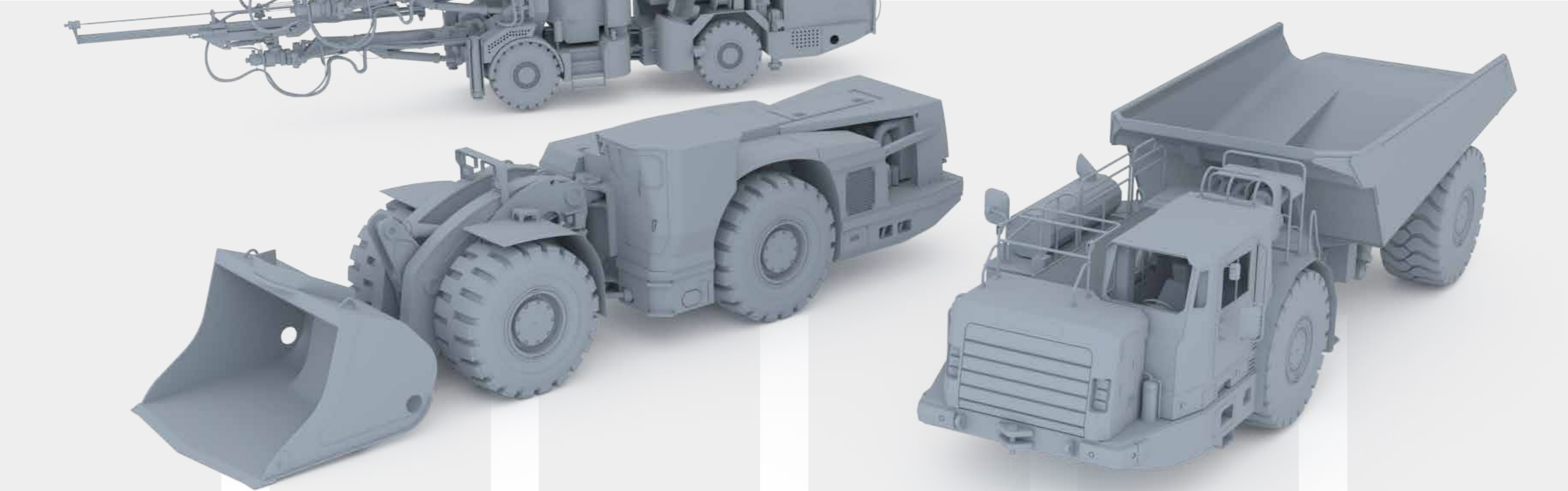


Muirhead protection solutions

Machine protection systems that support safe, controlled,
and consistent equipment operation



Underground machines



Muirhead Engine Idle Down Controllers

Designed to moderate extreme operating temperatures before final shutdown occurs on mobile equipment. A cost-effective means of protecting diesel engines and turbo components from excessive wear due to immediate shutdown without an idle period.



Muirhead Park Brake Door Alarms

Preventative action kits designed to stop machines from being left unmanned, in an unsafe condition ensuring a machine's park brake is engaged before an operator exits the machine



Muirhead Engine Protection Systems

Extremely reliable, easy to install and simple to use, this system can be customized to monitor known problems and functions commonly associated with equipment failure.



Muirhead Vehicle Overspeed And Engine Over RPM Systems

Warn and prevent operators from overspeeding and over-revving their machines to prevent machine damage from operator abuse.



Muirhead Fuel Cap Isolation

Designed to prevent the machine operator from starting the machine and driving away with the fuel filler still attached, preventing damage to machines, refueling stations and hoses.

