

RAMKY GROUP

Towards sustainable growth

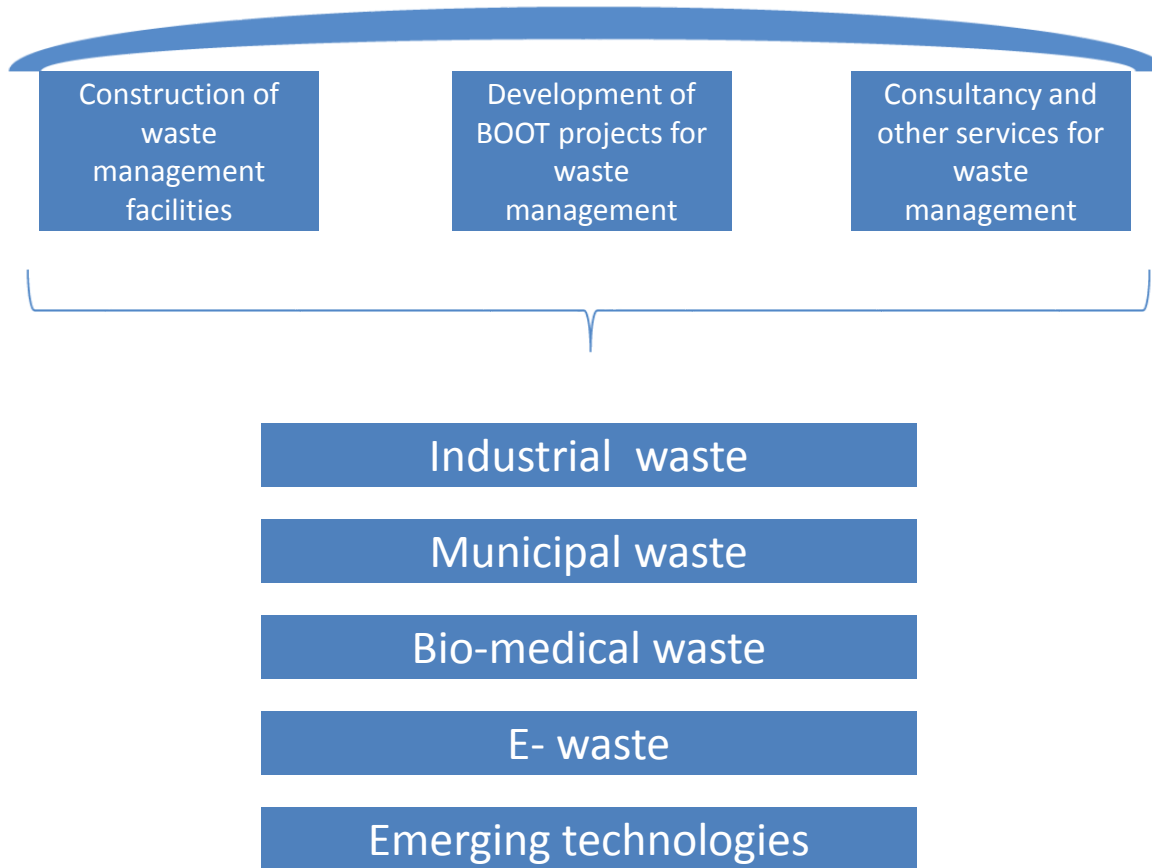


About Us

- Ramky Enviro Engineers Limited a leading Environment Management company in India.
- We are operating in 17 states across India . We are having 6 regional offices and our corporate office at Hyderabad.
- We are operating 12 TSDF"s and 3 TSDF"s to be commissioned and MSW projects across India.
- To facilitate our international operations , we are established our office at UAE, W. Africa, Gabbon and Singapore.

Business segments and product lines

REEL covers whole spectrum of services



➤ REEL is pioneer in all the waste management divisions it operates and keeps up the lead by research and innovation

➤ REEL has a diversified and balanced portfolio of business

Spread over 17 States & Union Territories in India

Andhra Pradesh, Assam, Bihar, Chhattisgarh, Delhi, Goa, Gujarat, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Tamil Nadu, Uttar Pradesh & West Bengal.

