

Pond Ash Beneficiation Australian Considerations



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The Australian Supplementary Cementitious Materials Market



- Slag (GGBFS) and fly ash have been successfully used within the Australian construction materials industry for decades.
- Properties of both materials are well understood.
- Quantities of GGBFS and fly ash will diminish over time, but not necessarily at the rate predicted by some international forecasts.
- In some parts of Australia, coal fired power stations will not retire until nearly 2050.
- New and emerging supplementary cementitious materials are becoming available – aluminosilicate rich materials, calcined pozzolans.
- Increased use of limestone mineral addition
- The introduction of beneficiated pond ash will form part of this “ecosystem” of new and emerging supplementary cementitious materials.
- Different materials will make sense for use within various parts of the country based on technical, sustainability, commercial and supply chain considerations

Pond Ash Beneficiation – Australian Considerations



- Within the Australian context, most fly ash that is not used and placed into ash dams (ponds) is slurried with brackish or salt water.
- As a result pond ash in Australia has unacceptably high levels of chloride that are not suitable nor compliant with specifications for use in concrete.
- Some of our pond fly ashes also contain unacceptable levels of trace elements and over time a concentrating effect of these elements can happen, depending upon how the ash dam has been managed.
- Australia is rapidly growing in its embrace of low carbon supplementary cementitious materials.

Pond Ash Beneficiation – Potential Roadblocks for use in Australia



- Chloride removal – leaching, possible but requiring a lot of fresh water, and creating a new waste stream of contaminated water
- Chloride removal – volatilization (requiring temperatures of ~1100DegC) leading to significant additional cost and increased embodied carbon load for the material
- Removal of trace elements if required – chemical scrubbing
- Drying and carbon burnout – expensive, and increased embodied carbon
- Milling of bottom ash – possible, but expensive and increased embodied carbon
- High capex cost for existing technologies ranging from \$30 – 100 mill USD
- Estimated operational costs for all of the above (excluding chloride removal) ~ \$50-60 per tonne

At some point in time it may make sense to beneficiate pond ash, but will Australia already have embraced other new and emerging, lower cost and lower embodied carbon supplementary cementitious materials?

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