

Mine designs or design changes can be done very easily using a simple CAD environment for inputting underground panels and roadways.

Reserves can be generated with production and cost drivers linked into the design. This gives engineers the means to run

Rulmeca pulls its weight

MANY factors bring suppliers into the coal industry — profit potential, proximity to a significant mining area, family connections — but Rulmeca Corporation president Mike Gawinski said a “desire to serve to the coal industry” was what drove his company. Its motorized pulley systems are no exception to that credo.

Rulmeca Group, through Italian idler producer Rulli Rulmeca SpA., got rolling with conveyor belt idlers in the 1960. Rulmeca Corporation was established as a subsidiary in 2003 amid the dawning of the coal boom. Headquartered in Wilmington, North Carolina, the subsidiary handles sales and manufacturing for the group’s bulk handling components for the United States and Mexico, and Rulmeca’s total workforce now tops 550 — seven of whom work at the Wilmington complex.

While motorized pulleys aren’t new, Rulmeca’s product line offering is not only more powerful, but also safe for users because it is self contained.

Pony drives, said Gawinski, often consist of two pulleys, two motors, two gearboxes, as well as couplings, guards, pillow blocks and other associated items. In the case of Rulmeca’s motorized pulley, the parts are compact and, according to Gawinski, “everything is on the inside ... it’s a natural solution.”

“We know there’s a need there [and] we’re wanting to meet a need,” Gawinski said.

Currently, Rulmeca’s motorized pulleys can handle 380-volt/3-phase, 460V/3-phase and 575V/3-phase. Plus, Gawinski said, the company is always thinking of methods to offer customers higher voltages and more cost-effective construction.

Another advantage is the cooling technique Rulmeca uses to maintain safe temperatures, as occurrences of overheating are obviously dangerous and can halt production. Although it is self-contained, heat sink technology is used — the belt actually acts as a cooling unit.

“Because our pulley is hermetically sealed, there’s no way to blow air over the motor. So the oil circulates [around it], picks the heat up off the motor, and spreads it out since the oil is circulating over the whole pulley face. We throw the heat into the belt, using it as a cooling unit, or heat sink.”

One obstacle Rulmeca addressed early on but appears to have defeated is offering all this and a long life span, too.

“We have pulleys in continuing service in Europe in excess of 30 and 40 years,” said Gawinski, a feat he refers to as the “Maytag rate”.

Gawinski notes that motorized pulleys account for just a small percentage of mining industry equipment, but he feels there’s a significant segment of the industry that has yet to discover it.

“There are a variety of different motivators that would prompt someone to get a motorized pulley, and there’s a certain fraction of people that have problems that can be solved [with] it,” he said.

“Our message to the market is that there’s a technology that’s been around for a while. You might not know about it, and you might want to think about it.”

Whether the goal is reduced maintenance, higher standards of safety or efficient use of limited space, Rulmeca’s pulleys are there to meet operations’ goals. Their customers attest to this.

different scenarios and identify which scenario offers economic benefits.

XPAC also stores geological grid files as well as physical/quality parameters, allowing reserves (including quality) to be calculated automatically as the mine design is created. Geologists are not needed to recreate

reserves for each design change and the manual transfer of reserves data is eliminated.

XPAC’s logic is systematic, auditable and accurate, providing a consistent approach across operations and better forecasting detail with less risk of rework.

Recent enhancements in XPAC include the introduction of Detailed Centerline Design.

This is to cater for those mine planners who prefer to create their detailed designs as a set of roadway centerlines rather than discrete roadways and pillars.

The new tool takes a detailed centerline design and automatically “explodes” it into individual roadways and pillars. This detailed plan can then be “captured” using already existing detailed design tools.

XACT

This year Runge released Xact, a new short-term mine scheduling application, to plug the 12-week scheduling gap generally covered by spreadsheets rather than purpose built scheduling packages.

The company said that if integrated with XPAC, the combined versatility is unprecedented.

Xact allows mines to adjust scheduling in response to day-to-day problems and improved decision making while still considering long-term goals.

“It is the only application to combine Gantt charts, a reporting mechanism, a hierarchical navigation system and 3D representation of the mine,” Runge said.

“Xact shows you — on multi-screen displays — exactly what transpires when any aspect of your daily or weekly mining operation is changed.”

Every task at the mine — complex equipment, personnel and rostering — can be modeled. This means short-term options can be evaluated in less time. Preventive maintenance scheduling is also less of a headache.

The software has the flexibility to generate work orders based on an individual operation’s needs.

Longwall simulation

A further new development currently on the drawing board is a software tool for the simulation of a longwall operation from the face to the surface. In collaboration with John Davis from JDS Mining, Runge is initially compiling tools to simulate the longwall face cutting cycle based on individual equipment parameters and geological considerations. As a second phase of development, the capacity of the conveyor network from the face to the surface will be modeled to provide a total mine production capacity simulation.

This exciting new software module (yet to be named) is planned to operate as both a stand alone system or integrated within XPAC.

“As an integrated XPAC tool, this module will add significant value by providing a dynamic simulation of the total mine capacity as the mine expands and changes over time,” Runge said. **AL**



Rulmeca's motorized pulleys can make booster or temporary drives for longwall conveyors because the motor and gearbox are hermetically sealed within the pulley shell.

“We sell to two groups — one group would consist of mines and prep plants through our network of distributors. We mostly sell to OEMs on a direct basis who then, of course, sell equipment to [operations].”

Gawinski refers to Rulmeca’s distributor network as “special” because it makes the option of retrofitting possible.

“Our strategic plan calls for us to work with exclusive generally regional distributors as opposed to nationwide distributors so as to get specialized knowledge; we have some distributors who are 50% service oriented,” said Gawinski.

Maintenance, however, is easily conducted on-site by maintenance staff and the main concern is oil changes with either standard or synthetic oil — every 10,000 operating hours for standard, every 30,000 operating hours for synthetic. Oil seals, he said, should also be maintained, with replacements every 20,000 hours.

Rulmeca is so confident in the future of its motorized pulley technology that it has recently made a significant investment in research and development. In addition to a new plant in Wilmington, where the subsidiary can now perform US-based assembly of 8.5-inch, 12.5-inch and 16-inch diameter pulleys (12.5-inch is the company’s most popular), the parent Rulmeca Group has invested a significant amount for their facility in Aschersleben, Germany, that will allow the organization to test its entire product line under full load.

Gawinski was enthusiastic about the R&D announcement and how it will affect the company as well as its customers. Not only can it now quote exact load handling specifications to its customers but “we have high hopes that we will soon be adding higher powers to our portfolio”.

“Nobody in the world makes motorized pulleys as powerful as we do,” said Gawinski confidently.

“There are other manufacturers, but we make the largest and most powerful and our idea is to strengthen that, primarily fueled by a desire to serve the mining industry.”

— Donna Caudill