The company has also commenced activities in Singapore and the Middle East.

Presence in India & Abroad



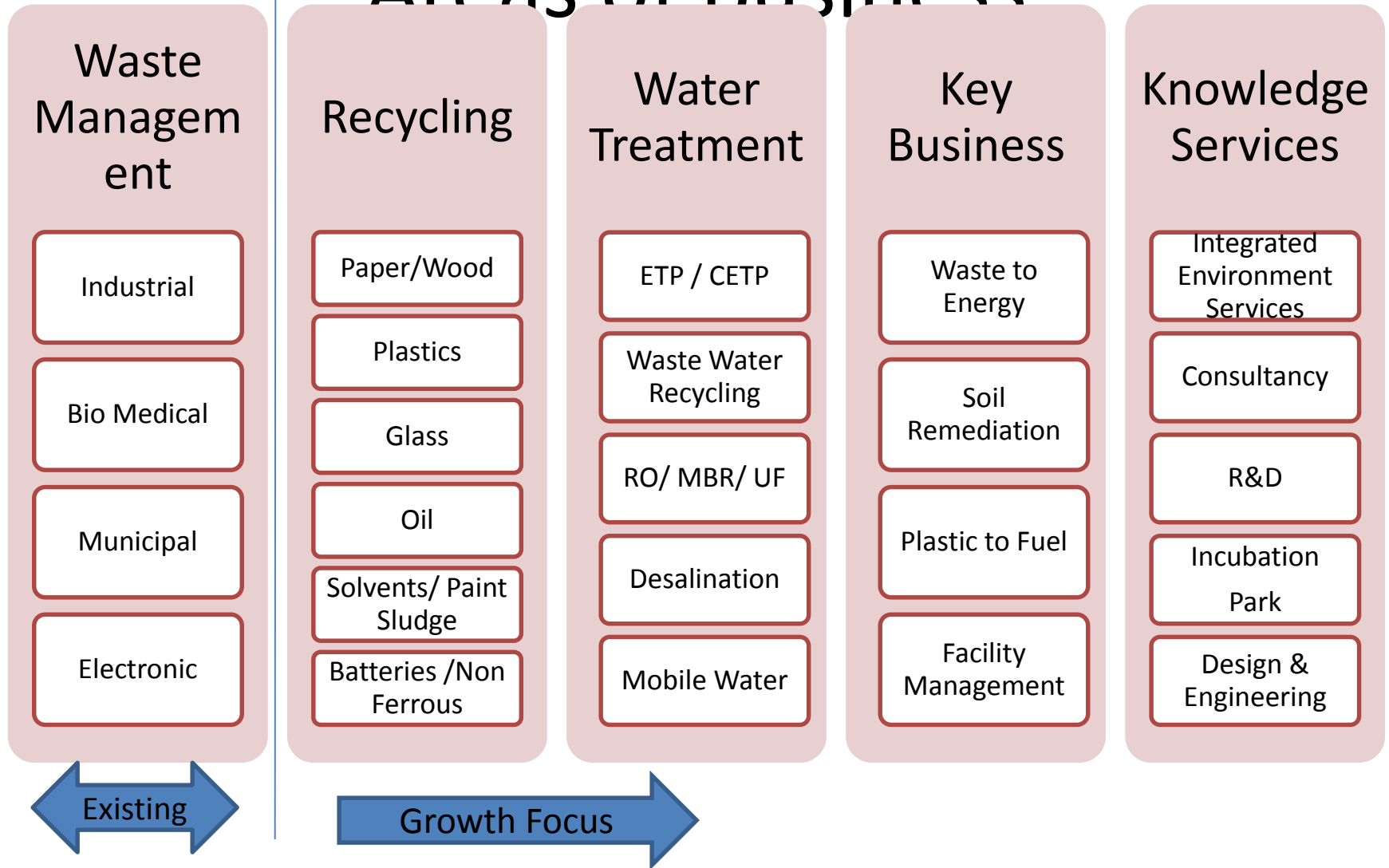
Middle East presence



REEL - Singapore presence

Our pan-India spread and also abroad gives us unique strength

