

Gas-fired boilers exceed popularity of coal counterparts

ZANDILE MAVUSO | FEATURES REPORTER

The increasing conversion of existing coal-fired boilers to use natural gas, owing to the changes in the price of natural gas, not only reduces emissions but also decreases boiler maintenance when compared with coal-fired boilers, says plant engineering and consulting company Carab Tekniva.

“Boiler plant operators are always searching for ways to reduce costs, improve boiler efficiency, availability and reduce emissions. The conversion of a boiler to gas-firing technology means no ash, no visible smoke emitted by the boiler and provides a more environment-friendly solution. The logistics of transporting coal to and ash from site have also been eliminated. Challenges introduced by varying coal grades are also removed,” says Carab Tekniva engineering manager **Erik van der Linde**.

He admits that one of the challenges faced when converting old boilers to gas is that drawings and other design information are usually difficult to come by, resulting in physical site measurements of the boiler and auxiliary equipment. All coal-handling and ash-handling equipment also has to be removed and replaced with gas-burner equipment.

The 2010 ‘Natural gas conversions of coal-fired boilers’ report by power generation group Babcock & Wilox states that the most obvious change to a power plant that

is converting from coal to gas will be the modifications to the fuel handling, storage and distribution equipment.

The plant must receive natural gas using a pipeline spur from the local main transmission line. If a spur does not currently exist, the plant will need to evaluate costs and activities, such as permits and land rights, which are associated with constructing a new spur.

Once inside the plant perimeter, the gas must be metered and piped to the boilers, where new gas burners will be required.

If the existing boiler is modified for gas firing, the convection pass, ducting and draught plant will likely need modifications. The extent of the modifications will be determined by an engineering study that will consider overall furnace heat absorption, furnace exit gas temperature and tube bank arrangement/material changes.

Other operational changes like sootblowing schedules, spray flows, air-heater operation and the operation of any back-end emissions-control equipment will need to be adjusted to switch from coal to gas, says the report. Boiler control philosophies may also need adjustment, adds Van der Linde.

“In terms of boiler maintenance database software, we provide the Carab Plant Care system, which tracks all boiler maintenance inspection and repair actions. Not a lot of companies worldwide can provide these



ERIK VAN DER LINDE

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kind of services, as it is quite a niche market. Currently, we provide the Plant Care system to the largest boiler operators in South Africa,” he highlights.

With regard to research and development, the company is always investigating more efficient ways of maintaining and monitoring boilers.

This helps Carab Tekniva improve the maintenance processes involved. By improving these processes, the quality of the information is improved, leading to better maintenance decision-making, which, in turn, increases the reliability of the plant.

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