

# Record-breaking production in Australia

## Project Challenge:

The new Anglo Grosvenor mine has aggressive production ramp up requirements. Therefore, the introduction of the longwall gate road entry driver machines at Grosvenor needed to be flawless.

Anglo American needed an entry driver at Grosvenor that could deliver the high productivity of the Joy Global continuous cut and bolt machines in the U.S., while also meeting the challenges of the greater roof support density requirements in Australia without compromising safety and productivity.

“With the Grosvenor Mine being a major new project for Anglo, and facing the head winds of a tough coal market, we have high expectations on Joy Global’s entry development equipment,” said Glen Britton, head of underground operations for Anglo American Coal.

## Solution Design:

The operating platform of the Australian entry driver was derived from Joy Global’s successful 14ED25 and 12ED25 continuous cutting and roof support product platform, which were developed for the U.S. market.

The 12ED25 Bolter Miner design encompasses **new levels of automation**, including the ability to operate in auto cut, auto sump and loading mode capability. The auto cut system which is in the final stages of refinement also includes the system intelligence to make horizon corrections while maintaining smooth floor profiles. These features, combined with high-powered, twin 274-kilowatt cutter motors, **provide a highly productive, repeatable and accurate method of mining capability.**

The design also focused on the roof support and consumables materials handling system. The roof and rib bolters come with a high degree of automation, operated via microprocessor control technology, **minimising the need for operator intervention throughout the roof support installation process.**

The system has the intelligence to both drill and install roof supports at maximum rig feed and drill rotation performance levels, while taking into account variations in strata hardness and geotechnical conditions.

The roof support system includes a user-friendly operator interface that caters to varying lengths of roof and rib bolts, fiberglass rib dowels, spin-to-stall resin applications and a range of mega bolt specifications.

*“Within a short period of time, the 12ED25 was setting and breaking its own production records on a weekly basis.”*

Jordan Taylor, Moranbah mine superintendent

**The product design team prioritised increasing safety, productivity, reliability and minimizing life cycle cost.**

The development team focused on the hydraulic design, including the application of hard piping, which resulted in the 26 percent reduction in hydraulic hoses. The team also incorporated a single centralised hydraulic control manifold for ease of maintenance at the rear of the machine.

## The Solution:

A team of operators were selected to trial the 12ED25s at Moranbah North Mine, testing its capabilities before introduction at Grosvenor Mine. They were supported by Joy Global's JoySmart<sup>SM</sup> Solutions team, who provided on-the-job training, onsite technical support and reviewed performance diagnostics round-the-clock.

"While there is always resistance to new technologies, I was very impressed with how well the operators adapted to using the electro-hydraulic push buttons rather than levers and how quickly they embraced the use of automation," said Jordan Taylor, Moranbah mine superintendent. "**By relying on automation, we were confident that every bolt was consistently installed to the same standard.** Within a short period of time, the 12ED25 was setting and breaking its own production records on a weekly basis."

**The crews set records for the 12ED25, including: best shift production of 42 meters advance and best day's production of 78 meters advance.**

Following the successful trial at Moranbah North, two 12ED25s were introduced at Grosvenor Mine in March 2015 with a third planned to go into service in July 2015. The same production crews were used, allowing the mine to ramp up to full production within the first 10 days of operation.

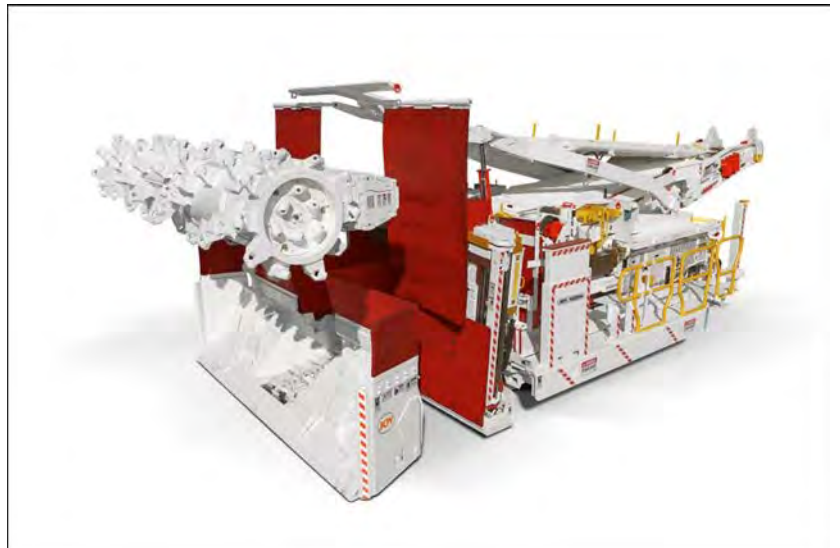
*"The 12ED25 has shown, in a relatively short time frame, it has the potential to outperform the current generation of bolter miners."*

Glen Britton, head of underground operations for Anglo American Coal

## The Results:

Within a short period of operation at Grosvenor Mine, the 12ED25 eclipsed the performance records set at Moranbah, **achieving 53 meters advance in a single shift, at a rate of 6.5 meters per operating hour.**

"We are very pleased with the 12ED25s," Britton said, "both from a mining productivity performance and a machine reliability perspective. The 12ED25 has shown in a relatively short time frame it has the potential to outperform the current generation of bolter miners."



**JOYGLOBAL**

Every customer is a reference<sup>SM</sup>