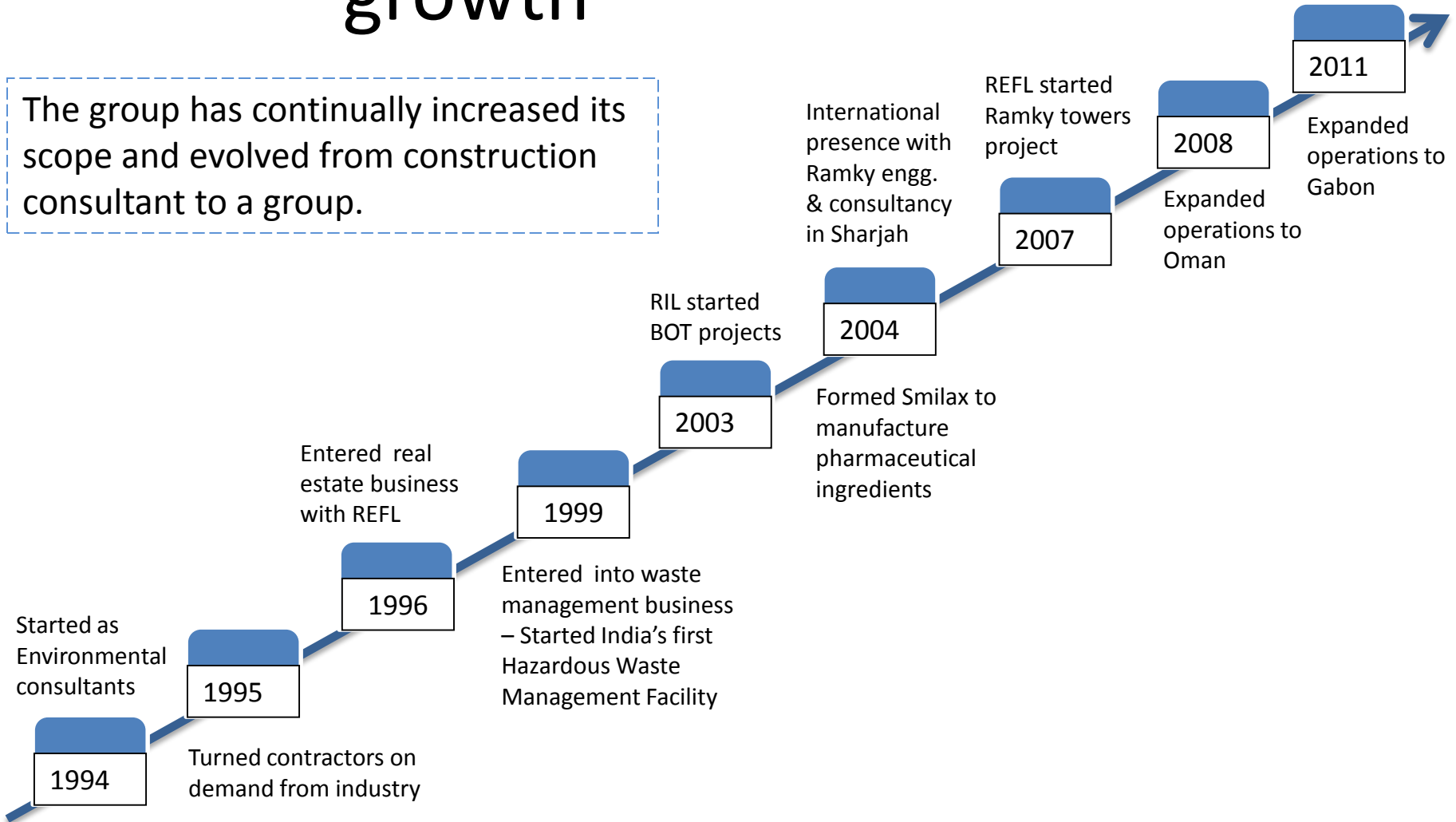
Areas of Business



Domestic & International Operations

Mile stones in our growth

The group has continually increased its scope and evolved from construction consultant to a group.



