Coal Ash in South Africa

Richard A Kruger

A valuable resource
S A Market Breakdown for Fly Ash

Total Volume 2.5 million tons

- Blended Cement 72%
- Civils 6%
- Precast 6%
- Readymix 10%
- Mining 4%
- Other 2%
- Other 2%
Grades of fly ash

- Unclassified
- Air-classified Sub 45µ
- Twice-classified Sub 8µ
Eskom: National power utility

Generation: 38 000 MW - 95% of power produced

- Coal: 85% - 115 million tons - 13 stations
- Nuclear: 4.4% - 4.8% - Hydro: 5.8% - Gas / Oil

Challenge: Unable to meet demand – Load shedding

South Africa’s power system is constrained and vulnerable, owing to deteriorating, underserviced power plants and delays in the completion of additional capacity.

The two new coal-fired power plants 4800 MW each are currently under construction. One of these will be equipped with FGD.
Coal ash & cement: Supply and demand

**Annual Production:** 35 million tons coal ash. (2014)
29 fly ash / 6 bottom ash.
42 million by 2020.

**Sales:** 2.5 million tons pa. fly ash. (2014).

Three fly ash suppliers - each owned by a cement company

One independent clinker supplier re-working old dumps

**Cement**
Capacity 18-20 million tons pa.
Sales 14.8 million tons pa.

**Five clinker manufacturers and one new entrant imminent**
- Construction market sluggish.
Prospects in the cement market

Africa’s cement consumption has doubled over the last decade from 97.1Mt in 2003 to 196.0Mt in 2013, of which 90Mt is in sub-Saharan Africa.

This region offers a positive scenario in terms of future cement demand and has attracted international attention.

Some international majors appear on the back foot.

China and India have entered the SA market as a route into the rapidly growing African market.

Likewise SA cement companies are setting up plants in sub-Saharan Africa
Current Situation

- Cost of transport hinders export of ash from SA.
- Growth Exploit resource potential of coal ash.
  - Activation and processing of fly ash to increase the amount incorporated into blended cement.
  - Pursuing non-cementitious opportunities particularly coal mine rehabilitation and agricultural applications.
  - Innovative technology including mineral recovery (Al), polymer applications, fertilisers, zeolites, AMD treatment etc.
- Problem All ash facilities are owned by cement producers who are generally not keen to enter unfamiliar territory.
TRYING to increase ash utilization

- Cement companies all working toward increasing ash blend ratios; aim 50%-60% - Success
- Eskom incubation centre to explore and expand beneficial use. – Minimal progress
- Opportunities in the functional filler market for polymers is being explored – Success
- Elimination of acid mine drainage, mine backfill and spoil rehabilitation proven on pilot plant scale - Success
- Universities investigating ash-based fertilisers and soil enhancers Legislation
- Also active in developing novel uses. – Success
- Developing zeolites and alumina extraction. - Patents
Nature NEVER stops TRYING to succeed – Why should we?

Thank you
Nature NEVER gives up trying to succeed
Why should we

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