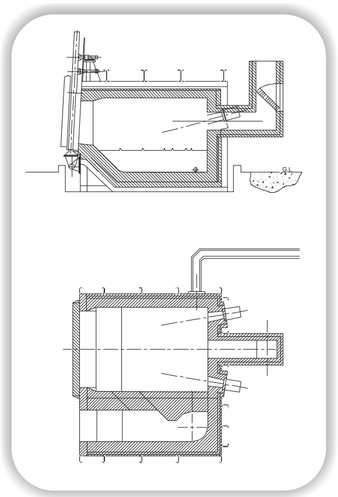
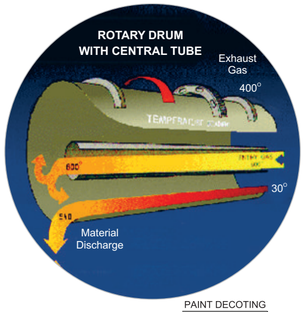
AN OVER VIEW OF ALUMINUM SCRAP/CHIP RECYCLING PROCESS PLANT LAYOUT

AFECO HEATING SYSTEMS

Mfr.: Industrial Ovens, Furnaces & Aluminum Scrap Recycling Plant

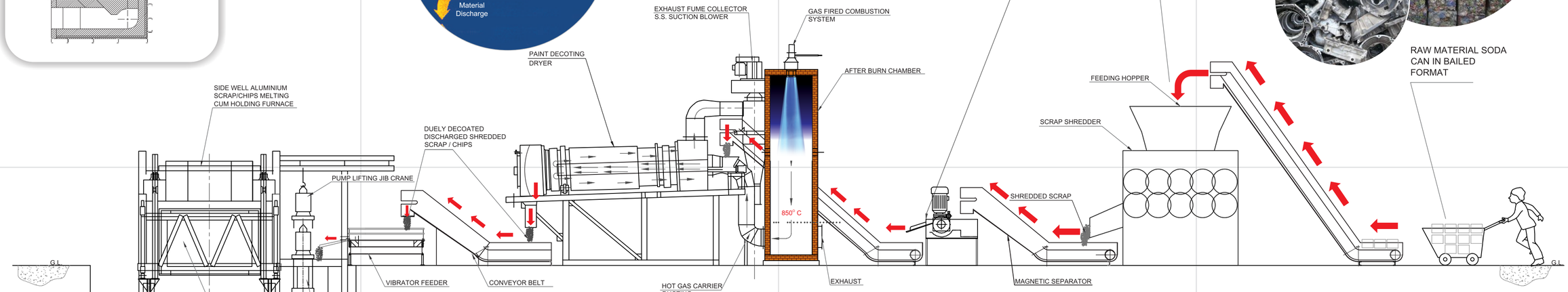
CROSS SECTION VIEW OF SIDE WELL MELTING FURNACE

