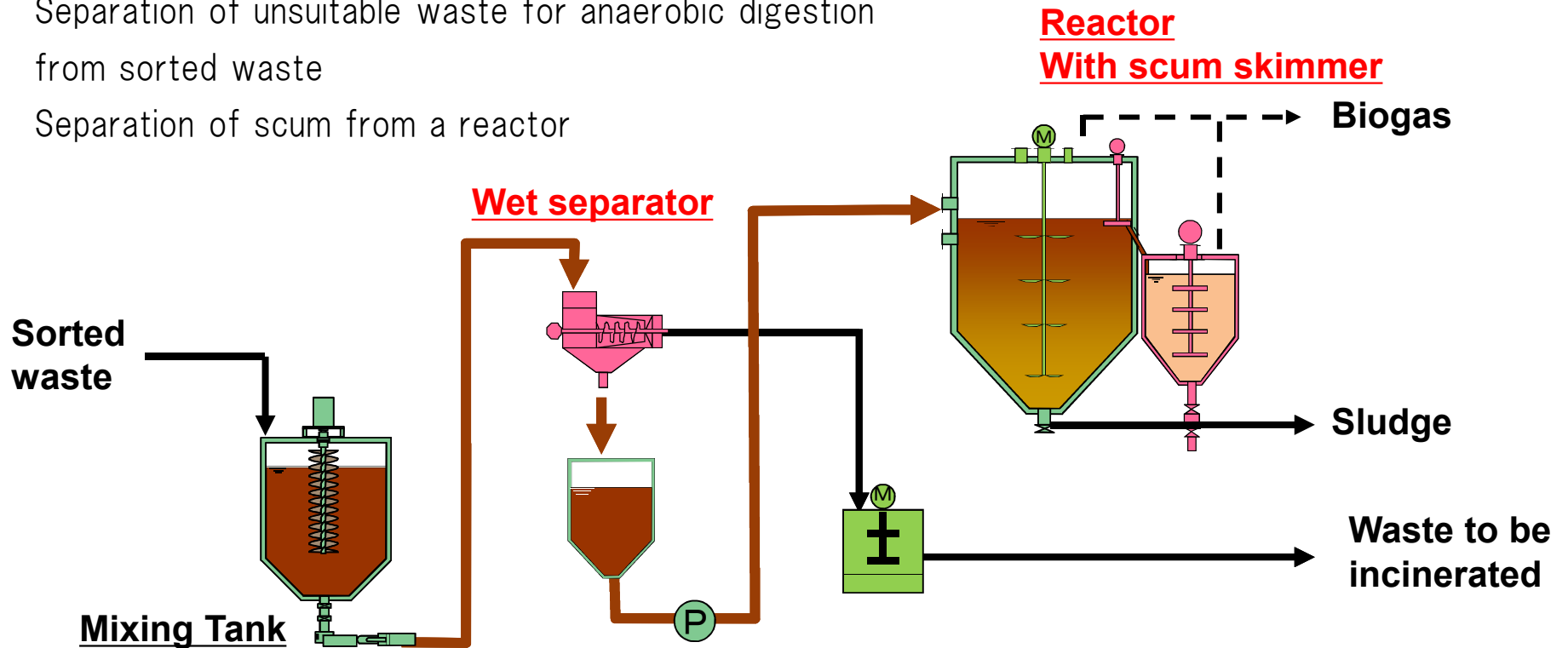
Crusher



Trommel screen

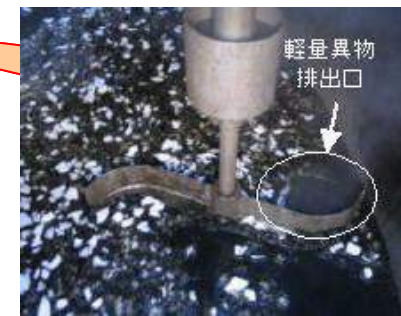
2.3. Key point of Boigasification

- Separation of unsuitable waste for anaerobic digestion from sorted waste
- Separation of scum from a reactor



