

St Barbara's Simberi Gold Mine

Enhancing Infrastructure Maintenance with RapidBlast™ Wet Abrasive Blast Equipment



CASE STUDY

Customer Profile

St Barbara's Simberi Gold Mine, located on the northernmost island of the Tabar group in Papua New Guinea, is a key operational site engaged in an open-cut mining approach. This site, characterized by its rugged terrain and steep coastal lines due to its volcanic origin, faces unique operational challenges. With an existing infrastructure poised for a significant lifespan extension through a new sulphide project, maintaining robust infrastructure is crucial. The mine is committed to sustainability, aiming to mitigate the environmental impact of its operations while maintaining high safety and operational standards.

Challenge

Simberi Gold Mine's remote location and harsh tropical climate, characterized by extremely high humidity levels, impose severe corrosion on its infrastructure, including critical components such as tanks, pipes, and steel frameworks. Poor water quality further compounds the issue. The need for effective and environmentally sustainable remediation techniques is compounded by the logistical challenges of operating in a remote environment. Traditional dry sandblasting methods had proven inefficient and environmentally detrimental due to excessive dust generation, leading to a pressing need for a cleaner, more sustainable solution.



**The Requirement:**

The mine sought a durable and an efficient surface preparation system that could handle the tough environmental conditions without exacerbating them.

The system had to:

- Remove corrosion and prepare surfaces for protective coatings.
- Ensure environmental compliance, particularly in minimizing dust and noise pollution.
- Provide operator safety and prevent any risk associated with explosions or inhalation of dust.
- Be robust enough for continual use in a remote, high-humidity environment

**Solution & Implementation:**

The chosen solution was the RapidBlast™ SD140 Wet Abrasive Blasting Equipment, custom-mounted on a purpose-built, hot-dip galvanized skid designed specifically for the challenging conditions of the Simberi Gold Mine.

This setup included:**RapidBlast™ SD140 Equipment:**

Constructed from 8mm stainless steel and adhering to both Australian AS1210 and European CE and ATEX standards, this equipment offers robust performance in explosive environments. It features a 155 Ltr powder coated pressure vessel, designed for ergonomic handling and efficiency, even in the most extreme conditions.

Skid Platform:

The custom-built platform supports over 3 metric tons, accommodating the RapidBlast equipment, a tonne of garnet, a 1000-liter water tank (IBC), a hose reel, and a water filter system. The skid's bright yellow paint enhances visibility and safety, crucial in the mine's operating environment.



Comprehensive Surface Preparation Tools and Coatings:

This includes high-quality spray paint equipment like the GRACO King 60:1 Sprayer and epoxy protective coatings, selected for their strong adhesion properties and corrosion resistance.

Environmental and Safety Enhancements:

The solution integrates a three-stage water filtration system and a robust diaphragm pump setup to ensure the environmentally friendly disposal and reuse of resources.

Inspection and Quality Control:

The inclusion of an Elcometer Digital Inspection Kit ensures that all prepared surfaces meet the stringent cleanliness standards required for effective coating application.



Outcome and Benefits:

The implementation of the RapidBlast™ SD140 has revolutionized maintenance processes at Simberi Gold Mine by,

- Significantly Reducing Environmental Impact: The wet blasting method captures up to 95% of dust particles, dramatically reducing airborne contaminants and aligning with the mine's environmental goals.
- Enhancing Surface Preparation Quality: The ability to achieve a consistent SA2.5 cleanliness standard across different materials ensures the longevity of the applied protective coatings, reducing the frequency and cost of future maintenance.
- Improving Safety and Operational Efficiency: The ergonomic design and easy operability of the equipment, combined with enhanced safety features, minimize operator fatigue and risk.



Conclusion:

The RapidBlast™ solution, tailored to meet the specific needs of Simberi Gold Mine, has not only addressed the immediate maintenance challenges but also set a new standard in sustainable, efficient infrastructure care in harsh environments. This case study exemplifies how innovative engineering solutions can effectively align with stringent environmental and safety standards to deliver outstanding operational improvements in the mining industry.