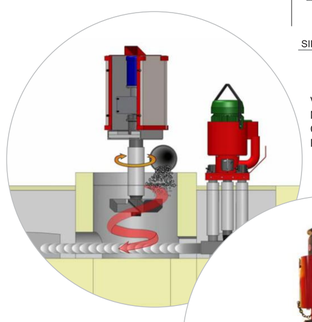




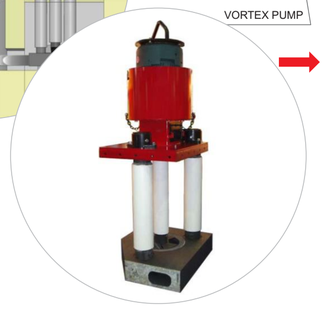
CENTRIFUGE UNIT

RAW MATERIAL SODA CAN IN BAILED FORMAT

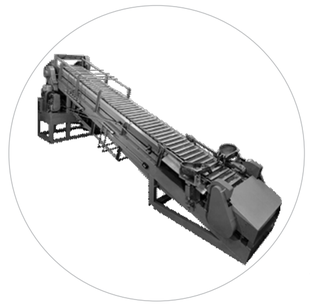




VORTEX PUMP MOLTEN METAL CIRCULATION PROCESS



VORTEX PUMP



INGOT CASTER MACHINE

FINISHED ALUMINIUM INGOTS

Scrap Recycling Machinery Required

Sr. No.	Type Of Machinery
1	Scrap Shredding Machine
2	Shredded Scrap Charging Hopper with Flow Control Lever.
3	Slat Conveyor motorized belt with VFD Drive .
4	Centrifuge unit Machine (Optional) for Chip recycling only.
5	Magnetic Separator Machine.
6	Decoting Dryer Machine.
7	After Burn Chamber Heat Generator Machine for deecoater.
8	Vibrator Feeder Machine
9	Side well Furnace with Three Chambers.
10	Vortex Pump /Scrap Eater Machine.
11	2ND Tilting Furnace for Making Various Aluminium Alloys Connected through Launder with Side well Furnace.
12	Launder systems To Carry the Molten Metal.
13	Caster Machine for Manufacturing Ingot. With VFD Drive.
14	Water Cooling systems for Ingots.
15	C.I. Mold
16	Weighing Balance
17	Forklift & Over Head Crane suitable capacity
18	Pollution Control Water Scrubber.

Flip over to discover...
the wonders you can make with Aluminium Scrap
... because its having value more than the SCRAP

Alluminium Scrap/Chip Melting Process

AFECO HEATING SYSTEMS
Manufacturer of Industrial Furnaces & Aluminium Scrap Recycling Plant

WHY RECYCLING OF ALUMINIUM SCRAP IS NECESSARY

One of the BEST TECHNOLOGY Available in the world for Various type of light gauge scrap Melting in which the material will fed into the SIDE WELL Melting Furnace, DUE TO Molten Metal IS Circulation done by Vortex Pump & specially designed well will have an impact on the METAL RECOVERY yield.

By pulling dry material subsurface through the vortex, Aluminium metal oxidation is minimized regardless of scrap type. Hence Recovery rate will be increasesare typically 94% max recovery will get. And 5% to 6% melt loss, depending on the existing method. If the system is operated properly as per designed you will get consistent metal recoveries of 94 %-95% can be expected. And For maximum recovery, salt flux must be required.

Aluminum SCRAP/ CHIPS Recycling Benefits.

Environment BENEFITS FROM ALUMINIUM SCRAP RECYCLING

- Scrap can be reutilized for Various Industrial Application.
- No Pollution during the process.
- Very less energy required to get Recycled Aluminium scrap.
- Very less man power required to operate this plant.
- Fully automation process controlled with advanced electronic Gadgets with data recording systems.
- Clean environment Green Environment.

COMMERCIAL BENEFITS FROM ALUMINIUM SCRAP RECYCLING PLANT

Benefits include the following :

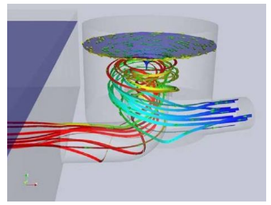
- High metal recovery rates
- Maximize metal production
- Designed for continuous, automated operation
- Low operating cost
- Low capital investment
- Low maintenance
- Easy installation
- Can be retrofit to existing furnaces
- Features to be considered
- In-house recycling of machining chips
- No dependency on Alloy supplier
- Additional melting capacity
- Rapid return on the investment
- Impact on foundry environment
- Improve productivity
- Compact layout

TYPICAL DIFFERENT MELTING PROCESS WITH MELT LOSSES.

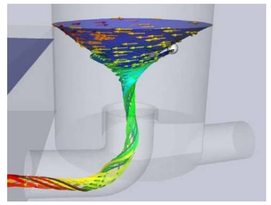
Sr.No.	Method of Recycling	Overall Recovery (UBC)
1	Direct Charge into Typical Reverbatory Furnace	70-80%
2	Direct Charge into Rotary Salt Furnace	75-83%
3	Shred, De coat & Charge into Side well Furnace with Vortex Pump	95-96%

Oxidation losses Minimized

Vortex Pump Create Flow in molten metal to REDUCE oxidation melt loss



Flow pattern at 600 GPM flow rate



(Close to Center)

VORTEX PUMP MINIMIZES OXIDATION MELT LOSSES

AFECO HEATING SYSTEMS

Established in 1990 with Designing capability having work force of

40 Employees (15 Engineers & Technician, 25 Skilled Labour)

ISO 9001:2008

Over 500 installations

22000 Sq.Ft. Production facility

TÜV SÜD ISO 9001 — ISO 9001:2008 Certified Company

AEROSPACE · AUTOMOTIVE · DEFENCE · NUCLEAR · ALUMINUM · STEEL

We can be a solution for your furnace requirement, wherever you are, wherever you need it.

Mission

To Design the high end Industrial furnaces which are manufacturing as per ASTM standereds 2750-D and to meet **Environment Friendly** with the high quality performance up to the satisfaction and to become a reliable partner for customers.

