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## Dust settles at Dalrymple Bay Coal Terminal

With an annual loading capacity approaching 60Mt, Queensland's Dalrymple Bay [Coal Terminal](#) is one of the largest and most efficient coal export facilities in Australia.

Each day, DBCT handles thousands of tonnes of coal transported directly from the Bowen Basin via an electrified railway and bound, ultimately, for outloading onto bulk carrier ships. It is little wonder then that [dust](#) control and an accurate knowledge of coal [moisture](#) content are key priorities for DBCT.

In early 2004, these priorities, together with an undertaking to the Co-ordinator General to reduce dust emissions, saw DBCT investigate the CSIRO-developed Low Frequency Microwave (LFM) Moisture Analyser.

The LFM Analyser is specifically designed to deliver accurate, online measurements of moisture in continuous on-conveyor applications. At this stage, it was already enjoying significant success in the iron ore market with BHP Billiton Iron Ore investing in multiple units as part of its moisture control strategy for the Marra Mamba ore-types.



The LFM Analysers, now being commercialised by spin-out company [Intalysis](#), were commissioned in July 2004.

Babcock & Brown Infrastructure (BBI), the company that holds the long-term leasehold of DBCT, was heavily involved in the analyser's commissioning.

BBI's electrical supervisor Doug Mitchell says the analyser offers the means for DBCT to meet the environmental conditions of the terminal license while at the same time enabling it to meet its individual contract obligations with the terminal customers.

"This basically involves ensuring the moisture content for each coal type does not exceed that which has been agreed upon with terminal customer," Mitchell says.

DBCT has installed two analysers on the inloading conveyors, each about 100m from the coal discharge hoppers. They are fitted to steel cord belts at a nominal speed of around 6m/sec that

carry the coal to either 4250tph or 5500tph yard stacking machines, depending on the string selected for stockpiling.

The analysers deliver real-time measurements of coal moisture levels that DBCT then uses to guide its water addition needs for dust mitigation.

"The analysers were originally installed on the outloading system so that calibration checks could be carried out," Mitchell says.

This involved extensive ISO sampling, with individual calibrations obtained for 29 different coal types to ensure the best accuracy.

The analysers delivered typical accuracies of between 0.2-0.4%, one standard deviation, across the coal types. Measurements were achieved at the highest tonnage rates and auto-switching of calibration curves via a plant interface was effectively demonstrated.

"Extensive independent trials enabled the optimum dust extinction moisture (DEM) levels of each coal type handled at the terminal to be identified and agreed upon by DBCT and the individual terminal users," Mitchell says.

As such, DBCT is effectively using the analysers as an "upper clamp" on the moisture added to the coal.

BBI says customers of DBCT and the surrounding community will benefit greatly from the investment in the LFM Analysers.

"The real-time moisture measurements provided by the analysers will assist DBCT to manage contracted moisture content while at the same time enabling optimum DEM to be achieved," Mitchell says.

"Through the increased understanding of the moisture levels of the coals handled, DBCT can optimise its dust control measures to ultimately help improve the terminal's environmental performance and relationship with the surrounding community."

Following the successful commissioning of the analysers, DBCT has begun the process of integrating them in its control loops for automated water addition. DBCT anticipates this will be complete by the end of May.

DBCT also plans to invest in a third unit with the design of its new conveyor, Inloading No 3, including an LFM Analyser.

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