

MOTION METRICS™

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are present everywhere
you do business.

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MOTION METRICS™

SHOVELMETRICS™ GEN 3

Optimize Haulage and Avoid Equipment Downtime

with Payload Monitoring and G.E.T. Detection
powered by AI

ShovelMetrics™ is the most advanced shovel monitoring solution, featuring **AI-driven G.E.T. detection** to quickly identify missing teeth, lip shrouds, or wing shrouds, **preventing costly crusher obstructions and minimizing downtime**. With **real-time payload monitoring**, ShovelMetrics™ Gen 3 detection system ensures optimal truck loading, avoiding underloading or overloading and maximizing efficiency.

- ✓ **Payload Monitoring**
- ✓ **Missing Tooth Detection**
- ✓ **Missing Lip Shroud Detection**
- ✓ **Missing Wing Shroud Detection**
- ✓ **Tooth Wear Monitoring**
- ✓ **Boulder Detection**
- ✓ **Fragmentation Analysis**
- ✓ **Blind Spot Reduction**
- ✓ **Video Recording**



How a Chilean Copper Mine Used SHOVELMETRICS™ to Save \$6.5M

After successfully trialing the system, a large open-pit copper mine near Santiago, Chile installed the **ShovelMetrics™** monitoring system to mitigate the risk of missing shovel teeth. The system exceeded key performance indicators set by the mine and helped the mine avoid an annual production loss equivalent to about USD \$6.5M.

The system is feasible to install, operate, and maintain, does not interfere with the mining operation, and meets the established safety standards.

The system can alert the shovel operator to missing teeth through an in-cab audio and visual system that does not require a connection to MetricsManager™ Pro (Motion Metrics' web-based data analysis platform). This means that **ShovelMetrics™** monitoring system works even when the shovel is operating in an area of the mine without a WiFi connection to transmit data to the dispatch system.

The system surpassed expectations, delivering even higher KPI results than those promised by Weir Motion Metrics in the Test Protocol.

In conclusion, the **ShovelMetrics™** monitoring solution detected 100% of the missing shovel teeth that occurred during the trial period; armed with this information, the mine was able to activate alarms and action protocols promptly to mitigate the risk of crusher obstructions. This pilot test validates the effectiveness of the Codelco División Andina mine's internal protocols and employees while demonstrating the value of the **ShovelMetrics™** technology. The system ultimately provided a strong return on investment by preventing an estimated production loss worth approximately USD \$6.5 million.

Financial Impact

In sum, the **ShovelMetrics™** missing tooth detection system mitigated an estimated production loss of about USD \$6.5 million, as shown in Table 1.

Cu / Mo	Profit (USD)
Cu	\$5,876,029
Mo	\$623,241
Total	\$6,499,270

ShovelMetrics™ detected 100% of the missing shovel teeth that occurred during the trial period.

SHOVELMETRICS™ GEN 3

Keeps mine personnel safe and pays for itself in months

Prevent dangerous and costly crusher obstructions by receiving **up to the minute alerts** when the system detects that a **tooth, lip, or wing shroud has gone missing**. This prompt insight allow contaminated loads to be diverted away from the primary crusher, helping to **reduce expensive crusher downtime and equipment damage**.

With real-time **payload monitoring** feedback for the operator, **ShovelMetrics™ Gen 3** ensures optimal truck loading, helping mines manage underloading or overloading issues for more efficient truck loads.

ONE SYSTEM, MANY BENEFITS.

Features

- ✓ **Payload Monitoring**
- ✓ **Missing Tooth Detection**
- ✓ **Missing Lip Shroud Detection**
- ✓ **Missing Wing Shroud Detection**
- ✓ **Tooth Wear Monitoring**
- ✓ **Boulder Detection**
- ✓ **Fragmentation Analysis**
- ✓ **Blind Spot Reduction**
- ✓ **Video Recording**

Design and Construction

Every aspect of the **ShovelMetrics™ Gen 3** monitoring solution has been meticulously engineered to operate in the harshest mining environments. Our hardware is built to military standards, ensuring durability against extreme heat, vibration, and altitude.

Secure Cloud Reporting

Like all **Motion Metrics™** products, the **ShovelMetrics™ Gen 3 shovel monitoring solution** interfaces with our centralized data analysis platform, **MetricsManager™ Pro**. Users with authorized credentials can receive SMS and email boulder notifications, easily review incident logs with insight into shovel operator performance, and access particle size data from anywhere.

