



HOLCIM BULACAN PLANT

Repair Vacuum Leaks at the Kiln Hood Door to Avoid Heat Loss

SUMMARY OF THE OPTION

HOLCIM (formerly Union Cement Corporation) Bulacan plant located in Bulacan, Philippines, and produces about 1.9 million tons of cement per year. Three leaks at the kiln hood door were identified and repaired using refractory cement. Repair costs were minimal and annual savings were 24.5 tons of coal or US\$ 12,283. The payback period was immediate. Greenhouse gas savings were 45 tons CO₂ per year.

KEY WORDS

Cement, Philippines, Furnaces & Refractories, Kiln, False Air, Vacuum Leaks

OBSERVATIONS

A rotary kiln is used for producing clinker at a rate of 4,740 tons clinker/day. The kiln is about 4.6 meters in diameter and 80 meters long. Fuel is fed in the front end of the rotary kiln, called the kiln hood. Upon inspection of the kiln hood, the following was observed:

- Three leaks were observed at the front door of the kiln hood. One leak at the right side was about 61 cm² in size and two leaks at the left side were about 84 cm² in size. Despite the small sizes of the leaks, the heat loss was substantial and calculated to be about 25,045 kcal/hour.
- In addition to heat loss, ambient air, or “false air” is also entering the kiln because the pressure inside the kiln is lower than outside. This also contributes to higher fuel consumption.
- Some coal was coming out of these leaks, but the amount of coal could not be quantified.

OPTIONS

The initial recommendation was to use heat resistant ceramic fibre or cloth to repair the leaks. But the leaks were repaired by plastering them with refractory cement, because this material was already available at the factory and therefore did not cost anything. The repairs were made during the scheduled plant down time in December 2004 as part of major maintenance work.

RESULTS

Financial benefits

- Investment: Minimal
- Annual cost savings: US\$ 12,283 (Php 55 = US\$ 1)
- Payback period: Immediate

Environmental benefits

- Annual energy savings: **24.5 tons coal** (152 million kcal)
- Annual GHG emission reduction: 45 tons CO₂ (Emission factor: 1.84 tons CO₂/ton coal)



Other benefits

- Elimination of coal leaking out of the kiln hood door
- Elimination of ambient air intrusion into the kiln

FOR MORE INFORMATION

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