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Coal Geometallurgy: A place geologists may add value to the coal industry?

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Recently the coal industry worldwide has come under significant pressure. The demand for coal by China has weakened. The coal industry in readiness for continuous Chinese demand had brought several large projects online. However, due to the weakened demand these new mines and existing low cost mines that have increased their output are now oversupplying the market, aggravating the situation. Weakened demand and over supply are forcing down the prices of both thermal and coking coal. Furthermore, there is a worldwide “war on coal”, and gas prices are at a level where it challenges coal as fuel in Power Stations, especially in the USA. Several large coal companies in the USA have filed for bankruptcy due to the pressures.

Due to this, there is less demand for coal geologists worldwide, and recently there were widespread retrenchments in many companies, essentially across all commodities. Only mines that are still profitable under the current circumstances will be able to remain in operation.

Under these circumstances, a question may be asked if it is still possible for coal geologists to add value to the coal industry? In southern Africa for example, the physical extent and thickness of the deposit from drill core, the raw coal quality, washability and petrographic composition are often well known for coal mines and projects.

In spite of this there have been reports in the media where a processing plant did not produce expected coking coal in the Limpopo province, South Africa, and the yield of coking coal product was lower than expected in a deposit in Moatize, Mozambique. In order to mitigate against the risk of lower than expected product yield washability tests may be simulated based on macro and micro lithotypes. Figure 1 shows results of washability simulation as cumulative washability curves performed on one specimen from the Limpopo coalfield as in Dorland et al, [1].

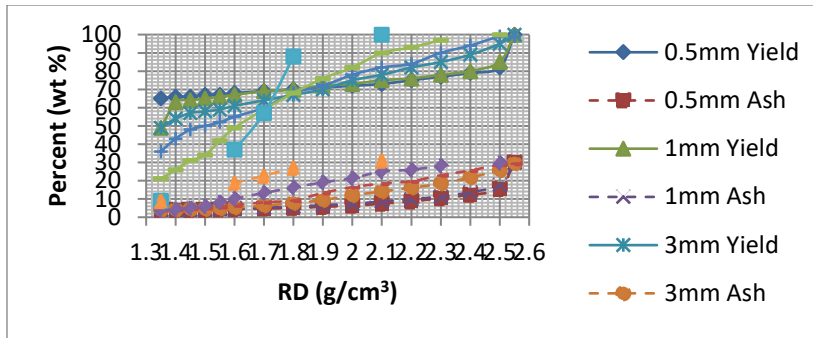


Figure 1: Simulated washability curves

The simulation results show that there is a significant change in the yield and ash versus relative density (RD) with change in virtual particle size. Information about the yield at a certain particle size would enable coal metallurgists to better predict product yield and develop informed plant designs that could lower the risk of companies and investors, even in current economic conditions. This paper will explore the possibilities of washability simulation in the coal industry.

References:

[1] Dorland M.I., Campbell, Q.P., Le Roux, M., Erasmus, P., McMillan, K., Dorland, H.C. (2015). *Predicting the washability behaviour of coal by numerical simulation of washabilities and product liberation from photographs*. Proceedings of the South African Coal Processing Society Conference, Secunda, South Africa, September 2015.