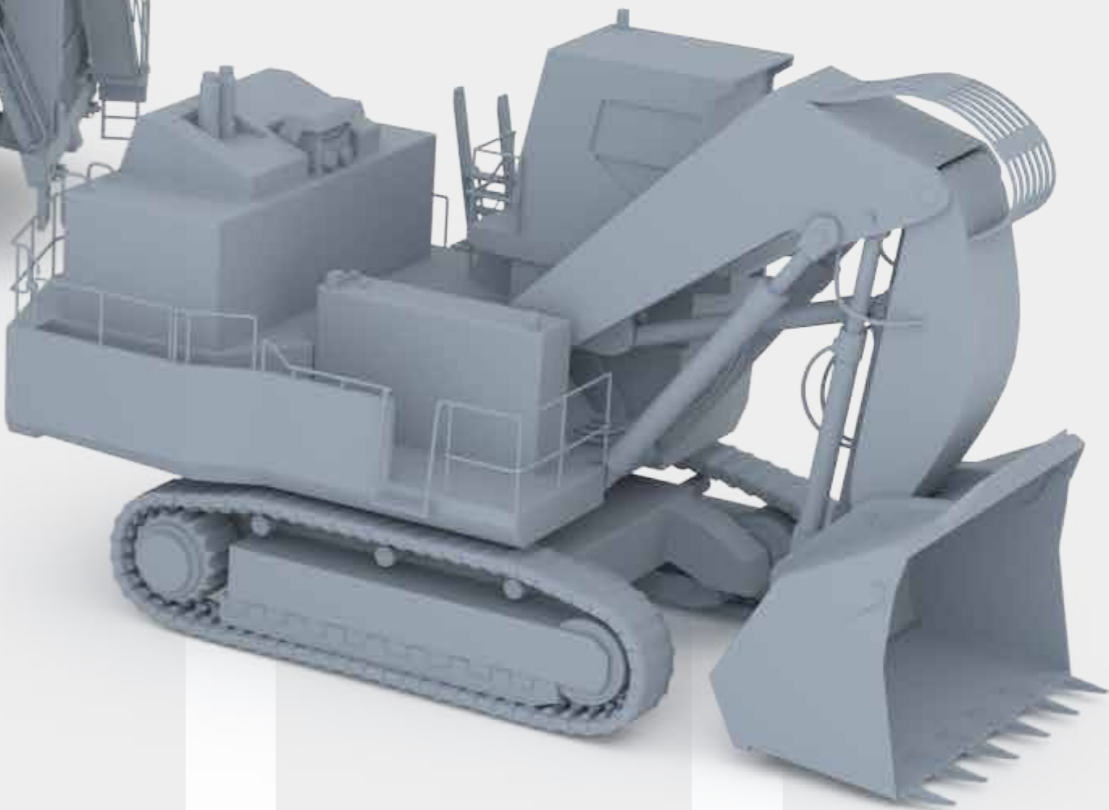
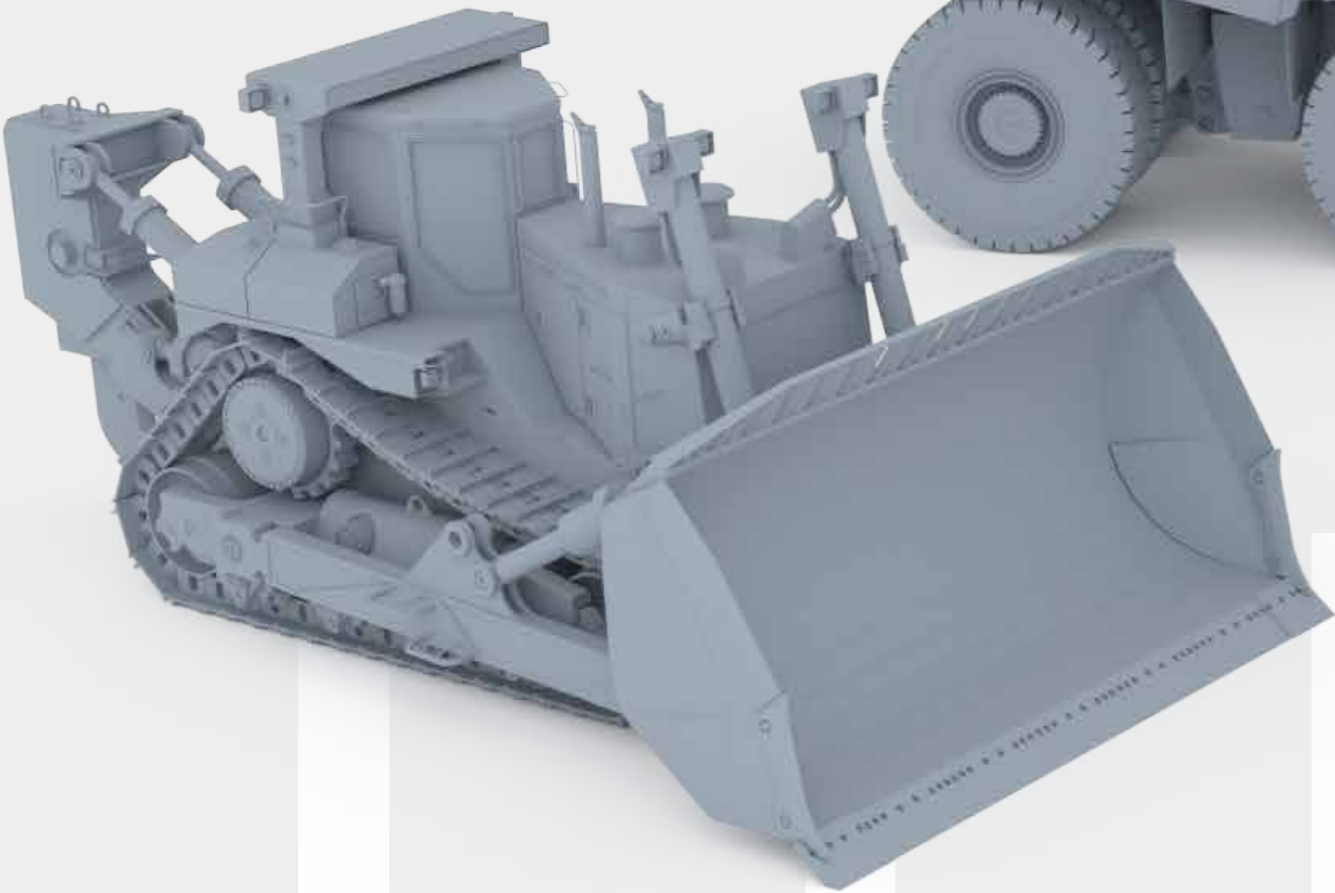


