

## Scantech's technologies analyse ash and moisture content of coal

Scantech International Pty Ltd designs, manufactures and supplies analysers for the measurement of conveyed coal utilizing various technologies — depending on parameters to be measured.

The COALSCAN range of ash, moisture and elemental analysers has been on the market for nearly 40 years and continues to expand. Initially the company was focused on commercializing dual-energy transmission technology for ash measurement in the early 1980s. With hundreds of installations this was, and still is, a very robust design with some units installed in the 1980s still operating.

The COALSCAN 2100 ash analyser typically achieves accuracies of better than 1% ash. Main applications are measuring raw coal feed to wash plants and washed coal quality. The COALSCAN 1500 uses natural gamma sensing to calculate the ash content of coal without the use of radioactive sources as in the COALSCAN 2100.

Moisture analysis is commonly used in conjunction with ash analysis to enable calculation of heating value of coal. TBM (Through Belt Moisture) systems utilize microwave transmission technology to detect free moisture by measuring the attenuation and group delay of microwaves passing through the conveyed coal. TBM determines the moisture content to accuracies better than 0.5% moisture. Moisture measurement can be used to monitor TML (transportable moisture limit), assist with optimal filter or dryer operation, and for dust management. CM 100 (Conductive Material moisture analyser) is used for coke as it can measure the hydrogen content accurately using fast neutrons and gamma transmission to determine moisture content.

More detailed information on coal quality, such as sulphur content and other ash components is useful, particularly for thermal coal where power stations may require coal with strict composition requirements. The COALSCAN 9500X provides representative elemental analysis on full conveyed flows. A chute-based version has also been supplied where opportunities to measure have been limited by high chlorine content in conveyor belts or space has been limited on existing belts. Measurement accuracy is typically close to 0.5% ash. A key advantage of the COALSCAN 9500X design is no contact



with the conveyor resulting in absolutely minimal maintenance due to absence of wear components.

The latest models use a common interface and include remote access capability. All models measure through the full bed depth continuously and provide results second by second or minute by minute.

Scantech analysers are considered a premium product due to high specification, robust design and comprehensive shielding particularly for the PGNA (prompt gamma neutron activation analysis)-based COALSCAN 9500X which requires no additional isolation area around the unit. Recent comparisons to other products on the market by a customer indicated COALSCAN 9500X had one quarter the radiation levels of a newer competitor product claiming to be the latest and most advanced system in the market with a smaller source, but also much less shielding. No two products in the market are the same so a thorough due diligence process should be considered in all purchasing decisions.

Scantech has worked with RWE in Germany to develop the latest version of the COALSCAN 9500X configuration. The XXL frame is used for conveyed lignite flows of up to 13,000tph (tonnes per hour) at bed depths of up to 1.1m and belt widths to 3m with no belt speed limitations — see picture. The unit measures lignite quality in real time between mine and stockpiles.

Scantech recently commercialized the SizeScan PSD (particle size distribution) analyser developed by COREM in Canada. This next generation PSD system uses a 3D infrared camera and advanced algorithms

that overcome known problems in particle recognition using segmentation software. The 3D IR camera is unaffected by dust and does not require controlled lighting making it significantly easier and cheaper to install, operate and maintain.

SizeScan has the added advantage of reporting every five seconds the conveyed volume and belt speed with the PSD data. Where bulk density is consistent the SizeScan becomes a reliable mass flow measurement device comparable to a nucleonic weigh scale in performance. SizeScan does not require ongoing calibration or support and does not limit access to data, unlike other measurement systems.

Scantech offers various installation services. Installation manuals are available to clients wishing to install equipment themselves. Installation supervision, engineering, fabrication, or full turnkey options are also available. This limits risk of cost or schedule blowouts and ensures analysers are installed correctly the first time, every time. Clients have analysers operating sooner and providing benefits in the shortest possible timeframe after purchase.

Ongoing service and support for analysers is handled by qualified service engineers based in Europe, Middle East, Africa, Asia, Australia, North America and Latin America. A central pool of engineers provides support as needed for commissioning and calibrating analysers as well as R&D.

New capabilities are continuously being developed through new technologies developments, acquisitions and better calibrations.