

# RPF, an ideal and sustainable fuel from Plastic and Paper waste

The best way to reclaim energy from industrial plastic and paper waste

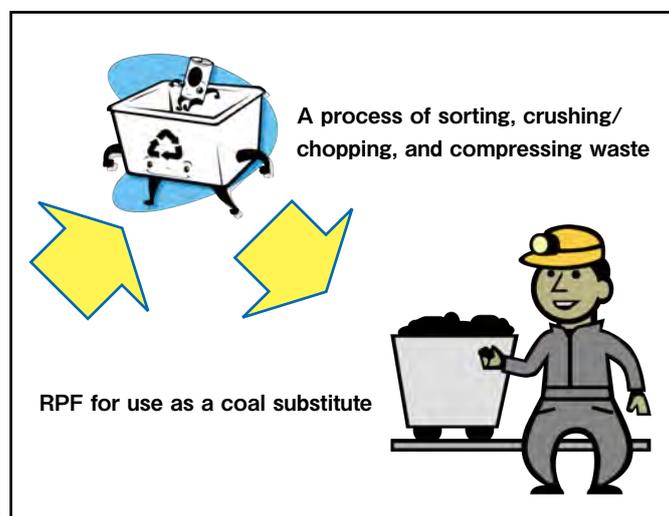
## Fuel from Industrial waste

Tons of Plastic and Paper waste are produced everyday in industrialized societies. These wastes can be utilized by transforming them into RPF, a sustainable substitute to coal. RPF puts together plastic waste (a petrochemical product which creates high levels of energy) and paper waste (a bioenergy product that contributes to reducing CO<sub>2</sub> emission). RPF is a combination of an ideal industrial waste process and a fossil fuel subsidy, developed solely in Japan.

### “Urban coal mines” (Industrialized Society)



Large amounts of industrial waste are produced everyday as a side product throughout an industrialized nation.



Sorting Plastic and Paper waste from other industrial wastes to make RPF

RPF, made from Plastic and Paper waste extracted from so-called "urban coal mines", is a multi-purpose fuel that produce more energy than coal itself.



Diameter

40mmφ

20mmφ

8mmφ

RPF

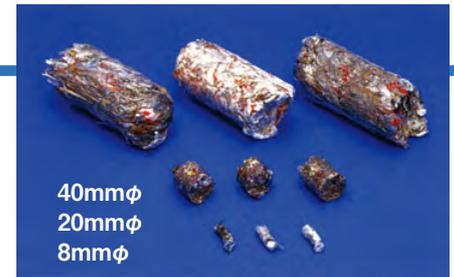
# Prominent features of RPF

## What is RPF?

RPF stands for "Refuse derived Paper and Plastic densified Fuel" (Refused Paper & Plastic Fuel) and is a high calorie solid fuel made mainly from waste paper and plastics that are difficult to recycle as industrial waste.

## RPF application

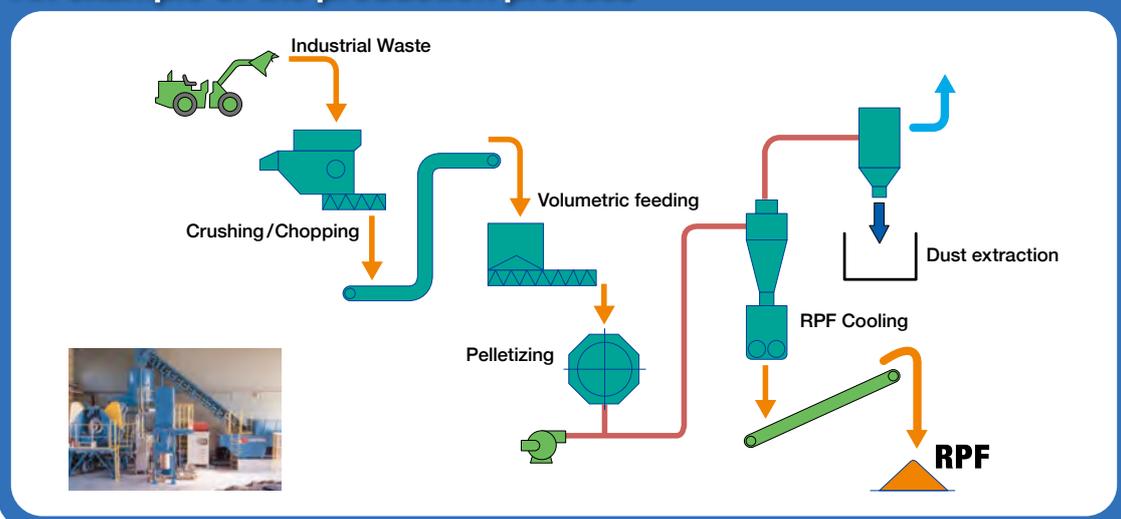
1. RPF ensures consistent and credible quality
2. The calorific value of RPF is adjustable at the client's request
3. RPF has high calorie fuel equivalent to that of coke
4. Clients can easily handle RPF as it comes in pellet forms. It allows easy transportation from RPF production sites to clients
5. RPF makes it easier for clients to take countermeasures against gas emission from incinerators.
6. RPF is economically efficient than using coal
7. RPF reduces CO<sub>2</sub> emission by 33% compared to coal



## RPF application

RPF can be a sustainable substitute to coal and coke at firms such as paper manufacturers, chemical manufacturers, and lime processing companies.

