Beneficial Utilisation of Sasol Coal Gasification Ash

M. Ginster, R. H. Matjie and M. A. Heap

Sasol Technology (R & D), P O Box 1 Sasolburg 1947

KEYWORDS: low grade bituminous coal, gasification ash, utilization, trace elements

ABSTRACT

Sasol utilises low grade coal in a Sasol-Lurgi Fixed Bed Dry Bottom gasification process to produce synthesis gas from which large quantities of ash is an inevitable co-product. Gasification ash, referred to as coarse ash, is an agglomerated clinker with heterogeneous texture varying from fine material to large irregularly shaped aggregates. Most of the ash produced is landfilled with associated environmental risks and liabilities primarily related to aesthetics, land use, water management, dust control and rehabilitation requirements. However, large scale beneficial opportunities exist for the off-site utilisation of gasification ash primarily for brick making, as road fill and other construction applications. As a commodity input its market penetration is price sensitive due to transport costs. Geographical location of the ash source hence largely determines off-site ash utilisation opportunities. Gasification ash remains a valuable under utilised co-product and its responsible use is encouraged particularly in exploiting its unique properties. Even though the quantities of ash that can be potentially re-used is small in relation to the amounts produced these practices support Industrial Ecology initiatives.

Submitted for consideration in the 2005 World of Coal Ash, April 11-15, 2005, Lexington, Kentucky, USA.