Waste Potential

- In INDIA the total waste generation from the Industrial source is about 6.2 million MT per annum. It is classified into
- Recyclable waste ----- 3.01 million MT .
- Landfill waste ----- 2.7 million MT.
- Incinerable waste ----- 0.4 million MT.

Both Landfill and Incinerable wastes are utilized for co processing as Raw Material and Fuel respectively.

HW Generation

- Gujarat , Andhra , Maharashtra are the top three hazardous waste generating state.
- Thereafter Chhattisgarh, Rajasthan , West Bengal and Tamil Nadu are found as major generator.
- Theses 7 states generating 80 % of the counties HW.
- REEL to establish AFR Facility with in TSDF across India.
- All our TSDF is being equipped with adequate infrastructure to handle the waste in any form .
- Our R&D and Labs in the respective TSDF's are NABL accredited which ensure the quality of the product.

Cement Factory Scenario

The production of cement in India is about 200 million MT per annum , for which estimated quantity of coal and limestone requirements are 40 million MT and 320 million MT respectively. The country, therefore, has potential to utilize entire Hazardous waste generation.

TSDF's can act as a hub, collect & process the waste as feed /fuel for co processing.

The products are prepared so as to the quality of the cement and the plants infrastructure are not impaired.

Co processing

- Basal convention 2011 defines as the use of waste materials in manufacturing process for the purpose of energy resource recovery and resultant in reduction of use of fossil fuel through substitution and reducing the Environmental burden.
- Article 10 of HWMS-09, deals with possible treatment of hazardous waste in cement kiln.
- It is proven sustainable development concept and it reduces the demand on natural resource, Pollution level and carbon foot print.

Co processing benefit

- Favorable kiln operation ensures complete combustion.
- Uniform Temperature range of 1400 °C .
- Residence time is >6 second.
- Superior destruction performance .
- Low and controlled emission of POP
- Eliminate incin ash to the Landfill.
- No external power or fuel requires.
- High thermal inertia ensures process capability.
- Surplus oxygen, larger treatment capacity.

AFRF

- AFRF means Alternative fuel and raw material facility .
- Hazardous waste materials can be used as fuel and raw material in AFR Facility barring certain exception stipulated in CPCB guidelines.
- Low calorific value, Non hazardous waste, Inorganic materials can be used as a blender.
- Homogeneity of the mixers parameter is vital for the end user.

