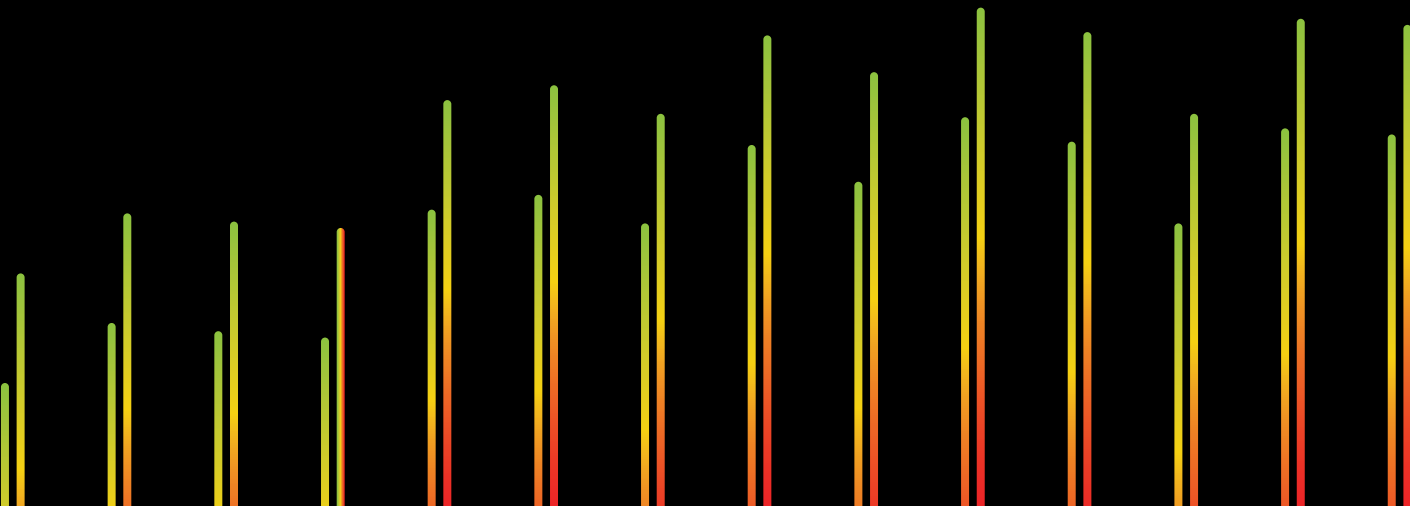




# PRODUCT OVERVIEW



# Welcome

The WearVue journey began with a shared vision between two industry professionals, Glenn Brearey and Mathew Rigby. Glenn's extensive experience in the mining sector, coupled with Mat's deep understanding of maintenance and operational efficiency, highlighted a critical gap in the market: the need for a proactive, real time wear monitoring solution.

This realisation, fueled by their combined expertise in manufacturing and maintenance, ignited the spark that led to the creation of WearVue®. The innovative technology, centred around visual wear indication, empowers maintenance teams to make informed decisions, optimise asset lifespans, and reduce downtime.

**WEARVUE**  
Wear Monitoring Made **Visual**





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# What is WearVue?

## See Wear. Save Money.

WearVue is a revolutionary visual wear indicator system that empowers you to see wear and tear on your equipment before it becomes a problem. Say goodbye to unexpected breakdowns, costly downtime, and safety risks. With WearVue, you can proactively manage maintenance, optimize operations, and protect your bottom line.

## Safety First

In industries where heavy machinery and critical components are commonplace, safety is paramount. WearVue acts as an early warning system, allowing you to identify potential hazards before they escalate into accidents. By visually monitoring wear and tear, you can prevent equipment failures, reduce the risk of injuries, and create a safer working environment for your team.

## Kanban for Wear: Simple, Visual, Effective

Inspired by Kanban, a visual management system widely used in manufacturing, WearVue utilises a simple, colour-coded system that anyone can understand. It's like a traffic light for your equipment:

- **Green:** Good to go. Your equipment is in excellent condition.
- **Yellow:** Proceed with caution. Wear is progressing; monitor closely.
- **Red:** Stop and replace. Wear has reached a critical level; immediate action is required.

