



Xact: Providing more detailed plans in less time

Xact, a short-term scheduling system, has been successfully implemented at five coal mines in Wyoming's Powder River Basin in the United States. The first of the Rio Tinto Energy America (RTEA) sites to convert to Xact was Antelope Mine, with Nate Foster, On-site Mine Planner, leading the project.

Background

Antelope Mine is located in the southern Powder River Basin near Gillette Wyoming. The principal seams being mined are splits from the Wyo-dak seam which originates from the Fort Union geological formation. Antelope Mine is currently permitted for 36 million short tons of coal annually.

Scheduling the equipment into a five-week plan at each crew change (every four days), as well as developing a 90-day plan each month - with daily updates - is logistically challenging, particularly using a spreadsheet system.

An automated short-term scheduling solution that could 'plug in' to the medium- and long-term scheduling tool was required.

The Solution

Antelope requires a high level of interaction between their long- and medium-term scheduling software. They also need to address the dynamic nature of short-term scheduling to respond to daily challenges, allowing



Antelope Mine, Powder River Basin near Gillette Wyoming

The Challenge

Antelope was using an Excel-based short-term planning system that was slow, inflexible and difficult to use. One person handled the scheduling for several equipment types (a Marion 8200 dragline, overburden and coal shovels, and loaders) through mining blocks that use a variety of mining methods (pre-strip, cast dozer, truck/shovel). It was a requirement that all daily coal production, inventory, and quality targets were met.

operational staff to plan shift-by-shift, day-by-day, and week-by-week.

Runge's desktop solution Xact was implemented, with Nate Foster managing the implementation.

Installing the software was simple and the model build and training was completed in less than a week. Within a month, Nate was running the model and presenting schedules and reports to production crews and management.

Schedules are now created that are flexible and that enable updates with immediate effect throughout the short-term plan. The model allows quick output of daily schedules and provides reports to production crews and management.

The Result

According to Nate Foster, the greatest benefit of using Xact as Antelope's short-term scheduling tool has been the ability to 'create more detailed and accurate plans in less time.'

'Staff are now keeping copies of the plan taped on the wall, monitoring the progress against the plan, and asking questions if the plan is not followed,' says Nate.

Xact has allowed us to create
more detailed and accurate plans in less time.'

– Nate Foster

In addition, the implementation of a short-term scheduling solution has resulted in:

Greater flexibility:

- > Xact allows for quick evaluation of 'off the cuff' schedule updates and resulting changes in the field, which can be effected immediately.
- > Changes to blocks and task re-sequencing update the schedule automatically.
- > Re-evaluation of any part of the schedule automatically flows through the schedule.
- > The model allows for quick and accurate evaluation of alternate detailed mine plans in reaction to major strategy and advance changes of the mine, resulting in increased mine cost savings.
- > One model stores all scheduling data and assumptions allowing for easy update and auditing.

Increased accuracy:

- > Xact provides accuracy throughout the entire plan.
- > Daily coal quality reports are generated providing enhanced ability to identify and resolve quality variances.
- > Dependency validation highlights any scheduling conflicts, which can then be resolved.

More detail:

- > Through reporting on break-out of shovel volumes by mining bench, the crew has increased visibility of planned shovel moves between benches.
- > Scheduled maintenance and walking delays are easily updated and displayed on the Gantt chart.
- > Scheduling the parting between the upper and lower Canyon seams is now available. This enables timing accuracy of moved material and availability for mining of the lower Canyon coal.

Time saving:

- > The five-week plan now takes less than 90 minutes to complete, compared to as much as four hours previously.
- > System intuitiveness allows minimal set-up and training time.

Conclusion

Implementing Xact as the new short-term scheduling solution has not only provided time and cost savings, but also additional functionality. The powerful presentation and reporting tools mean that coal inventory and coal quality reports are easily created, updated, and run using any time scale.

A separate Gantt chart view is designed solely for presenting the plan - it is 'easier for everyone to follow and understand,' says Nate. There are other features within Xact, including the polygon graphics functionality, that are not currently used at Antelope, so further improvements are still possible.

Runge would like to thank Nate Foster and Bob Green for their contributions in preparing this case study.

For further information please visit Runge online at www.runge.com