### An example of the production process

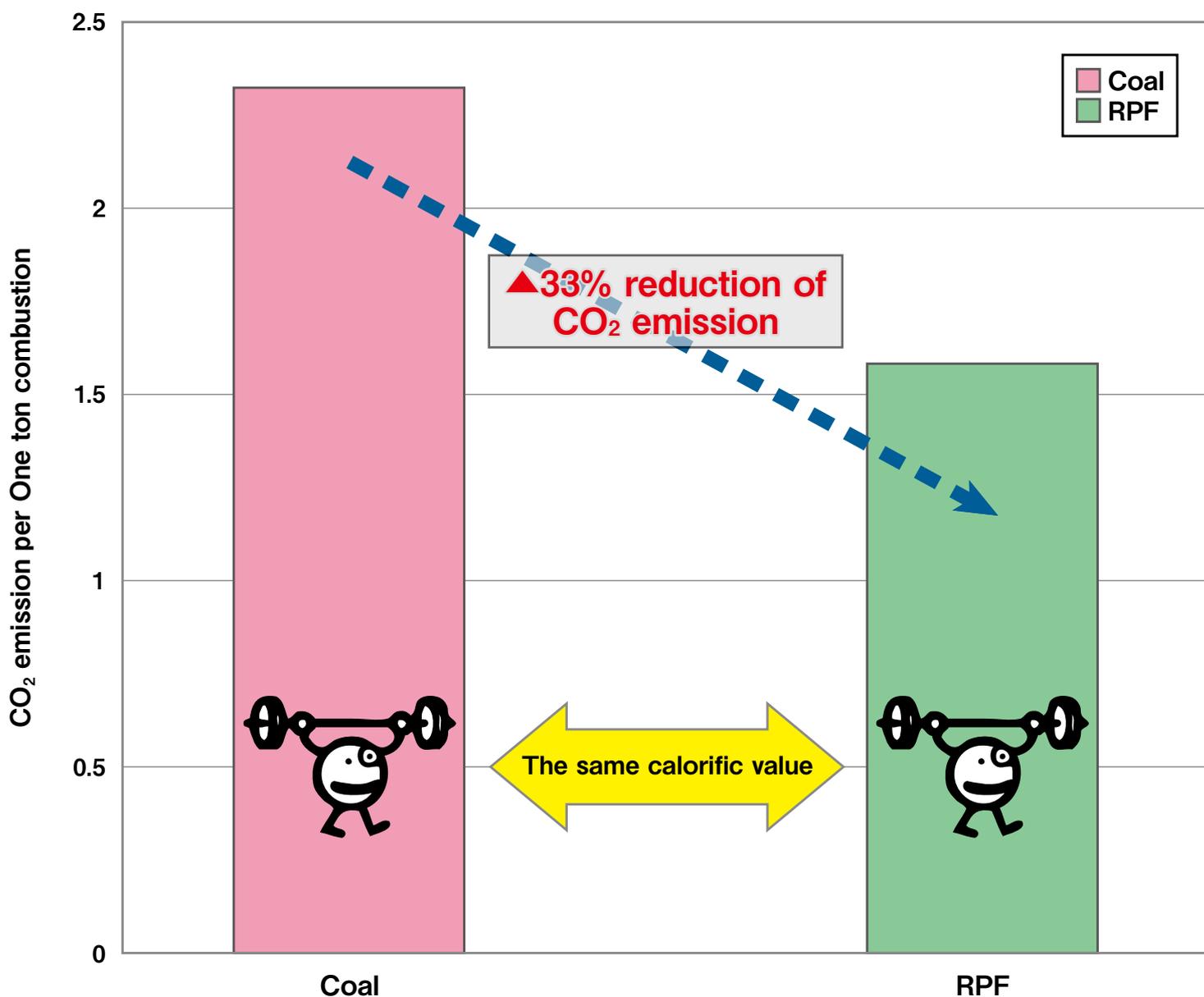


# RPF has superior Environmental Load Reduction compared to coal

RPF is just as effective but greener than coal

## RPF works against greenhouse effect

RPF has the same energy level as coal but is Eco-friendly compared to the latter as it cuts down on CO<sub>2</sub> emission by 33%. This is possible because RPF is made up of almost the same consistency of plastics and paper.



# JIS enlisted RPF as industrial goods.

Being enlisted by JIS added further credibility to RPF as a Japan-made fuel, and also enabled RPF to promote itself as an eco-friendly fuel to a wide range of industries.

## Background of JIS listing

As the number of RPF manufacturers increased to respond to the increasing demand for eco-friendly fuel, it became more and more difficult to ensure consistent quality. To guarantee the reliability of the RPF, major RPF manufacturers sought to have their products enlisted by the JIS (Japanese Industrial Standards Committee) in 2006.

## JIS listing

The Japan RPF Association has set reference values for RPF that reflect both the trust and expectations of major clients. Thereafter, the Japanese Plastic Industry Federation, with support from the Ministry of Economy Trade and Industry, took the initiative and succeeded in getting the RPF enlisted by JIS on January 20, 2010.

## Establishment of JIS standards for RPF

JIS reference of RPF below

List number : **JIS Z7311 : 2010**

Object : Refused derived paper and plastics densified fuel

Listed date : 20<sup>th</sup> of January 2010

### ■ RPF reference values on JIS list

RPF Type	RPF-coke	RPF			Unit
Grade	—	A	B	C	
Higher Heating Value	$\geq 33$	$\geq 25$	$\geq 25$	$\geq 25$	MJ/kg
	$\geq 7,883$	$\geq 5,972$	$\geq 5,972$	$\geq 5,972$	kcal/kg
Moisture	$3 \leq$	$5 \leq$	$5 \leq$	$5 \leq$	%
Ash	$5 \leq$	$10 \leq$	$10 \leq$	$10 \leq$	%
Residual chlorine	$0.6 \leq$	$0.3 \leq$	$0.3 < 0.6 \leq$	$0.6 < 2.0 \leq$	%