This intuitive approach leverages the power of color, the universal language that our brains process faster than any other visual cue. With WearVue, wear assessment is as simple as a glance, empowering everyone, regardless of technical expertise, to make informed decisions about equipment maintenance and safety.

## Just In Time (JIT)

WearVue seamlessly integrates with your Just-In-Time (JIT) maintenance strategies. By aligning the colour-coded wear indicators with the lead times of replacement parts, you can proactively manage your inventory and minimize downtime. When a WearVue indicator turns yellow, it triggers the order for a replacement part, ensuring it's readily available when the indicator turns red, signaling the need for immediate action. This streamlined process optimises your supply chain and keeps your operations running smoothly.

# What is WearVue?

## Innovation at its Core

WearVue is the first wear monitoring system that truly democratises wear assessment. Its patented technology, combined with its intuitive colour-coded system, makes it a game-changer for industries reliant on heavy machinery and critical components. From mining and aviation to manufacturing and construction, WearVue offers a versatile solution for proactive wear management. Embrace innovation and experience the transformative power of visual wear monitoring.

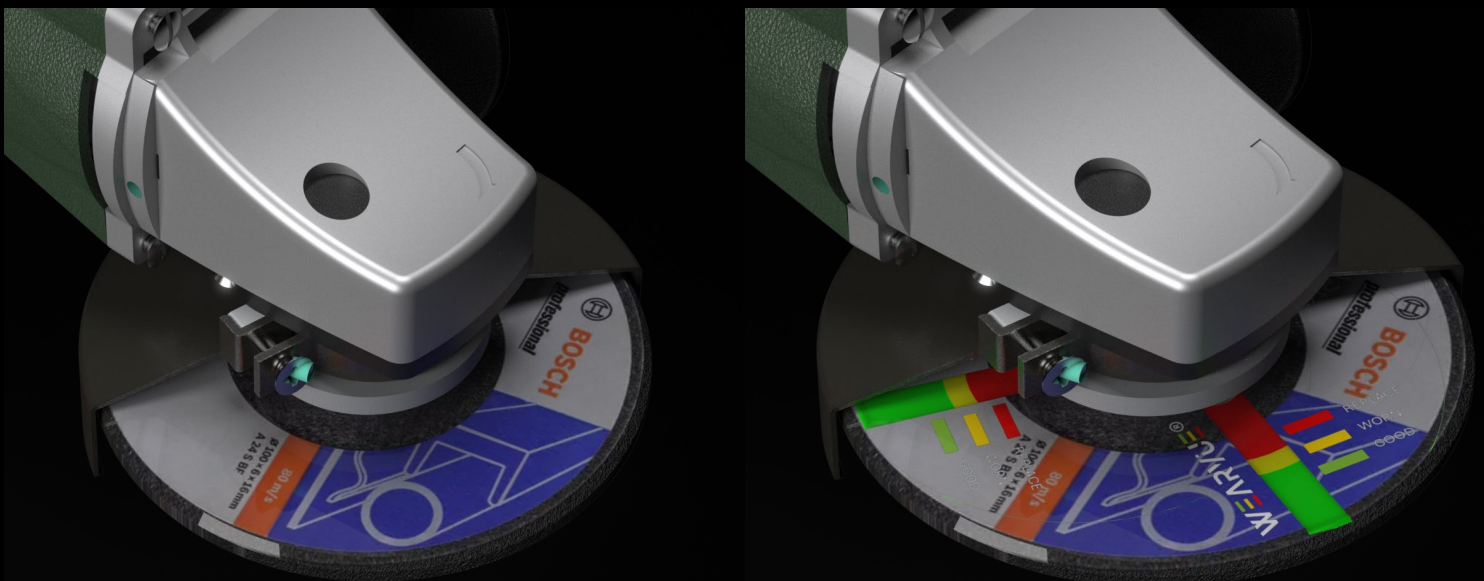
## Boost Productivity, Optimise Operations

Unplanned downtime is a productivity killer. WearVue empowers you to schedule maintenance proactively, minimising disruptions and maximizing equipment uptime. By identifying wear early, you can avoid costly breakdowns, optimise resource allocation, and keep your operations running smoothly.

