

New regulations demand new solutions

AT THE LAST COUNT IN 2010 THERE WERE 44 COAL MINES STILL OPERATING IN KENTUCKY USA, WHERE COAL MINING IS STILL A MAJOR INDUSTRY. HOWEVER NEW LEGISLATION HAS HAD A RADICAL EFFECT ON THE REQUIRED OPERATING CONDITIONS, DEMANDING A RETHINK OF SOME OF THE ESSENTIAL EQUIPMENT USED IN EXTRACTING THE MINERAL. SPECIALIST KNOWLEDGE AND EXTENSIVE EXPERIENCE WERE VITAL IN ARRIVING AT A SATISFACTORY SOLUTION TO MEET THE REGULATIONS.

Much extraction of coal in the Kentucky coalfield is carried out by Continuous Miners, which cut into the underground coalface and extract material at a phenomenally high rate. The extracted material is then transported to the surface via fast conveyors. Although highly effective, this extraction method also generates large quantities of dust – a fact disregarded by the mining companies and ignored until recently by the legislators. The Continuous Miners operated without any external equipment to mitigate the effects in the atmosphere of the dust which they produced.

However new legislation has recently been introduced in the USA which requires a drastic reduction in dust levels. As a result, the equipment manufacturers introduced water jets directed at the Continuous Miners' bits as they operate.

Although this has proved effective in reducing the amount of dust in the atmosphere, it is not an entirely successful solution as it can also result in water entering the cutter head, which then causes corrosion, possible premature machine

failure, and lost production. Given the speed at which these machines operate and the number of tonnes of coal they extract every hour, downtime is extremely costly and to be avoided whenever possible. The potential cost implications of continued use of the water jets without protection for the machinery prompted Bucyrus, manufacturers of the Continuous Miners, to contact Pioneer Weston to engineer a custom solution.

Pioneer Weston is a key part of the ERIKS Sealing Technology Core Competence



Centre, and is synonymous with quality, precision, and innovative sealing technology, with an enviable reputation across the world.

A Pioneer Weston engineer visited the USA to view the application and discuss a possible specification for the seal. A prototype rotary joint was then designed and manufactured by Pioneer Weston and shipped to Kentucky for evaluation under normal operating conditions in a mine. The prototype performed well and, following a further engineer's visit, a final specification with only minor adjustments from the prototype was drawn up, and the new joint went into production. As part of the comprehensive service offered by Pioneer Weston, the company also advised on the fitting of the joint, to help ensure optimum sealing performance.

The custom-designed Rotary Joint produced for Bucyrus by Pioneer Weston is a 23" overall diameter unit with specialist carbon faces, and is enclosed in a large housing which is electroless nickel-coated to protect against corrosion. The joint contains water in the drill head, and O-rings

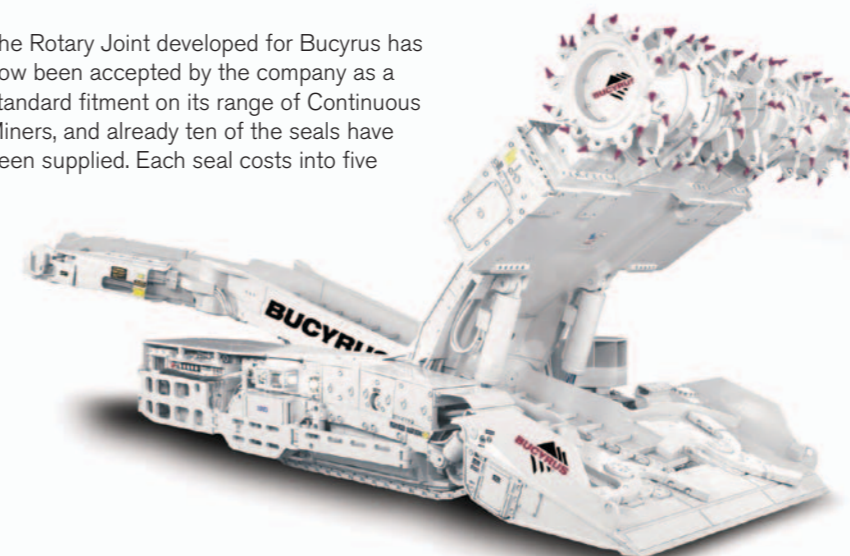


provide static sealing for the seal enclosure. The successful design was developed thanks to Pioneer Weston's fifty-plus years of design and manufacturing experience in customised sealing solutions and mechanical seals. The company's seals are used in applications as diverse as paper and steel mills, power stations, earth movers, bakeries and many more.

The Rotary Joint developed for Bucyrus has now been accepted by the company as a standard fitment on its range of Continuous Miners, and already ten of the seals have been supplied. Each seal costs into five

figures, but this is relatively insignificant compared with the cost of the Continuous Miners themselves, which each run into millions of dollars.

Chris Dixon, Divisional Sales Director for ERIKS Sealing Technology, described the project as "very prestigious – and demanding. However it shows what ERIKS



is all about. We can deliver sealing solutions where our competitors can't, and also work closely with customers to achieve solutions that ultimately improve their processes and operations."

ERIKS Sealing Technology's unbiased technical advice ensures a solution which truly meets the customer's needs, whatever their application. The custom design and manufacturing service offered by ERIKS and Pioneer Weston is complemented by a complete sealing technology supply solution, based on the UK's largest stock holding of branded sealing products. This makes ERIKS the only national industrial services company which can offer a complete sealing technology supply solution, able to provide successful solutions for even the most demanding production environments. So when conditions, requirements or regulations change, ERIKS is the sealing technology partner of choice.

