

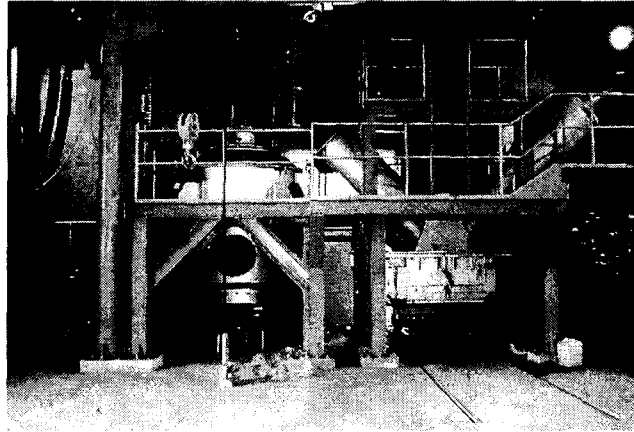
㈜ 자원리사이클링연구소



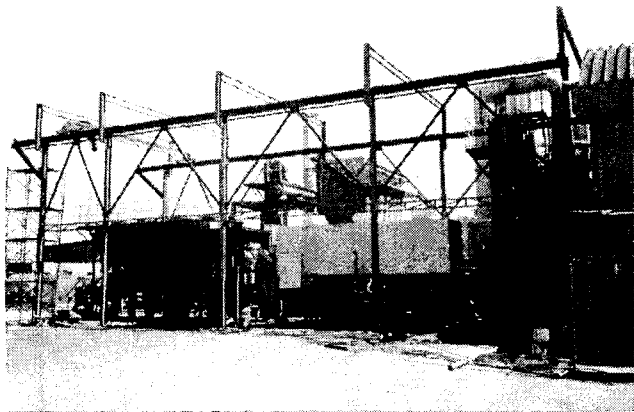
Part of RAPID System

Part Name	Characteristics	Part Name	Characteristics
Main Electric System	- Dual T/R - 12 Pulse - Thyristor type Rectifier - Electric Power : 4 MVA (400 V, 10,000 A)	Mixer / Extruder	- Pelletizing of EAF Dust, Coke and Lime - Mixed dust extruding by Screw enforcement
Furnace	- Volume : 1.9 Nm ³ - Refractory : Mag-Carbon Brick - Copper-Graphite Duplex Cathode - Pin-type Anode	Dryer	- Recycling of waste gas heat - Hot Air Blow & drying in 3layer moving bed
Zn-Condensing Chamber	- V-type - Pb pumping & Splashing - Maximum residence time	2nd Combustion Chamber	- Combustion of CO gas by LPG Burner - normal elevation temp. : 600°C
Pb preheating Pot	- Capacity : 5 ton - Max Temp. : 800 °C	Heat Exchanger	- Air-cooled & Water-cooled - Recycling of waste gas heat - Rapid cool down of Exhaust gas
Feeder	- Capacity : max 2 ton/Hr - Vibration & Screw type	Aux. Utility Line	- Cooling Water, Air Compressor, N ₂ supply line

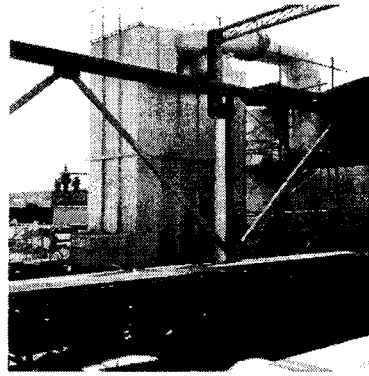
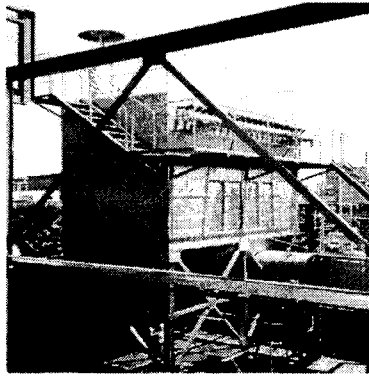
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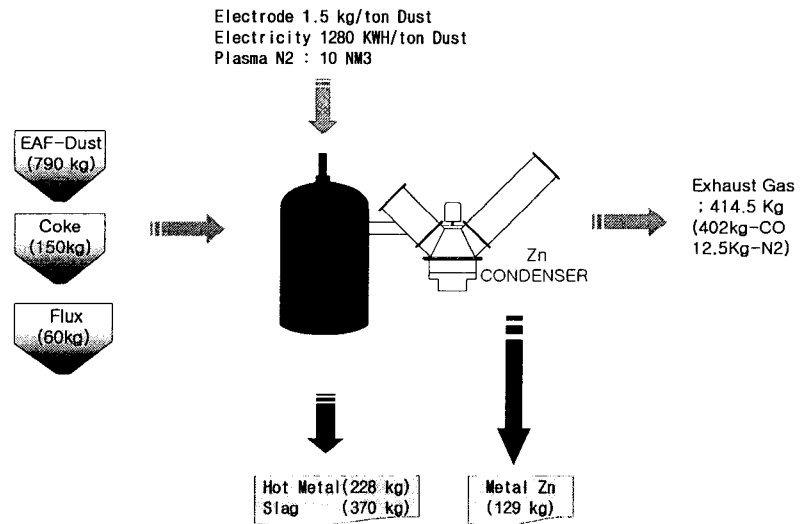


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If Mixed dust 1,000 kg was treated



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Show the chemical composition of EAF dust used in this research.

