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Condition monitoring and performance optimisation of pulverised fuel vertical spindle type mills

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Abstract

In order to alleviate the current bottleneck caused by the milling plant, two problems were identified. Monitoring of the key performance indicators of the milling plant (throughput and particle fineness) required improvement, and the average throughput must be increased without sacrificing the product quality. Monitoring of the coal mass flow was achieved by means of an on-line Mill Energy Balance. The Particle Size Analyser evaluation identified five key test parameters which caused inaccuracies in results. Relationships were established enabling one to commission this instrument to achieve precise and accurate measurement for continued condition monitoring.

Extensive testing was performed on a pilot scale mill where the operational control parameters were related to the key mill performance indicators. Characterisation of the relationships between the throughput, classifier setting, air/fuel ratio and particle fineness were successfully established. An operating regime was then developed which increased the maximum sustainable throughput while maintaining optimal particle fineness.