Muirhead Raised Tray Warning Systems

Minimize these risks by alerting the operator and personnel within the area that the vehicle's tray is in a raised position with a programmable ultra sonic sensor for the operator.



Surface machines



Muirhead Speed Limiters

This device can be further enhanced with the use of a Zone Controller which will enable different speed settings for different zones on site to ensure a machine is travelling at the optimum speed at all times to further improve productivity.



Muirhead Park Brake Door Alarms

Preventative action kits designed to stop machines from being left unmanned, in an unsafe condition ensuring a machine's park brake is engaged before an operator exits the machine



Muirhead Fatigue Monitoring

Operator fatigue has been identified as a major contributor of machine damage and reduced productivity.



Muirhead Power Mode Bypass

When the Haul Truck is carrying a load, "power mode" is engaged. And, when it is empty, it automatically transitions to "economy mode" to reduce overall fuel and maintenance costs.



Muirhead Raised Tray Warning Systems

Minimize these risks by alerting the operator and personnel within the area that the vehicle's tray is in a raised position with a programmable ultra sonic sensor for the operator.



Muirhead Incline Alarm Systems

Warn machine operators that the machine they are operating is on a dangerous incline (at angles over 35° or 60°) with an audible and visual warning for a pre-set time after which the engine will be shut down.



Muirhead Idle Timer

The Muirhead Idle Timer was developed to ensure machines were able to cool down before they were shut down to prevent engine and turbo damage.

Having the Idle Timer in place allows shutdown to be managed through a configurable setting; eliminating damage and significantly reducing costly unplanned downtime which results in increased production. Immediate gains in machine availability and production hours were experienced across fleets.