## Experience the WearVue Difference

WearVue isn't just another wear monitoring system; it's a paradigm shift in equipment maintenance and safety. With its visual simplicity, adaptability, and focus on proactive solutions, WearVue empowers you to see wear, save money, and optimise your operations.

WearVue takes the complexity out of wear monitoring. Forget about specialised tools, complicated measurements, or expert interpretations. Our system is designed for everyone, from seasoned technicians to those with no technical background.





# WearVue Indicators

## WearVue Indicators: The Heart of Proactive Maintenance

In the demanding world of mining, heavy machinery and critical components are constantly subjected to wear and tear. Traditional wear monitoring methods, such as visual inspections, scheduled maintenance, and measurements using specialised equipment, can be time-consuming, subjective, and may even miss crucial signs of wear. This can lead to unexpected breakdowns, costly downtime, and potential safety hazards.

WearVue indicators offer a proactive and intuitive solution to these challenges. Unlike traditional methods, WearVue Indicators provide real-time, colour-coded visual cues that indicate the level of wear on a component. This eliminates the need for manual inspections, specialised tools, or expert interpretations, making wear assessment quick, easy, and accessible to everyone. By providing instant visual alerts, WearVue allows for timely maintenance interventions, preventing costly downtime and maximising the lifespan of critical components.

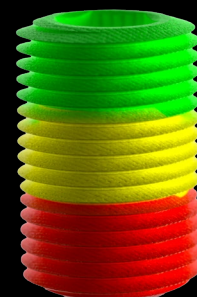
### Housed Indicators

- **Design:** These indicators are encased in a protective housing, typically made of durable stainless steel or titanium alloy.
- **Ideal for:** Harsh environments where the indicator may be exposed to excessive impact, vibration, or corrosive substances.
- **Available in threaded or plain versions** for different installation methods (threaded or welded).



### Grub Screw Indicators

- **Durable Construction:** The indicators are made from high-impact, abrasion-resistant materials like polycarbonate, nylon, acetal, or appropriate metal alloys.
- **Cost-Effective:** Grub Screw Indicators offer a cost-effective solution for wear monitoring, making them an attractive option for a wide range of applications.



# WearVue Indicators



## Plug Indicators for HME Tyres

- Design: These indicators are specifically engineered for tyre applications. They are typically made from durable silicone compounds that can withstand the dynamic forces and deformations experienced by tyres during operation.
- Applications:
  - Haul Truck Tyres
  - Loader Tyres:



## Plug Indicators for Fixed Plant Operations

WearVue indicators offer a proactive and safe solution for monitoring wear in these challenging environments. By providing real-time visual cues, they eliminate the need for manual inspections in confined spaces or hazardous areas, improving worker safety and reducing downtime.

### Specific Applications in Fixed Plant:

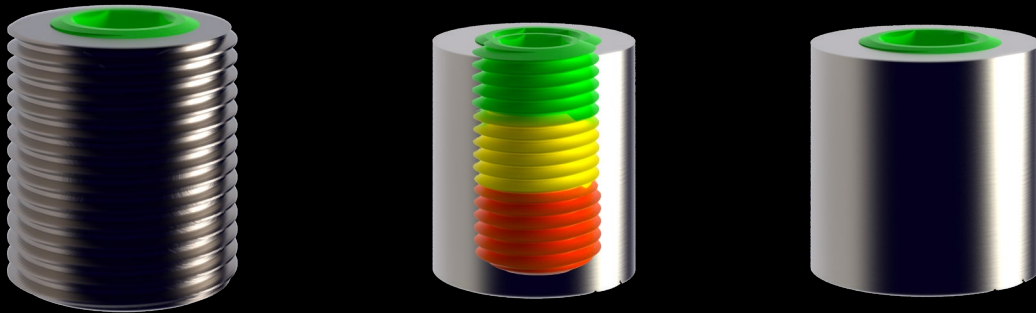
- Confined Spaces: WearVue indicators can be installed in confined spaces, such as inside crushers, hoppers, or tanks, eliminating the need for workers to enter these potentially dangerous areas for inspection.
- High-Vibration or Noise Areas: WearVue indicators can operate reliably in areas with high vibration or noise levels, where manual inspections may be difficult or inaccurate.
- Chutes and Transfer Chutes: Monitoring wear in these high-abrasion areas can prevent material buildup, optimise flow, and reduce downtime. WearVue indicators can be strategically placed in chutes to provide real-time wear data, enabling timely maintenance and preventing blockages that could lead to spills or equipment damage.
- Crusher Liners and Wear Plates: Tracking wear on these components helps ensure efficient crushing operations and prevents costly damage to the crusher itself. WearVue indicators can be embedded or adhered to crusher liners and wear plates, providing continuous wear monitoring and enabling proactive replacement before failure.
- Conveyor Systems: Conveyors are the backbone of material transportation in fixed plant operations. WearVue can be installed on conveyor belts, rollers, and pulleys to monitor wear and tear.