Wet separator

Reactor



Scum skimmer

3. Composition of MSW in Yokosuka city

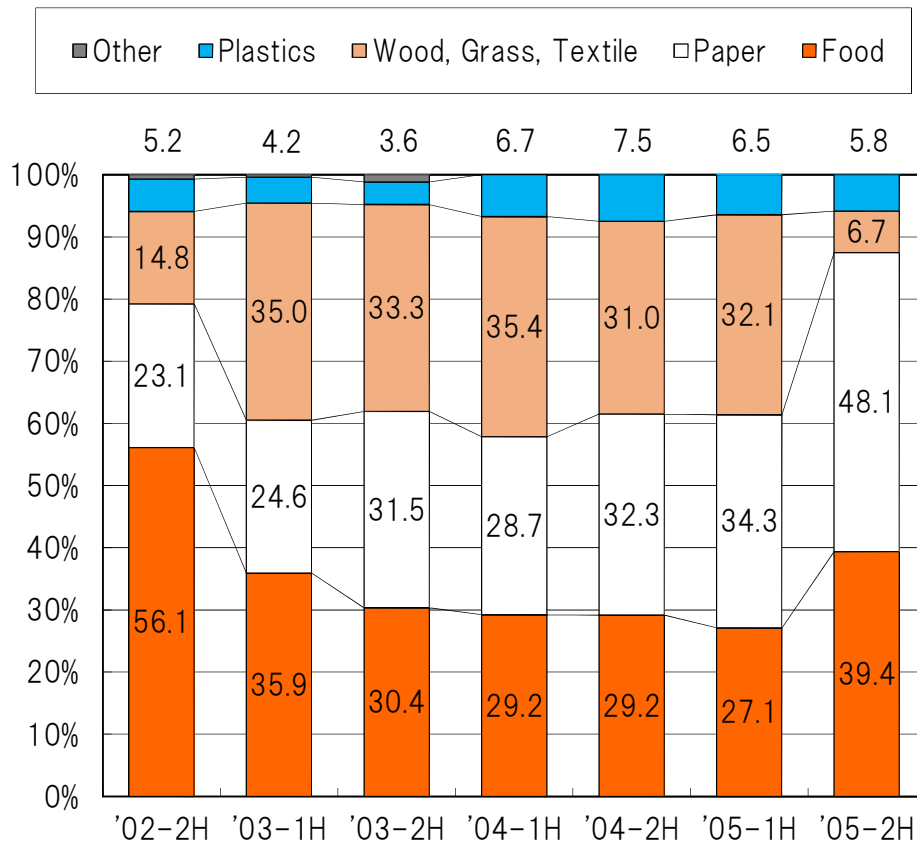


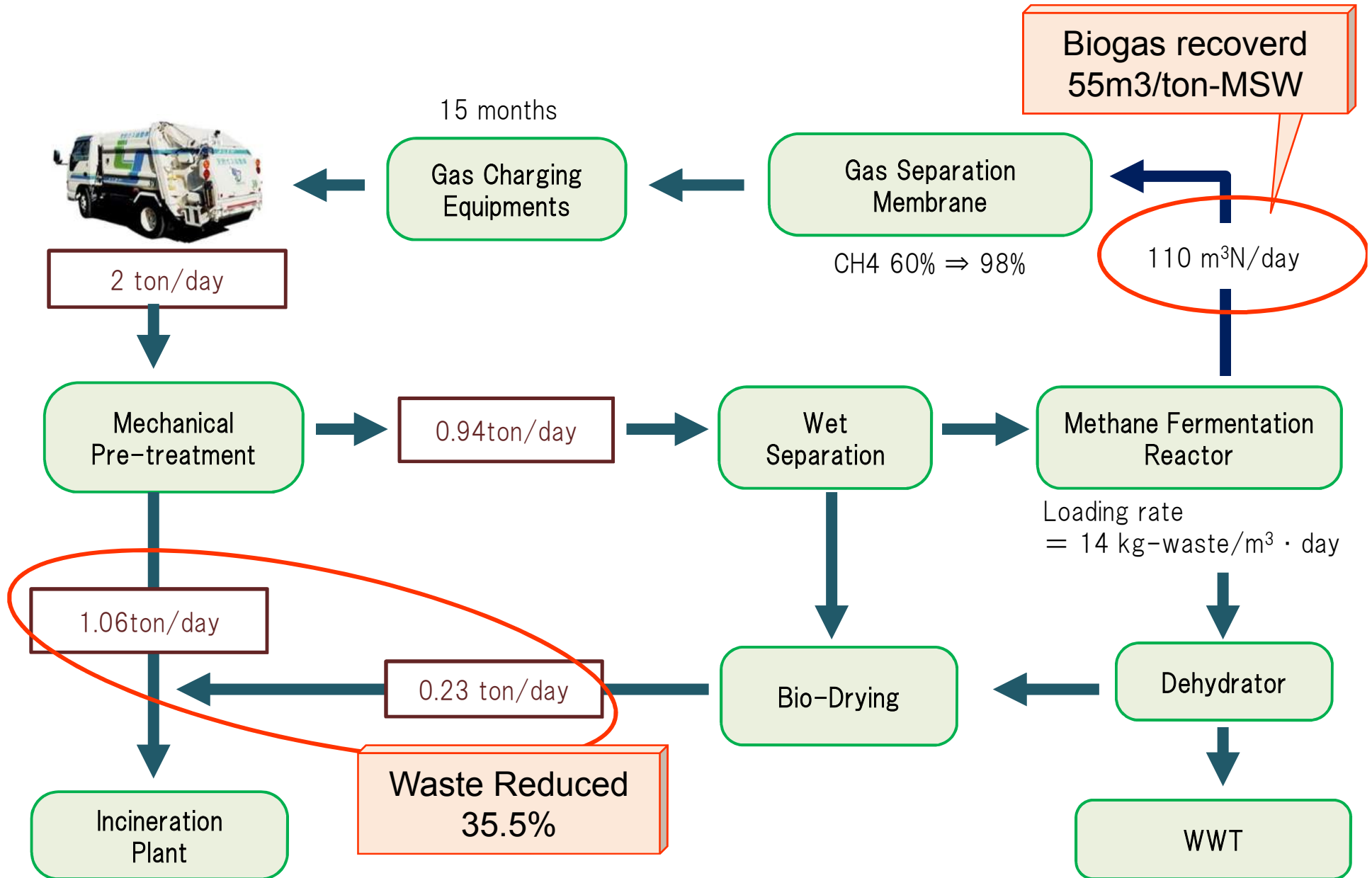
Fig. Composition of MSW



Pic. Collected MSW

- Food waste = 30%, Paper waste = 30%, Wood, Grass, Textile = 30%