Idle Timers are easy to install and maintain and require no ongoing maintenance. The benefits of the Idle Timer far outweigh the small cost involved in introducing the product.

One client reported the elimination of turbo damage to its fleet of trucks following the installation of Idle Timers; saving them thousand of dollars in repairs.

Muirhead Speed Limiters

The Muirhead Speed Limiter controls the speed of machines to prevent accidents. However, the benefits extend to: greater fuel economy, reduced unplanned downtime, and extended life of all major machine components.

This small device is delivering big results in terms of productivity. In one case the Speed Limiter extended machine life by a further 2000 hours and reduced fuel usage by 40%.

This device can be further enhanced with the use of a Zone Controller which will enable different speed settings for different zones on site to ensure a machine is traveling at the optimum speed at all times to further improve productivity.

The Speed Limiter is not restricted to just travelling speed, but can also limit engine speed. The Engine Overspeed System is designed to prevent major component damage and reduce engine life. The solution will monitor and prevent overspeed by limiting or restricting engine RPM to below or at OEM specified levels.

The Overspeed Systems are universal in design to allow for installation across all machine types and brands.

Muirhead Park Brake Interlock

Entering and exiting large mining machines can be precarious due to numerous reasons beyond control, so RCT has come up with a solution to mitigate a risk it can control with the Muirhead Park Brake Interlock.

This warning system reduces the risk of an accident resulting from a machine rolling when the park brake not been applied correctly. Improving machine use helps to drive productivity gains and extends machine life.

Introducing the Park Brake Interlock has proven to improve site's operating habits which, in turn has reduced machine damage.

Muirhead Fatigue Monitoring

Operator fatigue has been identified as a major contributor of machine damage and reduced productivity. RCT has developed a range of easy-to-use Muirhead Fatigue Monitoring systems to help combat the problem without disrupting production or increasing the risk of accidents.

The systems come in two options; Reflex and Active to cater to different requirements. The Reflex Warning System monitors the time it takes for the operator to reset the warning once it goes off. If the system detects a slower reaction time, the warning will ensue more frequently.

The Active Fatigue Warning requires the operator to react when prompted, however this warning can be programmed to operate at times fatigue is most prevalent. For example, one site found that operators working between the hours of 10pm-3am were most prone to fatigue. Upon implementation of the system, the user noticed a considerable decrease in operator fatigue and accidents.

Muirhead Fuel Lockouts

Safeguard operators during refueling to prevent incidents such as driving off with the fuel nozzle still attached by ensuring the machine remains locked out, in a safe state for the duration of the daily task.

Muirhead Fuel Lockouts are suitable across all machine types and brands and has proven to improve machine availability and operating practices.

Clients already utilizing the Fuel Lockouts have eliminated damage to refueling bays. This has saved companies in both repairs and downtime costs associated with operators driving off with the nozzle attached.



Parts		
3179 5164 21	Idle Timer kit	
3179 5150 16	Excess Idle Shutdown Kit	
3179 5150 17	Idle Timer with Start Inhibit controller	



Parts		
3179 5158 65	Electronic Throttle Speed Limiter	
3179 5157 26	Speed Limiter 12V Throttle Cable	
3179 5150 09	Speed Limiter 24V Throttle Cable	



Parts		
3179 5164 13	Park Brake Warning Kit	
3179 5150 10	Park Brake Warning Kit Single Switch	
3179 5150 12	Door Open Park Brake Interlock Kit	



Parts		
31795175 89	Fatigue Warning Kit	



Parts		
3179 5150 18	Live Refuel Lockout Controller	
3179 5159 19	Fuel Cap Isolation System	
3179 5150 19	Dual Fuel Cap Isolation System	

Muirhead Incline Controllers

Machine roll overs on site are all too prevalent and results in costly and significant disruptions that interfere with productivity on site. Muirhead Incline Controllers assist operators in combating the issue; empowering them with the information on their operating conditions and machine position, allowing them to make better decisions.

Although Incline Controllers can be equipped to any mobile machine they are particularly sought after for use on bulldozers, which often work on steep incline and operate at critical angles.

