



TBS PRESS RELEASE

Teetered Bed Separators making inroads into Coal market

The treatment of coal fines is one of the important environment and economic issues being covered at the South African Coal Process Society's conference.

Peter Hand and Mark Craddock of QVA Process Technologies are presenting a process where fines can easily be treated down to 150 microns therefore reducing the need to discard the minus 1mm fraction.

"The treatment of fine coal (nominally minus 1mm) is very important in the economics of most coal mines, as this fraction can constitute up to 20% of the ROM feed (including a slimes fraction, nominally minus 200 microns)," says Hand. "However, in an increasing number of cases, the fines are not being treated as the value after beneficiation is too poor in terms of quality, moisture or both, to add back into the coarser product."

A number of methods can be used to treat fine coal at a lower density, the most obvious being the use of (DMS) dense medium cyclones, which has been attempted many times, mostly abandoned, but has been revived by Coaltech 2020.

Under discussion will be the Stokes Hydrosizer or Teetered Bed Separator (TBS). The process has been used since 1934, originally for separating on size for mono density particles. These systems have been used for coal recovery from waste piles and tailings lagoons since the sixties and used to treat ROM coal in the UK, US and Europe since the eighties.

"More than 400 of TBS units have been installed world wide," comments Hand "and the applications range from coal, iron, sand, foundry sand sizing, glass and mineral sands and haematite."

According to Hand, awareness developed in Australia when the first unit was installed in 1998 at Stratford in the Hunter Valley. Thirteen units were installed from 1999 to 2003 and a further twenty have been installed between 2004 and 2007. "In these applications the TBS is being used to treat coal in the -3 to +0.25mm size range at cut points below 1.60."

In order for the technology to gain acceptance in the South African mining fields, multiple tests have taken place at a number local collieries. QVA manufactured two test units with full control of density and teeter water. Results of the tests were comparable with those obtained in Australia.



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“Fine coal is being discarded, but can be treated at minimal cost. The TBS is simple to operate, produces quality and has short payback times,” says Hand.

South African coals probably need more sophisticated washing than Australian coals. The use of large DMS cyclones makes the bottom size cut off very important, if TBS can wash up to 3mm then overall plant efficiency can be improved.

Coarser particles and fines may need different TBS regimes. This will depend on test work carried out.

“In general, the treatment of fines will be a case of ‘horses for courses’; some fines will always be discarded, spirals will work well in some mines and some fines will have to be treated using DMS. However, the majority should use TBS/Hydrosizers, either in single or a 2 stage operation or sometimes in combination with spirals or DMS,” concludes Hand.

In South Africa, Anglo Coal has led the way by installing a TBS unit at Landau.

This has enabled the second stage spirals to work properly and improve overall plant yield by up to 3%. The Mafube project is installing a TBS unit and two machines are currently being manufactured for Kleinkopje Colliery.

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