Plastics = 10% included.
- Composition of MSW depends on lifestyle, area, season, etc.

4.1. Result



4.2. Result of pre-treatment

MSW



(Crushed)

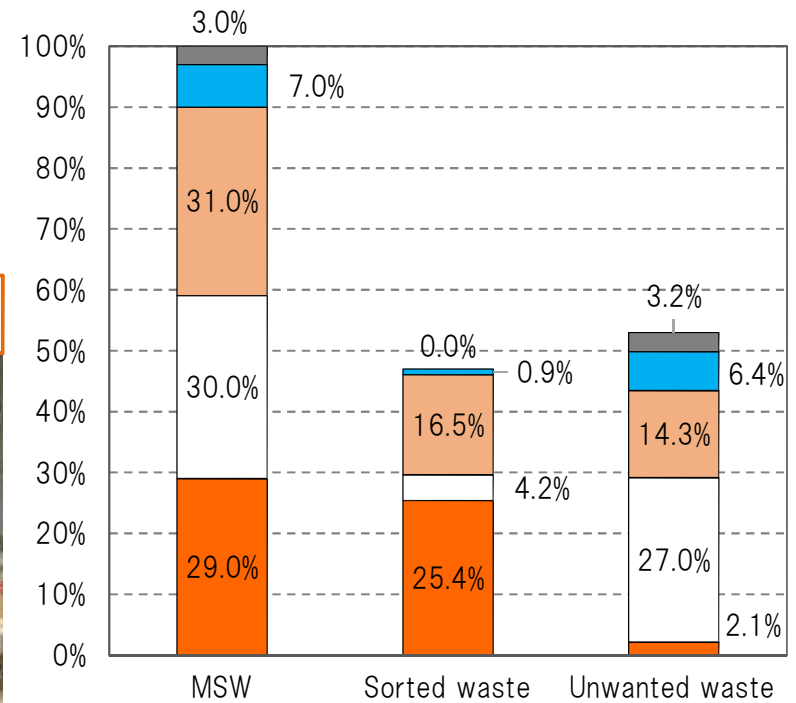
Separatol (Trommel)



