

CASE STUDY 1 : ALTERNATIVE FUEL AND RAW MATERIAL CO-PROCESSING EXPERIENCES - ACC LTD., KYMORE CEMENT WORKS

Project Implemented by : ACC Ltd, Kymore Cement Works

Project Implemented in : 2008

Company Details

ACC Limited is India's foremost manufacturer of cement and concrete. ACC's operations are spread throughout the country with 16 modern cement factories, more than 40 Ready mix concrete plants.

Since inception in 1936, the company has been a trendsetter and important benchmark for the cement industry in many areas of cement and concrete technology. ACC has a unique track record of innovative research, product development and specialized consultancy services. The company's various manufacturing units are backed by a central technology support services centre - the only one of its kind in the Indian cement industry.

Kymore Cement Works is one of the most modern cement plants in ACC Group. This is located at Kymore, Katni District, Madhya Pradesh. Capacity of ACC, Kymore are 2.20 MTPA.

Project Details

Co-Processing of Industrial waste from various Industries

ACC Limited, Kymore Cement Works, as part of its AFR Policy has taken steps for utilizing the hazardous waste/solid wastes generated from other industries of Madhya Pradesh. Thermal substitution of waste depends on type of waste material, quantity of waste & its supply mode and the continuity of its feeding for disposal.

A. Co processing of Poly Residue from M/s SRF Pvt. Ltd.,

SRF Pvt Ltd is a manufacturer of Nylon inter alia. Plant is situated at Malanpur, Bhind in the State of Madhya Pradesh. In the process of production of Nylon Fibers, Plant generates following waste

1. ETP Sludge
2. Residue of poly section (as the "solid waste material")



M/s SRF approached ACC Limited, Kymore Cement Works for evaluating the feasibility of safe disposal of their solid waste material (generated at its Nylon Plant), in an environment-friendly manner. After evaluating the same at its testing facilities in Thane, ACC Limited has offered to co-process the solid waste material generated by SRF's Nylon Plant at Kymore Cement Works.

Three trials were conducted and the 3rd trial was also successfully completed in the month of April 2010. The baseline, trial burn monitoring data and after burn monitoring data were taken by an independent third party (M/s SGS India Ltd, engaged by ACC Limited). The trial of waste disposal was witnessed by the representatives of MPPCB. The result of emission measurement reveals that none of the gaseous emissions, heavy metals or dioxin/Furans and TOC was exceeding from the base line measurement data.

ACC Limited is looking for co-processing of waste on regular Basis. After mutual agreement, M/s SRF will now be supplying waste on regular basis. Till date 530 MT of waste has been co-processed successfully at ACC Limited, Kymore Cement Works. Details of waste disposal are as under

- 1st Trail Burn – 61.4 MT
- 2nd Trail Burn – 400.0 MT
- 3rd Trial Burn – 69.02 MT
- Total – 530.02 MT

B. Co-processing of industrial wastes from M/s Hindustan Unilever

The rejected and outdated products from M/s Hindustan Unilever Limited (HUL) were co-processed in the cement kiln. The various types of rejected materials such as non-hazardous shampoo sachets, shampoo bottles, toothpaste, creams, Lotions etc were disposed off successfully at ACC Limited, Kymore Cement Works. The average quantity co-processed was about 300 MT/month.

As part of this waste disposal exercise, a trial-burn program of HUL waste material was carried out for the baseline monitoring data, trial-burn monitoring data and after-burn monitoring data by an independent third party (M/s SGS India Ltd, engaged by ACC Limited). The result of emission measurement reveals that none of the gaseous emissions, heavy metals or dioxin/furans and TOC was exceeding from the base line measurement data



C. Co-processing of industrial wastes from M/s Cadbury Industries

The rejected and outdated products of M/s Cadbury Limited were co-processed in the cement kilns of Kymore Cement Works. The various types of rejected non-hazardous materials were Bournvita, Bytes, and different types of chocolates. The quantity disposed off was approximately 1 Ton

D. Co-processing of industrial wastes from M/s EICHER

Paint sludge is being successfully co-processed in the Kilns of Kymore Cement Works. The quantity of paint sludge waste disposed till date is approximately 40 tones.

E. Co-processing of industrial wastes from M/s Narmada Geletene,

Lime sludge waste generated from Narmada Geletene is also being successfully co-processed at ACC Limited, Kymore Cement Works

F. Co-processing of industrial wastes from M/s Hindustan Coco Cola

Waste generated from Hindustan Coco Cola such as Paints, Activated Carbon, ETP sludge and Spent Granulated Carbon are being successfully co-processed at ACC Limited, Kymore Cement Works. Quantity of waste processed is approximately 1 Tonne.