Element	Wt. %
SiO ₂	3.77
ZnO	27.82
Na	1.53
K	2.11
T.Fe	30.33
CaO	2.82
MgO	1.02
Pb	3.43
Al ₂ O ₃	0.7

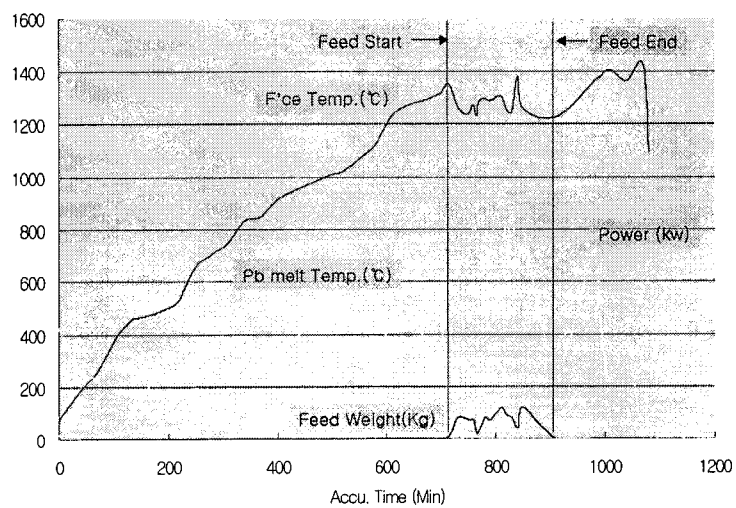
● Leaching test of EAF Dust

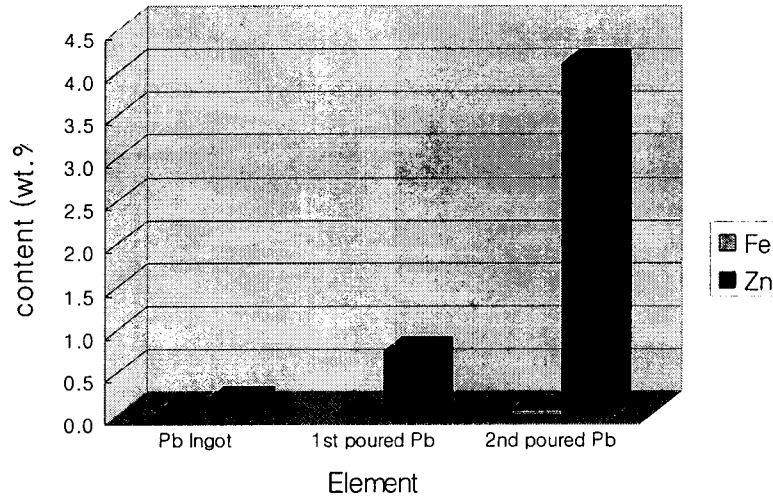
(unit : ppm)

	A	B	C	D	Legal Allowance
Cu	0.20	1.86	0.12	0.04	3.0
Cd	12.60	41.70	25.70	5.60	0.1
Pb	16.20	22.80	1.20	6.10	1.0
Zn	105.00	620.00	215.00	-	-
Mn	3.20	21.70	13.60	-	-



● The Working result of RAPID-10 System





● Typical chemical composition of recovered iron

C	Mn	Ni	Fe
1.21	0.046	0.23	bal.

● Typical chemical composition of recovered Zn

Zn	Pb
95.7	2.3

● The chemical composition of the slag

SiO ₂	27.4
Al ₂ O ₃	16.9
ZnO	0.006
MnO	4.88
CaO	32.75
MgO	7.26
FeO	9.7

● A toxicity test results

	Cd	Pb	Cr ⁺⁶
EAF Dust	0.03	66.52	0.13
Slag	0.02	0.02	0.01
Legal Allowance	1	5	10

Conclusion

The results are as follows;

- The RAPID system is revealed to be the proper system for treating EAF dust.
- 2. In the RAPID-10 System pilot test, the recovery of Zn is about 80%. For increasing the recovery of Zn, test trial and modifying of Zn-condensing parts in RAPID-10 system is carrying on.
- 3. Design & construction of RAPID-50 system , a commercial scale plant for treating 50,000 tons of EAF dust per year, are now undergoing near Pohang city.