High furnace energy efficiency

Temperature Uniformity up to ± 5ºC

Decades of furnace life

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AFECO HEATING SYSTEMS
Mfr.: Industrial Ovens, Furnaces & Aluminum Scrap Recycling Plant

BS 1490 - ALUMINUM Alloys and Approximate Equivalents

UK	ISO	Germany	USA AA / ASTM	Japan	End Uses
LM0	AL 99.5		150		Electrical, food, chemical plant
LM2	AL-Si10Cu2Fe		384	ADC12	Pressure Diecasting
LM4	Al-Si5Cu3	G-AlSi6Cu4 (225)	319	AC2A	Sand gravity diecast manifolds, gear boxes, etc.
LM5	AL-Mg5Si1		514	AC7A	Sand, gravity; corrosion resistant, for marine use, Food plant, chemical plant
LM6	AL-Mg6	G-AlSi12 (230)	A413	AC3A	Sand, gravity; thin sections, manifolds, etc.
	Al-Si12				
	AL-Si12Fe				
LM9	Al-Si10Mg	G-AlSi10Mg (233)	A360	AC4A	Low pressure, etc; motor housings, cover plates, etc. High strength when treated
LM12	Al-Cu10Si2Mg		222		Gravity, sand cast; machines well, hydraulic equipment
LM13	Al-Si12Cu		336	AC8A	Sand, Chill; used for pistons
	Al-Si12CuFe				
LM16	Al-Si5Cu1Mg		355	AC4D	Sand, chill; cylinder heads valve bodies, good pressure tightness
LM20	Al-Si12Cu	G-AlSi12 (Cu)(231)	A413		Pressure diecasting; corrosion resistant, marine castings, water pumps, meter cases
	Al-Si12CuFe				
LM21	Al-Si6Cu4	G-AlSi6Cu4(225)	308	AC2A	Sand, gravity; similar to LM4, crankcases, gear boxes, etc.
LM22	Al-Si5Cu3	G-AlSi6Cu4 (225)	319	AC2A	Chill casting; solution treated, good shock resistance, automotive heavy duty parts
LM24	Al-Si8Cu3Fe	G-AlSi8Cu3(226)	A380	AC4B / ADC10	Pressure diecasting; engineering diecastings
LM25	Al-Si7Mg	G-AlSi7Mg	A356	AC4C	Sand chill; general purpose high strength alloy with good castability; wheels, cylinder blocks, heads
LM26	Al-Si8Cu3Mg		332		Chill; used for pistons
LM27	Al-Si7Cu3Mn0.5			AC2B	Sand, chill; versatile alloy, good castability; general engineering parts
LM28	Al-Si19CuMgNi				Chill; high performance pistons
LM29	Al-Si23CuMgNi				Chill; high performance pistons
LM30	Al-St17Cu4Mg		390		Pressure diecast; unlined cylinder blocks
LM31	Al-Zn5Mg		712		Sand; large castings, good shock resistance, good strength at elevated temp.

ISO 9001:2008 Certified

TYPICAL UBC CAN ALLOY DATA & MELT LOSS

Chemical Containt in Can	Each Element Wt.	LID Wt. Part1	PULL TAB wt. Part 2	Mixed wt.
Mg %	0.132g	0.149g	0.014g	0.293g
Si %	0.036g	0.007g	0.001g	0.078g
Mn %	0.132g	0.012g	0.000g	0.144g
Fe %	0.060g	0.012g	0.001g	0.072g
Cu %	0.012g	0.005g	0.000g	0.017g
Cr %	0.000g	0.003g	0.000g	0.003g
Total Weight	12.00 g	3.30 g	0.30 g	15.6

MELT LOASS:-If we assume that the cans contain approximately 3% coating, 1% water and 1% tramp material this equates to a metal loss of 4 – 6%. Not all of the metal is loss in the furnace, there will be losses due to fines generation within the shredding process.

TABLE SHOWS MELT LOSSES FOR DECOATED & NON-DECOATED MATERIALS

Scrap Type %	Metal Loss (No Decoating)	Metal Loss (With Decoating)	Metal Recovery
Used Beverage Cans	Minimum 20-24 %	Less Than 6-5%	94%

Above table gives the results of melting tests carried out on different materials. The first test was done by direct charging the scrap into a standard reverbatory furnace without decoating. The second test was done on scrap that had been shredded and then after decoated.

You can use either UBC Shreded Chips or Turning Chips.

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