

Minimising the effects of acid mine drainage

(Date), 2015: The harmful effects of acid mine drainage on the environment are being successfully combatted by a large acid mine drainage plant in Germiston, Gauteng, which contains a comprehensive mixing system developed by leading mixer manufacturer Mixtec.

The acid mine drainage plant consists of a combination of 53 specialised Mixtec mixers, which are in turn individually powered by the same amount of gearboxes manufactured and supplied by leading drive engineering company SEW-EURODRIVE.

Mixtec sales manager **Brian Paxton** states that the agitators' role in the process can be split into different sections. "In simple terms, the first is the make-up of lime into a slurry, which is in turn introduced to reaction vessels where the lime slurry comes into contact with the acid mine drainage. By mixing the lime slurry with the acid mine water in this area, the lime reacts with the acid to cause a neutralising effect."

The bi-product produced is Gypsum, a soft sulphate mineral composed of calcium sulphate dihydrate, which can be used as a fertiliser, and is the main constituent in many forms of plaster and chalk.

The mixing system had to be designed to accommodate the highly-corrosive pH levels found in water contaminated by acid mine drainage. SEW-EURODRIVE contracts engineer **Rudi Swanepoel** notes that the gearboxes were covered with an OS2 paint work.

"The 210 µm paint work is specially-designed for acidic environments. Viton seals were also fitted on the high speed shaft and low speed shaft, which is standard for these environments. Without these extra precautions, the seals would perish and the paint would peel off."

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SEW-EURODRIVE's scope of work included the supply of 36 MC mixing units fitted with EBD (extended bearing distance) to absorb the radial forces encountered in mixing. A further 17 helical gear units were supplied, some of which were assembled with AM Adapters.

According to Swanepoel, the bearings on the system should last more than nine years. "Based on our calculations, the bearing life should be in excess of 100 000 hours if they are properly maintained. This ensures high-efficiency and minimal downtime," he adds.

Paxton indicates that Mixtec has been a satisfied SEW-EURODRIVE client for a number of years. "We involved SEW-EURODRIVE in the project right from the beginning, due to the fact that the company displays commitment to the task at hand from initial quotation, right through to after-sales back-up and technical support."

About Mixtec

Johannesburg-based Mixtec has been operating for 30 years, with an international footprint spanning Australia, Asia, Europe, North and South America. Mixtec's product range covers almost any industry, however its largest market is the African mining sector.

Around 95 percent of the company's mixers and agitators are manufactured in South Africa. "We have an in-house design package which we use to design the mixer, and source additional components from tried-and-trusted suppliers such as SEW-EURODRIVE," Paxton concludes.

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