ENGINEER'S PERSPECTIVE ON SCRAPER WINCHES AND RBE

31 July 2026

Background

- Scraper winches and rail-bound equipment are mission-critical systems that underpin safe and productive underground mining
- Their performance depends not only on mechanical reliability but also on disciplined engineering practices, effective maintenance and strong operational controls.
- Engineering is about ensuring these systems are safe, reliable and fit for purpose throughout their service life
- The foremost engineering responsibility is to protect lives therefore, every design, modification, inspection, and maintenance activity should reduce risk and prevent harm.

Engineering Integrity is Non-negotiable

Equipment integrity is maintained by ensuring:

- Compliance with approved engineering standards and specifications
- Proper installation and commissioning
- Timely inspections and preventive maintenance
- Formal management of modifications and repairs
- Verification that safety-critical components perform as intended

Scraper Winches Require Continuous Engineering Oversight

From an engineering perspective, attention should be drawn to:

- Wire rope condition and replacement criteria
- Drum, gearbox, brake and clutch performance
- Secure anchorage and structural stability
- Guarding of rotating and moving components
- Electrical protection and emergency stop systems
- Safe operating procedures

A scraper winch should never be operated if any critical safety system is defective.

Rail-Bound Equipment Demands System Reliability

Rail-bound equipment must operate as an integrated transport system. Engineering priorities should include:

- Rail alignment and trach condition
- Locomotive braking systems
- Couplings and drawgear integrity
- Wheel condition and wear
- Signaling and communication systems

Human Factors Matter

Engineering solutions alone cannot eliminate all risk. Safe performance also depends on:

- Competent operators and artisans
- Clear communication
- Effective supervision
- Compliance with procedures
- A culture that encourages reporting hazards and stopping unsafe work

Leadership Through Engineering

Engineering leaders should:

- Promote adherence to engineering standards
- Support training and competency development
- Verify effectiveness of critical controls
- Challenge unsafe practices
- Investigate incidents thoroughly and implement corrective actions
- Promote learning from incidents
- Foster collaboration between engineering, operations and maintenance teams
- Not succumb to production pressures

Conclusion

- Engineer's role extends beyond maintaining equipment, it is about ensuring the integrity of systems that safeguards lives and sustain productivity
- Scraper winches and rail-bound equipment must be managed with disciplined engineering, proactive risk management and continuous improvement
- When engineering excellence is combined with operational discipline, mines become safer, more reliable and more productive

"Engineering excellence is measured not only by equipment performance, but by every worker who returns home safely at the end of the shift."

THANK YOU!