Muirhead Engine Protection

Engine damage is costly and can significantly disrupt mine production for extended periods. To mitigate this risk and ensure long-term machine availability, the Muirhead Engine Protection System (EPS) was developed for heavy-duty machines to ensure long-term machine availability.

The EPS prevents engine damage if a fault was to arise. It has proven to be an industry leading product and as a result it is one of the most popular engine protection solutions available in the mining industry today.

This solution is programmable to three levels of protection in addition to being able to lockout operation in order to prevent catastrophic engine failure.

The kits can be configured to suit all machine types and brands; regardless of the size of machines. EPS should be included on all mining machines to prolong engine life increase productivity levels.

Muirhead Tray Lockouts

A haul truck is the critical link in the surface mining process in determining if production tons are met. Being able to prevent avoidable accidents and damage to these machines can ensure productivity targets are continually met.

Damage to a haul truck's tray is the most common occurrence, particularly with oversized or modified trays. To prevent this damage, the Muirhead Tray Lockout solutions alert the operator or inhibit the tray from rising in a situation that could result in damage. These devices are now widely used to accommodate the increase in custom trays being installed on haul trucks to assist in increasing production rates.

Tray Lockouts are simple to install and maintain and configurable; delivering peace of mind to mining managers.

Muirhead Power Mode Bypass

Managing Haul Truck fuel consumption efficiently is an easy and effective way to help streamline operations on site.

The Muirhead Power Mode Bypass ensures the "power mode" function on a Haul Truck is used correctly, every time. It's the easiest way to guarantee the longevity of the trucks and facilitate high productivity – which is what all mine managers strive for.

Mining operations across the globe are facing rising costs due to fuel price hikes and maintenance overheads and the Power Mode Bypass is helping overcome this by reducing these costs and assisting in the viability of an operation.

The innovative system can be installed on Komatsu 785-5 and 785-7 Haul Trucks with custom kits available for other haul truck models and brands where a "power mode" selection is available.

The controller is designed to automatically select either "power mode" or "economy mode" via an interface to the machine's switches. When the Haul Truck is carrying a load, "power mode" is engaged. And, when it is empty, it automatically transitions to "economy mode" to reduce overall fuel and maintenance costs.

Muirhead Overcrank Controllers

If a machine's engine is cranked and fails to start, continued cranking of the engine results in excessive heat and load on the starting circuit. This results in damage or premature failure of batteries, starter motors and cabling.

The kit preserves the starting system by preventing crank when the engine is turned on and limiting the number of times the engine may be cranked; then locking out the start circuit to allow for system components to cool down. This reduces the flattening of batteries and abuse of an engine's starting components.

The system will provide a visual indication to the operator – alerting them when a starting circuit is isolated. An override switch may be incorporated to allow maintenance staff to carry out servicing tasks without the start circuit being inhibited.

Basic on-machine configuration of both the crank time and start interlock periods, or advanced programming are available through a PC using the Muirhead Programmable Controller Utility (PCU) software package.



Parts		
3179 5150 20	35 Degree Incline controller	
3079 5150 21	60 Degree Incline controller	
3179 5150 24	Fully Programmable 10 to 45 Degree Incline Controller	



Parts		
3179 5154 74	Six Function Water Cooled EPS Panel Only	
3179 5150 25	Six Function Air Cooled EPS Panel Only	

Note: Contact your nearest Epiroc Customer Center for support in selecting the right Engine Protection kit and to explore all available parts.



Parts		
3179 5150 29	Raised Tray Alarm Kit	
3179 5150 30	Raise Raised Tray Transmission Inhibit Kit	
3179 5150 27	Tray Angle Kickout	
3179 5150 28	Smart Tray Collision Warning System	



Parts		
3179 5150 31	Power Mode Bypass Controller to Suit Komatsu 785-5 and 785-7	

Note: Other Haul Truck models and brands are available upon request.



Parts		
3179 5150 32	Overcrank Controller Kit 24 Volt	
3179 5150 33	Overcrank Controller Kit 12 Volt	

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