G. Co-processing of industrial wastes from M/s A2Z Industries, Kanpur

ACC Limited, Kymore Cement Works is also successfully co-processing about 30 Tons of waste Re-fused Derived Fuel (RDF) from M/s A2Z Industries, Kanpur

H Use of Biomass, Mustard husk, Perthenium grass etc. in Power plant

ACC Limited, Kymore Cement Works has also been successfully co-processing various types of biomass based fuels available in the vicinity:

Sn	Biomass Fuel	Source
1	Mustard Husk	Local Market
2	Gram Husk	Local market, Jabalpur, Katni
3	Soya huskShahdol,	Local market, Jabalpur , Katni, Satna, Rewa
4	Cow dung	Katni, Jabalpur
5	Saw dust	Katni, Jabalpur
6	Cuttings of Jatropa	

I Plastic waste /garbage co-processing in Kilns

ACC Limited, Kymore Cement Works established the system and infrastructure for co-processing of the polythene garbage in its Kiln and the system is in operation since June 2008.

In order to identify a sustainable solution for management of plastic waste, ACC Limited undertook trial for processing in cement kiln. The co-processing trial run was carried out to demonstrate that the Cement kiln is able to co-process plastic waste in an environmentally friendly manner, without any adverse impacts on the product quality and emissions.

The emission monitoring results of the trial run provides a basis to demonstrate the environmentally sound performance of co-processing, to the authorities and other stakeholders in the waste disposal activity.

Data for AFR materials co-processed at Kymore Cement

AFR materials co-processed (year 2008) at Kiln & power plant

Name of Waste Stream	Hazardous / Non Hazardous	Total Jan - Dec, 2008 (Tonnes)
Biomass	Non Hazardous	1510
Trade Reject (HUL, Nivea, Cadbury's,)	Non Hazardous	2536
Spent carbon	Non Hazardous	0
Plastic waste	Non Hazardous	192
WTP Sludge	Non Hazardous	0
Lime sludge	Non Hazardous	141
Slag-as Mineralizer	Non Hazardous	23205
SRF Waste	Non Hazardous	401
Paint Sludge	Hazardous	0
		27986

AFR materials co-processed during year 2009 at Kiln & power plant

Name of Waste Stream	Hazardous / Non Hazardous	Total Jan - Dec, 2009 (Tonnes)
Biomass (Soya husk, rice husk, saw dust, gram husk, pruned materials etc.)	Non Hazardous	3632
Trade Reject (HUL, Nivea, Cadbury's,)	Non Hazardous	5044
Spent carbon	Non Hazardous	0
Plastic waste	Non Hazardous	396
WTP Sludge	Non Hazardous	0
Lime sludge	Non Hazardous	127
Slag-as Mineralizer	Non Hazardous	23950
SRF Waste	Non Hazardous	0
Paint Sludge	Hazardous	0
		33150

AFR materials co-processed in yr. 2010 at Kiln/power plant (Till Oct 2010)

Name of Waste Stream	Hazardous / Non Hazardous	Total Jan - Dec, 2010 (Tonnes)
Biomass (Soya husk, rice husk, saw dust, gram husk, pruned materials etc.)	Non Hazardous	2426.18
Trade Reject (HUL, Nivea, Cadbury's,)	Non Hazardous	2053.3
Spent carbon	Non Hazardous	41.35
Plastic waste	Non Hazardous	279.58
Water Treatment Plant sludge (from Hindustan Coco Cola)	Non Hazardous	8.9
Lime sludge	Non Hazardous	596.51
Slag-as Mineralizer	Non Hazardous	11836.45
SRF Waste	Non Hazardous	208.8
Paint Sludge	Hazardous	38.5
RDF (Refused Derived Fuel) from A 2 Z Industry, Kanpur	Non hazardous	26.9

Financing of the Project

ACC Limited, Kymore Cement Works has invested about Rs. 400 Lakhs for implementation of the project. This investment is for establishing system for alternative fuel storage and feeding. The investment has been taken up fully with internal funds.

Results of the Project

- Co-processing of waste at cement kiln is the best disposal option than conventional options of land filling and incineration.
- Substitutes precious fossil fuel reserves

Replication Potential

Similar project can be implemented in all cement plants in India to solve the disposal problems of the industrial solid wastes, plastic wastes and biomass etc. These wastes are otherwise very difficult to manage in the society

Recommendation to other units

It is recommended to co-process the waste in cement rotary Kiln.

Contact Information of the plant

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