Unwanted Waste
(Unrecyclable)



■ Food
 □ Paper
 ■ Wood, Grass, Textile
 ■ Plastics
 ■ Other



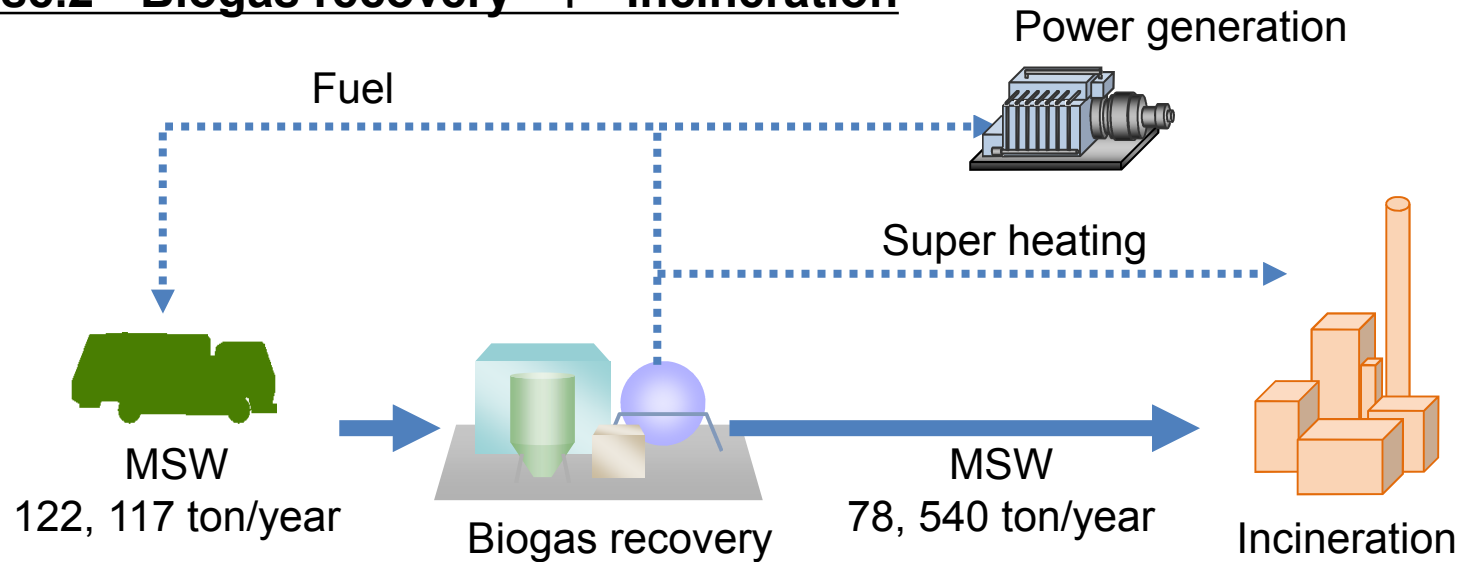
Sorted Waste
(Recyclable)