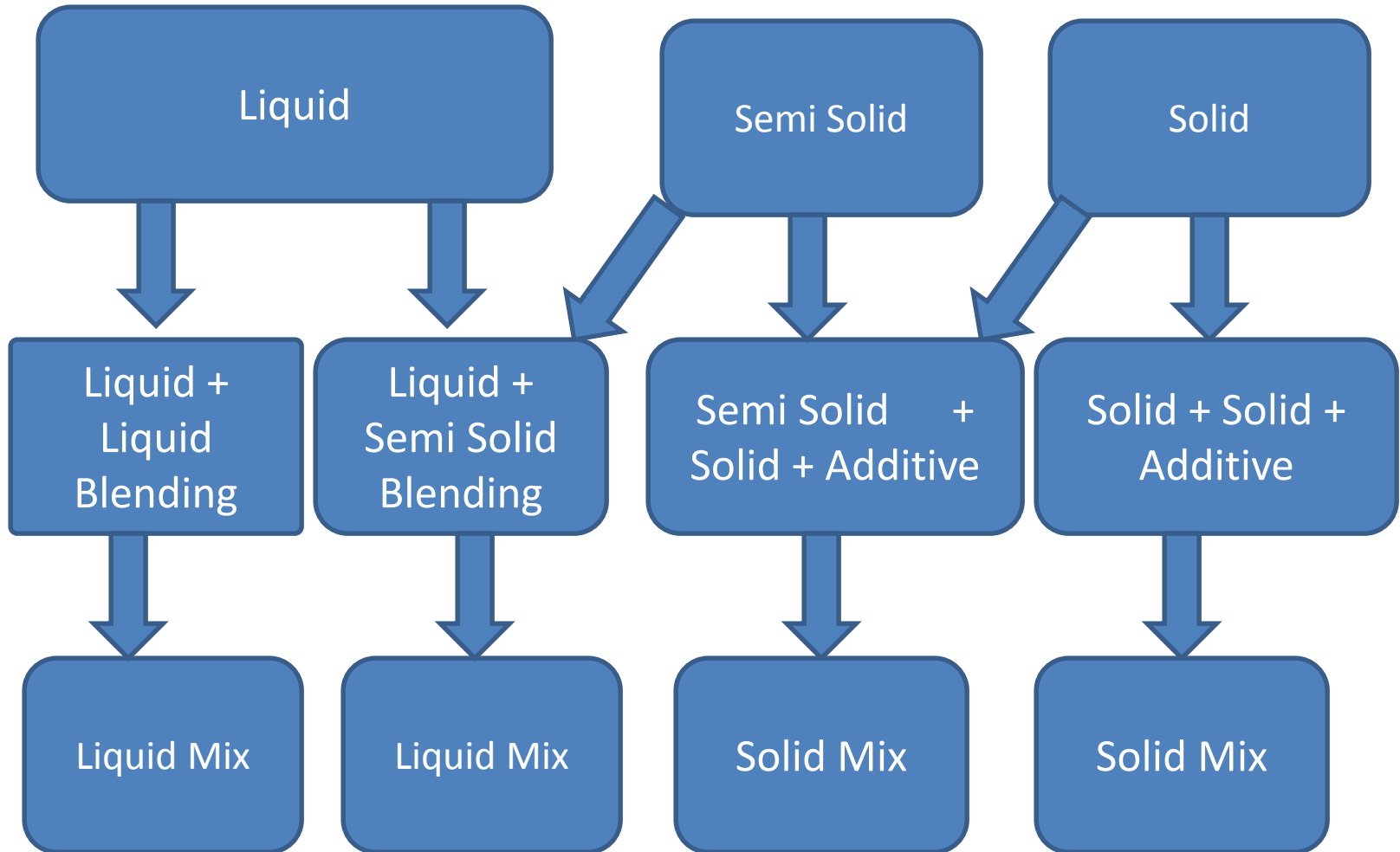
PRE PROCESSING

AFRF collects , transport waste from generators , process as alternate fuel and raw material and supplying to cement factory for co processing.

Hazardous waste materials are processed using appropriate equipments for maintaining homogeneity of the product.

Consistent quality and quantity is being maintained in the Finished product.

Pre Processing of Hazardous Waste



LAB

AFRF equipped with Advanced laboratory .

Samples are collected from the generators to check the suitability of the material for co processing.

Continuous R&D to be conducted to prepare the recipes in a pilot scale and the same to be implement in the process stage .

The product has to meet all the standards enumerated by the competent authority. Lab has to ensure that the product meet out the desired quality.

Lab has to monitor each consignment of the Finished goods till it is dispatched.

Manifest & TREM Card System

- A six copy manifest system and a TREM Card system shall be followed for each shipment
 - From Generator to AFRF
 - From AFRF to Cement Cos.

Color Code	Purpose
Copy (1) - White	Generator to SPCB after Dispatch
Copy (2) - Yellow	Retained By Generator after Dispatch
Copy (3) - Pink	Retained by the AFRF after Receipt
Copy (4) - Orange	Returned to Transporter by AFRF after Receipt
Copy (5) - Green	AFRF to SPCB after acceptance and Receipt
Copy (6) - Blue	AFRF to Generator after acceptance and Receipt

Parameter	Liquid Mix	Solid Mix	Semisolid
Calorific Value (KCal/Kg)	4000 to 4400	4000 to 4400	4000 to 4400
Water (%)	<20	<20	<20
Flash Point (°C)	>60	NA	>60
Chlorides (%)	<1.5	<1.5	<1.5
Total Halogens (%)	<1.5	<1.5	<1.5
Sulphur (%)	<1.5	<1.5	<1.5
PCB / PCT (ppm)	<50	<50	<50
Heavy Metals (%)	0.2 to 1.0	0.2 to 1.0	0.2 to 1.0
Heavy Metal (ppm)			
Tl + Cd	<20	<20	<20
V	<100	<100	<100
As	<60	<60	<60
Cr	<400	<400	<400
Hg	<10	<10	<10
Cd + Tl + Hg	<100	<100	<100
As+Co+Ni+Se+Te+Sb+Cr+Sn+Pb+V	<2500	<2500	<2500
Ph	5 to 9	5 to 9	5 to 9
Ash (%)	<5	<25	<5
Packing	Leak Prof., Double Lined HDPE Packing		
		Preferably 25 Kg Bags	
Odour	No Strong Odour		
Toxicity	NON Toxic		
Nature	Should not contain inerts like grit, rags, gloves, glass, stone, metal etc.		