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Payload Monitoring

Every load counts: Unlock the full potential of your haulage operation

In open-pit mining, every tonne moved matters. Yet without accurate, real-time payload data at the shovel, mines risk underloading, overloading, and missing out on millions in lost productivity, fuel waste, and equipment wear.

ShovelMetrics™ Gen 3 delivers payload monitoring with AI precision for hydraulic shovels, backhoes, and excavators, ensuring every truck is loaded right, every time.

With no extra screens required, **ShovelMetrics™ Gen 3** delivers critical payload data directly to the operator through a rugged, integrated touchscreen display. Operators can instantly see the current truck ID, its target capacity, and the weight of each bucket load in real time.

As material is transferred, the system tracks the cumulative payload for the truck, helping operators fine-tune the final pass to hit target loads with precision.

This intuitive interface empowers operators to load smarter, faster, and more consistently, every cycle.

Payload Monitoring solves

- Underloading** - Lost tonnes, more cycles, lower throughput
- Overloading** - Equipment strain, safety risks, more maintenance
- Fuel Inefficiency** - Higher burn per tonne
- Data Gaps** - Manual reporting, reactive decisions
- Operator Variability** - Inconsistent loading performance

How it works

- Real-time payload feedback** for operators in the cab
- Cloud-based reporting** included for supervisors and planners
- AI-powered sensors** for accurate bucket-by-bucket measurement
- Seamless integration** with existing FMS systems and planning tools
- Training & Support** services are always available to maximise value



Rugged, easy to use touch-screen operator interface provides **real-time payload feedback** for bucket and current truckload.



ShovelMetrics™ Gen 3 is more than a payload tool, it's a performance multiplier.

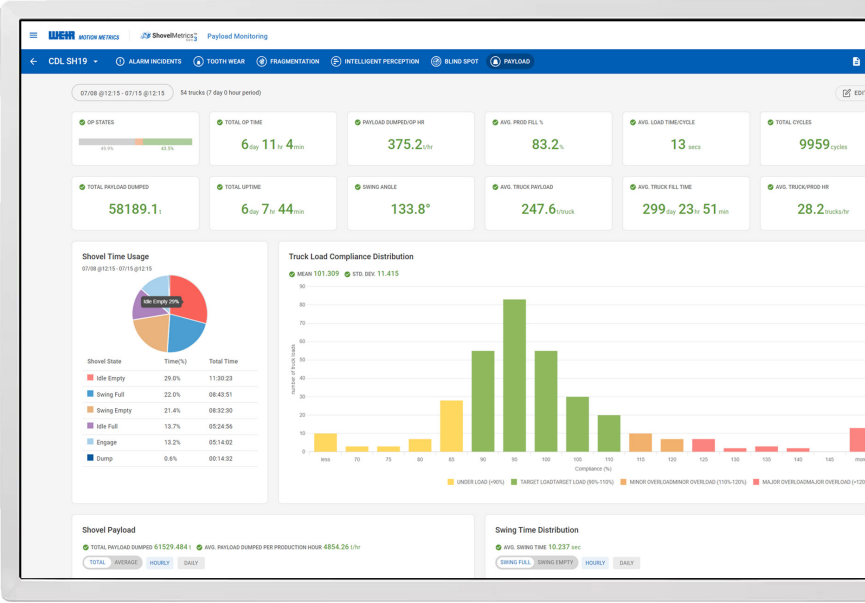
Paylod Monitoring for ShovelMetrics™ Gen 3 is an add-on feature that helps operators consistently hit target payloads, reducing variability and improving loading efficiency.

While real-time data flows into the cab, shovel state and payload metrics are automatically captured and securely saved to the cloud for easy analysis which can be used for improving operator training, reviewing shift performance and planning.

One Dashboard. Every Shovel. Full Control.

With **MetricsManager™ Pro**, Payload Monitoring data from ShovelMetrics™ Gen 3 is automatically collected, processed, and visualized—giving supervisors, planners, and operations managers a complete view of loading performance across the pit.

- Track shovel productivity per shift
- Monitor payload accuracy and operator consistency
- Analyze trends in swing time, passes per truck, and bucket fill distribution
- Identify training needs and performance gaps instantly



Visualized payload and loading metrics onthe cloud help **identify trends, operator performance, and opportunities for optimization over time.**