5.1. Case study

Case.1 Incineration

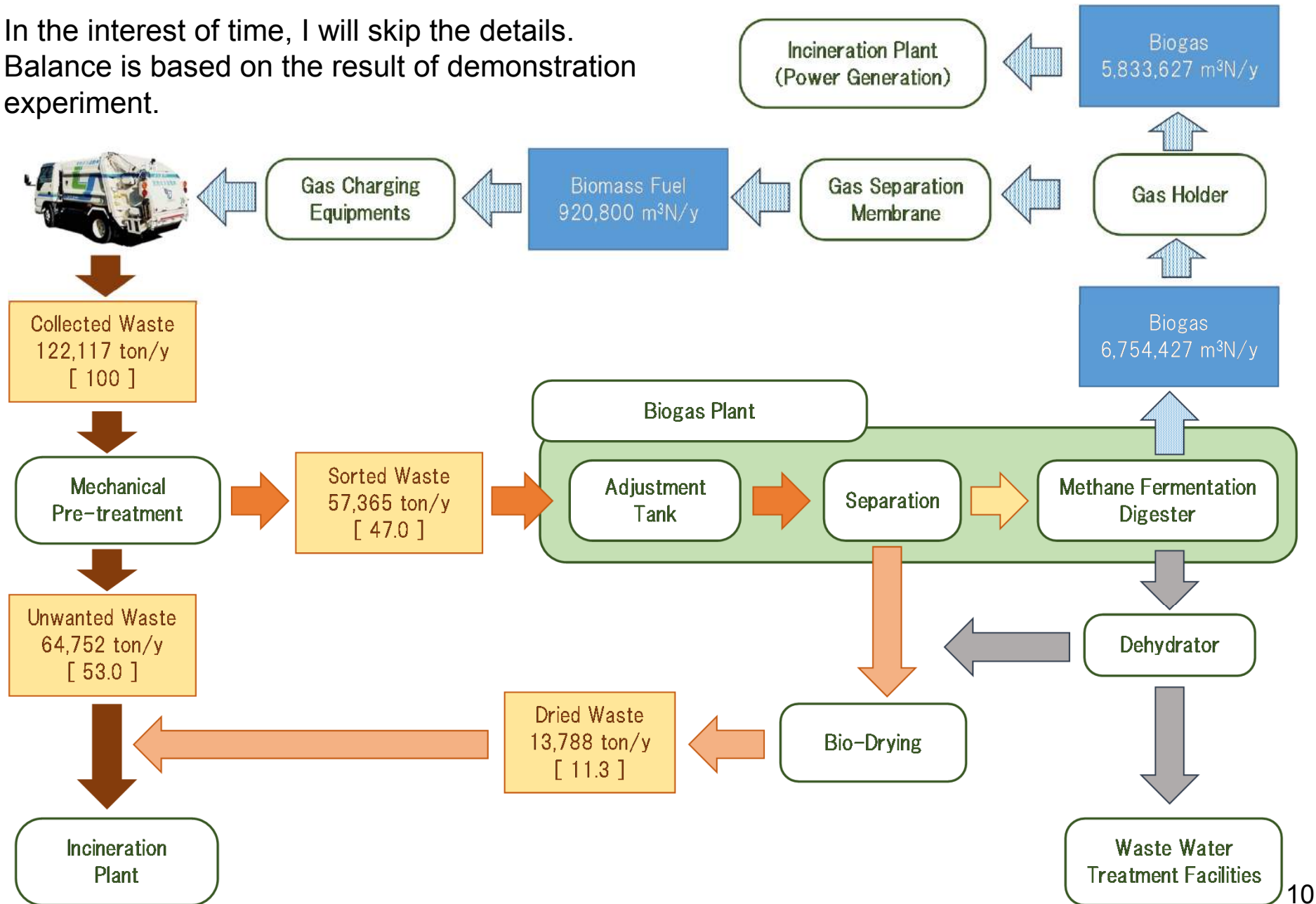


Case.2 Biogas recovery + Incineration

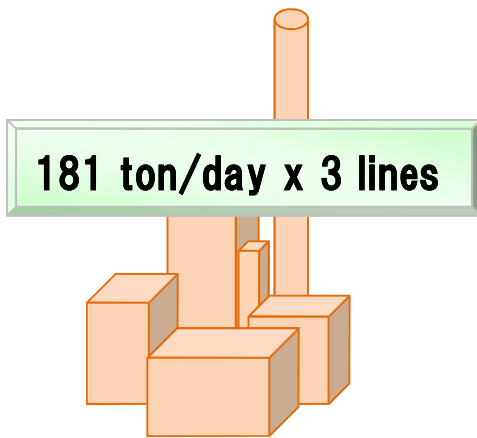


5.2. Case study (Balance)

In the interest of time, I will skip the details.
Balance is based on the result of demonstration experiment.



5.3. Case study (Cost)

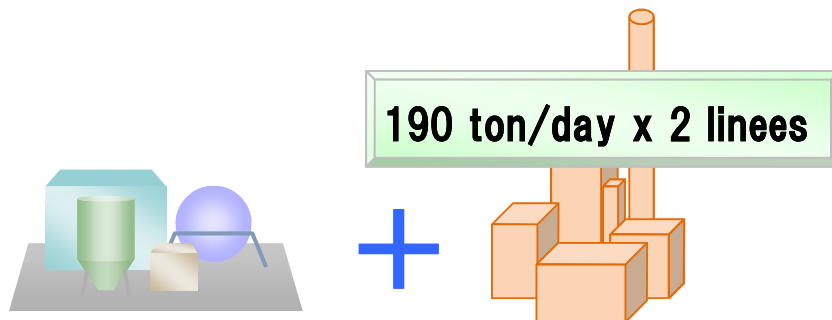


Case.1 Incineration

Construction cost saved 6%

(dollars in thousands)

	Case 1	Case 2
Construction		
Incineration	246,154	155,385
Biogasification	-	76,923
Common	-	11,282
Subsidy	▲ 72,821	▲ 81,778
Total	173,333	161,812



