



EREL CEMENT LTD

Improved Sealing of Dust Control System

SUMMARY OF THE OPTION

Erel Cement is a cement producer in Darkhan, Mongolia and produces approximately 80,000 tons cement per year. The dust emission removal and control system at the gypsum feeding point to the cement mill was poor, and dust emissions were only visually monitored. Twelve electro motors were installed at the strew conveyors and the dust control system was better sealed off. Investment costs were US\$ 2210, annual net savings were US\$ 14400 and the payback period was less than 2 months. Each year, 4500 tons of coal are reduced, electricity consumption for the electro motors is increased by 302 MWh and net greenhouse gas emission reductions are 11007 tons CO₂ per year.

KEY WORDS

Cement, Mongolia, Electric motors, Dust control

OBSERVATIONS

The observations made were:

- Dust monitoring at the clinker and gypsum feeding point to the cement mill is through visual observation only (i.e. dust lost means raw material loss)
- The dust removal and control system were in poor condition

OPTIONS

The following options were installed to reduce dust and improve energy efficiency:

- Installation of 12 electro motors for strew conveyers
- Improving of sealing of the dust control system



Figure 1. One of the installed motors for rehabilitated strew conveyers



RESULTS

Financial benefits

- Investment: US\$ 2210 or 2,660,000 MNT, which was calculated as follows:
 - Installation of 12 electro motors for strew conveyers: 600,000 MNT
 - 12 Gear boxes: 600,000 MNT
 - Strew conveyers: 860,000 MNT
 - Welding materials: 200,000 MNT
 - Improving of sealing: 400,000 MNT
- Annual operation cost: 13,900,000 MNT
 - Electricity consumption: 302,400 kWh
 - Cost of electricity consumption: 11,500,000 MNT
 - Labor costs: 2,400,000 MNT
- Annual cost savings: 31,500,000 MNT
 - Raw material saving (or dust saving): 30-40 tons/day
 - Annual savings of raw material: 9000 tons/year
 - Cost of raw material: 3,500 MNT/tons
 - Cost savings from dust reduction: 105,000 MNT/day
- Net annual cost savings: US\$ 14,400 or 17,300,000 MNT (= 31,500,000 – 13,900,000 MNT)
- Payback period: less than 2 months
(1 US\$ = approximately 1200 MNT)

Environmental benefits

- Annual coal savings: 4500 tons of coal
- Annual electricity increase: 302 MWh
- Annual GHG emissions reduction: 11007 tons CO₂ per year, calculated as follows:
 - GHG emission reductions from coal savings: 4500 tons of coal X 2.51 = 11300 tons CO₂ per year
 - GHG emissions increase from increased electricity consumption: 302 MWh*0.97 = 293 tons CO₂ per year
 - Net GHG emission reduction: 11300 - 293 = 11007 tons CO₂ per year

Other Benefits:

- Improved working conditions around dust conveyers and bunkers
- Reduced dust emissions
- Reduced raw material consumption (as recovered dust is recovered product!)

FOR MORE INFORMATION

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