EXPECTED TYPES OF WASTE FOR CO PROCESSING .

SR, NO	SECTOR	TYPE OF WASTE	PHYSICAL FORM
1	Automobile Manufacturing	Wastes & Residues containing oil / paint sludge /Sludges	Semi Solid / Solid
2	Engineering	Oil sludge / Paint sludge	Semi Solid
3	Drugs & Pharmaceuticals	Distillation Residues / Spent Carbon / Solvents	Semi solid / Liquid
4	Chemical	Distillation residues / Tarry residues / aromatic residues	Liquid
5	Aluminum (others)	Off gas treatments	Liquid / Solids
6	Glass Manufacturing	Oil containing residues	Solids
7	Bulk drugs	Spent catalyst / carbon	Solids
8	Electronic	Chemical coating wastes	Solids
9	Confectionary	Residue containing oil	Solid
10	Cement	Residues containing oil	Solid
11	Pulp & Paper	Pulp containing adsorbable organic	Semi solid
12	Fertilizer	Spent Oil	Liquid

CONTINUE....

SR, NO	SECTOR	TYPE OF WASTE	PHYSICAL FORM
15	Re Processing	Oil sludge / cargo residues	Solid
16	Pesticide formulations	Chemical	Liquid
17	Paint	Chemical Sludge	Solid
18	Power Plant	Residues containing oil / wastes	Liquid
19	Tannery	Chemical bearing residues / sludges	Liquid / Solids
20	Pesticides	Chemical sludge / Process wastes	Liquids
21	Others	Residues / Alkali wash of fuel / Oil skimming residues / Sludge	Liquids / Solids
22	Refinery	Bottom Residue/ organic sludge/ distillery residues	Liquid/ Solid/ Semi Solid
23	Petrochemical	Organic Sludge, Distilary sludge	Liquid/ Solid/ Semi Solid

Protocol

- TSDF are operating as per the Hazardous waste handling rule 2008 (M,H&TM).
- We are in the process of getting approval from the PCB for AFRF.
- Guidelines on co processing 2010 , authorizing to start AFRF plant with in CWTSDF with prior approval.
- We are operating PCB approved vehicle for transporting the HW materials as per Motor vehicle act 1978.
- Trial run procedures and subsequent regular permission of SPCB ,CPCB are mentioned in guidelines.
- [..\TRIAL PERMISSION PROCEDURE.docx](#)

Quality

- Quality of the Cement material is being ensured at all circumstances.
- Critical Parameters like Chlorine , Sulphur , Moisture, Heavy metals , etc, are kept well within the specification during the pre processing of the waste materials.
- Controlled feeding system, with respect to the kiln , precalciner and other loading points, based on the characterization of the materials which ensures the complete combustion & resultant in DRE of POP is 99.9999% ascertained.
- REEL delivers Consistent quality and quantity product to the Cement Industry.

Environmental benefits.

- The Cement Industry can play an important role in the urgent global need for destruction of hazardous wastes like PCB, POP, and ensuring the DRE of 99.9999 % .
- Investigation proved cement kiln had the Lowest PCDD/F emission reduced to the extent of 99.3% using HW.
- Methane is a particularly potent GHG, and is currently considered to have a global warming potential (GWP) 25 times that of CO₂ . Reduction of about 1.6 kilograms (kg) of CO₂ per kg of utilized RDF.
- A holistic approach to waste management has positive consequences of GHG emissions . Co processing proved a viable method to dispose the HW.

THANK YOU

