



Case Study Co-processing Waste Materials in Cement Production

Pre-processing of Waste Material

The Example of Energis, Holcim Group, in Albox in Spain

BACKGROUND

Energis was created in 1997 as a subsidiary of Holcim Spain. The purpose of the company is to add value to Holcim Spain's cement operations by providing waste management solutions to industry and communities through co-processing of waste in Holcim cement kilns. To directly access the waste market, Energis established the pre-treatment plant at Albox in 2003. The plant, located in southeastern Spain, transforms a wide range of solid, pasty, and liquid wastes into impregnated sawdust and liquid substitution fuels.

PROCESS

Albox has two main production lines: (1) a shredding and mixing line in which solid and pasty waste is mixed with sawdust to produce impregnated sawdust and solid substitute fuel (CSS), and (2) a liquid storage and blending line for liquid substitution fuel (CSL). The lines are designed to produce 60,000 tonnes of CSS and 20,000 tonnes of CSL per year. In July 2005 Spain introduced a law banning organic waste in landfills. This gives Albox more opportunities to find organic waste on the market.

WASTE DELIVERY

About 90% of Albox's waste is delivered in drums, 10% is transported in bulk by tanker or container truck, and a small amount is delivered in large bags.

- Source materials for Solid Substitute Fuel (SSF) include contaminated earth and sand; resin; paint; distillation residues; sludges of ink, glue, varnish, and oil; mastic; filter cake; grease; soap; used catalyzers; and alumina sludge, etc.
- Source materials for Liquid Substitute Fuel (LSF) include waste oil, polluted water, and halogenated and non-halogenated solvents, etc.

QUALITY ASSURANCE

Albox accepts waste from authorized producers or collectors only. To become authorized, the waste producer must submit a sample for analysis in Albox's on-site laboratory, and permit Energis representatives to visit the producer and collect information about its manufacturing process. If the producer and the waste meet Albox's requirements, Albox issues a certificate. To prevent contamination, each delivery undergoes rigorous quality control.

GOOD PRACTICE

Albox does not treat wastes such as pressed drums and metal separator residues, which are sent to a foundry for recycling. Pallets are taken back by the sawdust supplier, non-polluted scrap metal is sold to a local scrap dealer, and waste that cannot be processed – such as drums that cannot be shredded – is sent to a third party for treatment. Thanks to preliminary testing, a strong external communications policy, detailed analysis and a strict refusal policy, the percentage of refused waste is low.





SAWDUST

Half of the sawdust used in CSS production must be fresh, and substitutes may be mixed with the sawdust. The main impregnation substitute material is compressed cellulose. Moisture content varies significantly among deliveries and suppliers, and greatly affects the impregnation capability of sawdust. This in turn affects the percentage of sawdust required for CSS production.

FURTHER DEVELOPMENT

The plant's success ensures a sustainable flow of AFR to Holcim Spain, offers an innovative and practical solution to waste producers and, above all, benefits the cement industry as a whole.

LESSONS LEARNT

The design of Albox is similar to an earlier plant in Belgium: Scoribel. to an earlier plant in Belgium: Scoribel. Albox profited from the many lessons learned at Scoribel. But market conditions in

Spain and Belgium differ: 90% of the waste in Belgium is transported in bulk, whereas 90% of the waste in Spain is transported in drums. Each drum must be sampled as part of the quality assurance program, and properly handled and stored, which increases operational costs.

The plant faced the problem of shredder fires caused by friction between the drums, their contents and the machinery during shredding. To reduce this risk, Albox used nitrogen during the shredding operation, which increased the overall pre-processing costs. Over the past two years, Albox has got these problems under control. It has improved its sourcing of critical spare parts, and developed a special course to teach workers how to prevent shredder fires

REFERENCES

www.coprocem.com