**Case.2 Biogas recovery
+ Incineration**

Operating cost saved 9%

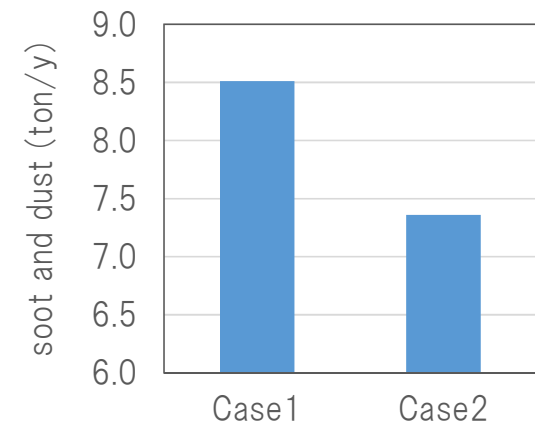
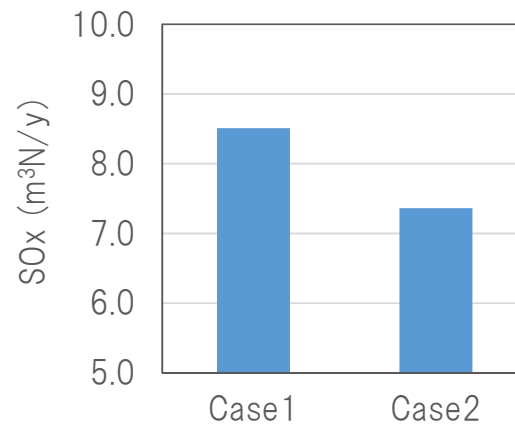
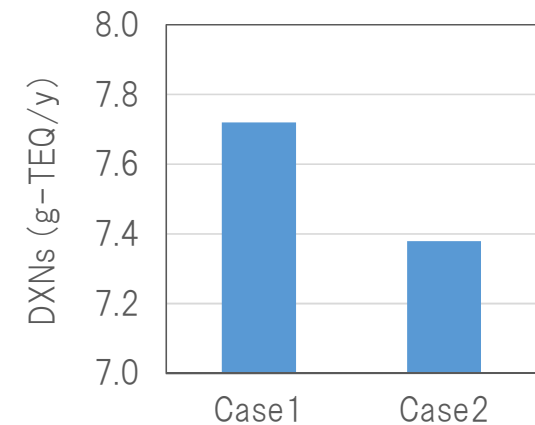
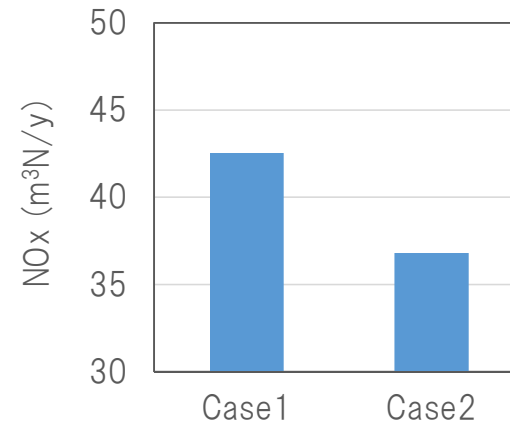
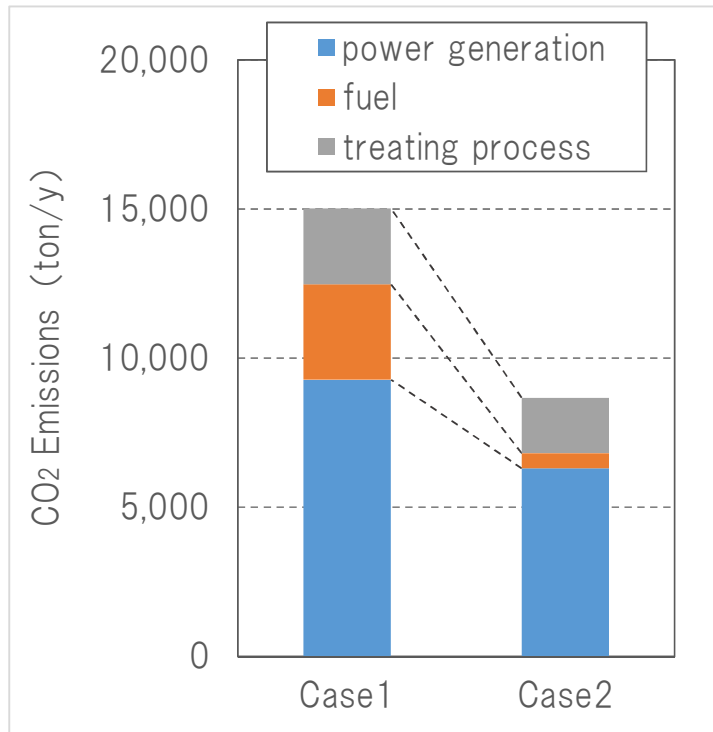
(dollars in thousands/year)

	Case 1	Case 2
Chemicals	1,373	2,260
water & sewage	456	571
Power	234	174
Power Sales	▲ 1,112	▲ 1,637
Fuel	1,264	215
Maintenance	3,590	3,675
Total	5,803	5,259

5.4. Case study (Environmental load)

Carbon footprint
Reduced 6,348 ton/y

DXNs etc. Contaminant
reduced 4.4–13.7%



Case.1 Incineration

Case.2 Biogas recovery + Incineration

6. Conclusion

“Biogas recovery + Incineration system” is effective MSW treatment system

Compared with Incineration,

Waste reduced 35.7%

Construction cost saved 6% (including the subsidy)

Operating cost saved 9%

Carbon footprint reduced 6,348ton/y

DXNs etc. contaminant reduced 4.4–13.7%

Thank you all very much for your attention
If you need more information, please visit our exhibition booth

END