



JIANGXI YADONG CEMENT CORPORATION LTD

Use of Coal Ash Powder instead of Steel Slag as Clinker Substitute in Cement

SUMMARY OF THE OPTION

Jiangxi Yadong Cement Corporation is a joint-venture producing Portland cement and located in Jiangxi Province, China. The annual production of the company is 3 million tons of clinker and 4 million tons of cement and cement products. Each year the company uses more than 0.22 million tons of slag to produce cement as a partial substitute for limestone. Nowadays, steel slag is a useful resource rather than a “waste”, since extensive applications of slag have been developed. At the same time, the Government of China encourages the use of coal ash powder to produce low quality cement through tax refunds. During a Cleaner Production audit prior to the GERIAP project, the Cleaner Production team of the company proposed utilizing coal ash powder instead of steel slag to produce 33 composite cement, containing 41% of coal ash powder. This option was implemented in July 2003 with total investment of US\$ 110,000 and annual savings of US\$ 380,000 with a payback period of 4 months. The company produced 0.34 million tons of this type of composite cement in 2004.

KEY WORDS

Cement, China, Coal

OBSERVATIONS

The “Cleaner Production Audit and Demonstration Program in 2003” organized by Jiangxi Provincial Economic & Trade Commission and Jiangxi Provincial Environmental Protection Bureau, the Cleaner Production team of the company made the following observations:

- Each year the company uses more than 0.22 million tons of slag to produce cement. Nowadays, slag is a useful resource rather than a “waste”, since extensive applications of slag have been developed.
- Utilization of coal ash powder to produce composite cement can save 8 RMB per ton on production cost, which in turn improves the market competitiveness of the company.
- The Chinese government encourages the utilization of coal ash powder and refunds VAT on composite cement that contains over 30% of coal ash powder.
- There are two coal-fired power plants (Jiangxi Jiujiang Power Plant and Hubei Daye Power Plant) close to the company, which dispose of millions of tons of coal ash powder each year, which occupies a lot of land and pollutes the environment.
- The returning fleet could carry back coal ash powder

OPTIONS

The Team in 2003 proposed to replace steel slag with coal ash to produce low quality 33 composite cement products. This required:

- Building a coal ash powder storage bin and connect this to the cement production equipment.



- Organizing that the returning fleet carries coal ash powder from Jiangxi Jiujiang Power Plant to the company, and that the returning shipment carries coal ash powder from Hubei Daye Power Plant to the company.

The 33 composite cements contains 41% coal ash powder and the company produced 0.34 million tons of this type of composite cement in 2004.

RESULTS

Financial benefits

- Investment: US\$ 110,000
- Annual cost savings: US\$ 380,000
- Payback period: 4 months

Environmental benefits

- Energy savings because less clinker must be produced per ton of cement (not quantified)
- Reduced coal ash powder waste and reduced need of land to dispose of coal ash powder
- Annual GHG emission reduction: not determined

Other benefits

- Improving the company's competitiveness in the market of low quality cement.

FOR MORE INFORMATION

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