Case Study: Managing Water and Gas Ingress with StrataLock® Resin at an Underground Mine

BACKGROUND

At an Underground Mine, floor and rib softening around longwall seal locations caused significant water and gas ingress into the mine workings. These issues posed serious risks to both safety and operational efficiency, threatening to delay production and compromise the stability of the mine's infrastructure. Traditional ground consolidation methods would have required extensive exclusion zones, resulting in halted gas drainage operations and further downtime.

THE CHALLENGE

The primary challenge was to manage the ingress of water and gas around the longwall seals while maintaining uninterrupted access for essential gas drainage operations. Due to the hazardous nature of traditional ground consolidation techniques, restricted access zones would have been required in the area, severely limiting inbye activities and delaying critical processes.

THE SOLUTION

StrataLock® Resin was injected around the longwall seal locations, providing a highly effective solution to manage both water and gas ingress. The resin's unique formulation allowed it to fully displace water and set without being hindered by its presence. This ensured that the seal areas were properly stabilised, preventing further ingress issues. While StrataLock was being injected, access inbye of the injection point remained undisturbed, unlike traditional methods that would have required exclusion zones. This enabled gas drainage operations to continue unobstructed, ensuring critical safety and ventilation activities remained on schedule.

RESULTS

Water and Gas Control: StrataLock® Resin successfully managed water and gas ingress, fully displacing water during the injection process and setting effectively in its presence.

Continuous Operations: The elimination of exclusion zones during StrataLock injection allowed gas drainage operations to proceed without interruption, significantly reducing potential delays.

Enhanced Safety and Efficiency: The ability to stabilise the longwall seal areas without halting production or inbye access marked a significant improvement over traditional methods, leading to enhanced operational efficiency and safety.

CONCLUSIONS

The application of StrataLock® Resin at the Underground Mine provided an innovative and efficient solution to the complex challenge of managing water and gas ingress around longwall seals.

By maintaining full operational access during injection and effectively sealing the affected areas, StrataLock® not only improved safety but also ensured continuity of critical operations, preventing costly production delays.

"The leadership to develop this product rises above with the potential for industry-wide impact. Reducing long-term health risk is also an excellent outcome"

"The cost reduction and environmental impact in their solution was impressive, with long-term cross-industry applicability"

Queensland Mining Awards Judge's