

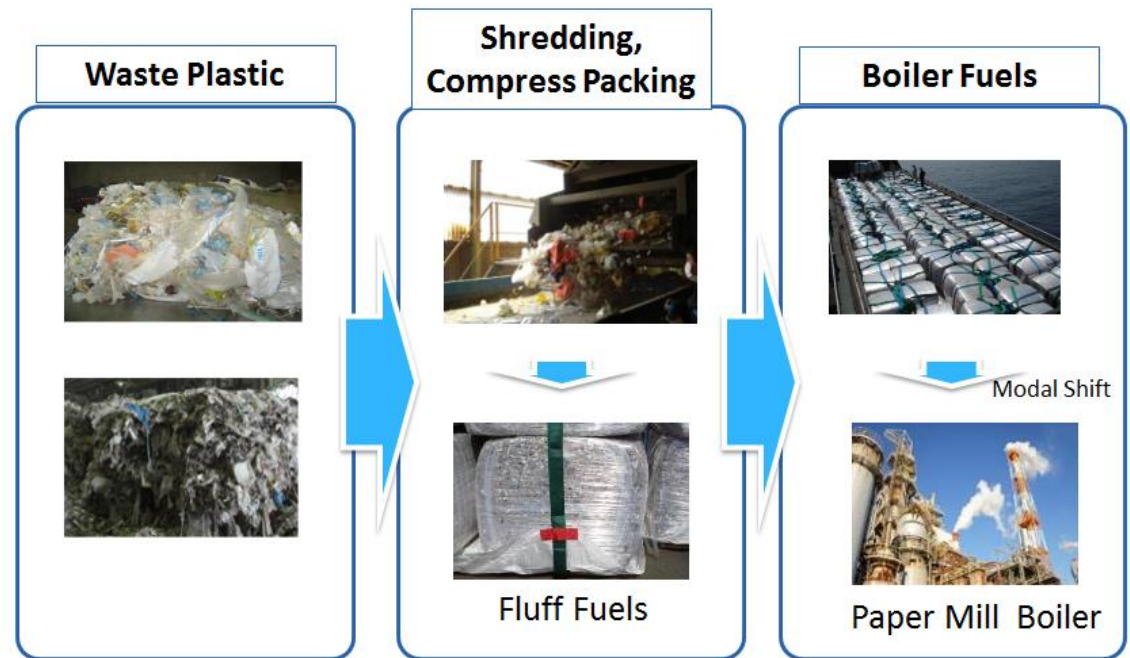
# Fluff Fuel Technologies Derived from Waste Plastics

## 1. Characteristics of the technology

- Fluff Fuels provide more eco-friendly, space-saving and affordable options as compared with other types of fossil fuels.
- Fluff Fuels have a calorific value of 6,500~8,000 kcal/kg and ash content of approx. 10%, and they are most often used as alternatives to coal or heavy oil in paper manufacturers in Japan and cement companies overseas.

## 2. Overview of the technology

- The Fluff Fuels are produced through shredding, compressing and packaging (Baling) of:Plastics, Papers and Fibers.
- The weight of Fluff Fuel bale is about 560kg/piece.



Packing Films, Bubble Wraps, Urethane, Polystyrene, Polyethylene, Waste Plastic

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## 3. Special features

**I. Lower CO<sub>2</sub> emissions than fossil fuel:** Fuel consumers such as cement manufacturers or power generation companies can cut back on their CO<sub>2</sub> emissions by 17 percent during the heating process by Fluff Fuel rather than coal. That is due to the lower carbon content of Fluff Fuel over coal.

**II. Less electricity consumption than Refuse derived Plastic and Paper Fuel (RPF):** The Fluff Fuel production process consumes one-third the electricity required by standard RPF. That is because the Fluff Fuel production does not have a heating and pelletizing process like RPF does.

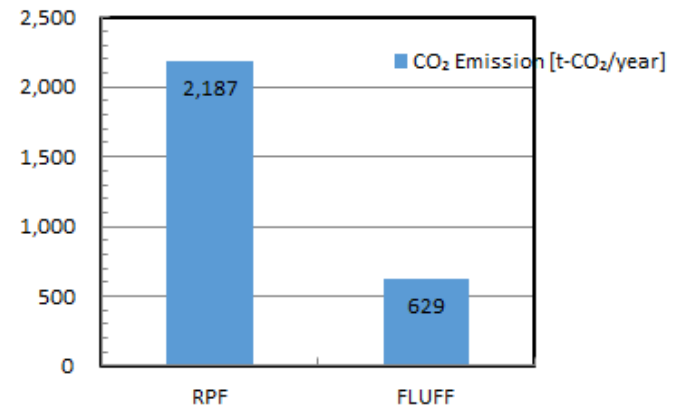
**III. Takes up less space:** The needed stock yard area for Fluff Fuel is estimated to be only 60~70% that of RPF due to the rectangular shape of Fluff Fuel bale that allows you to stack up to three layers.

## Comparison of CO<sub>2</sub>emission

	Electricity Consumption [kW/t-wpl]	CO <sub>2</sub> emission [t-CO <sub>2</sub> /year]
Fluff	59	629.412
RPF	205	2186.94

※Calculation process is on the next page

## CO<sub>2</sub> Emission [t-CO<sub>2</sub>/year]



**Fluff Fuel is more Eco-friendly (3times) than RPF in the production process!!**

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## 4. Installation record

### **1) Domestic:**

Manufacturing facility in Yokohama was completed in March, 2008.

Amount of waste disposal, sales of Fluff Fuels: 22,000 TPY

Removal and disposal of contaminants to other facilities (PVC, Metals and others): 1,150 TPY

Processing capacity: 144 TPD

Years of operation: 9 years since 2008

### **2) Overseas:**

#### **(1) Pilot Project**

A pilot project to establish a recycling enterprise in Cebu, Philippines, ran for 2 years starting in 2013, and the project was taken over by Cebu City in 2015, and has been running so far.

Amount of waste disposal, sales of Fluff Fuels: Processing capacity: 5 TPD

Years of operation: 3 years since 2014

#### **(2) Commercial scale plant**

A commercial scale plant for Fluff Fuel was completed in May 2017 in Cebu, Philippines.

Processing capacity: 50~75 TPD

Years of operation: since July, 2017



Pilot Plant in Cebu