# WearVue Indicators

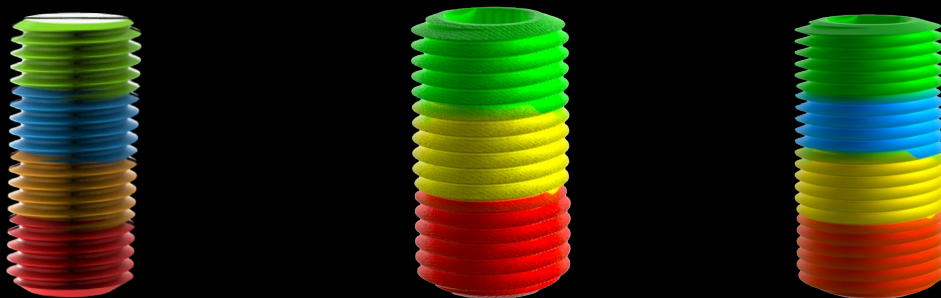
## Indicator Design – Housed Type

- Indicator Body: Machined indicator body from an appropriate base metal (stainless steel, titanium etc.) compatible with Q&T450 steel and incorporate a weldable or threaded diameter for secure installation into the wear plate.



## Indicator Design – Grub Screw Type

- Material: High-impact, abrasion-resistant plastics, polycarbonate, nylon, acetal or appropriate metal alloy, compatible with Q&T450 steel parent metal.



## Indicator Design – Rubber inserts

- Indicator body: The indicator body will be able to withstand the dynamic forces and elastic deformation experienced by a typical haul truck tyre during normal operation.







# WearVue Sizing Guide

## WearVue Indicator Size Selection Guide

Accurate wear assessment is crucial for maximising equipment lifespan and minimising downtime. The WearVue Indicator Size Selection Guide empowers you to choose the optimal indicator size for your specific application, ensuring clear visibility and proactive maintenance.

By considering factors such as exclusion zone distance and viewpoint angle, this guide enables you to calculate the ideal indicator diameter, incorporating a safety factor for added confidence. This proactive approach to indicator selection ensures that wear indicators remain readily visible, even under challenging conditions, promoting a safer and more efficient operation.

The chosen measurement method, based on ISO 3864-1:2011 principles, prioritises clear visibility by considering factors like human visual acuity, viewing angle, and environmental conditions. By incorporating a safety factor, we ensure that WearVue indicators remain readily distinguishable even under challenging circumstances, further enhancing workplace safety.

### Formula:

Indicator Diameter (mm) =  $1.5 * 1000 * (\text{Exclusion Zone Distance in meters} + \text{Person's Height in meters}) * \tan(1/60 \text{ degree}) / \cos(\text{Viewpoint Angle in degrees})$

This formula incorporates a 50% safety factor and accounts for the observer's height and viewpoint angle. The exclusion zone distance is the radius from the indicator to the observer.

### Example:

Exclusion Zone Distance = 5 meters

Viewpoint Angle = 30 degrees

Person's Height = 1.7 metres (average adult height)

Indicator Diameter =  $1.5 * 1000 * (5 + 1.7) * \tan(1/60 \text{ degree}) / \cos(30 \text{ degrees})$

Indicator Diameter  $\approx$  23.1 mm

Recommendation: Round up to the nearest available Indicator size, 25 mm, to ensure adequate visibility.

If you are unsure, talk to your WearVue representative for assistance.

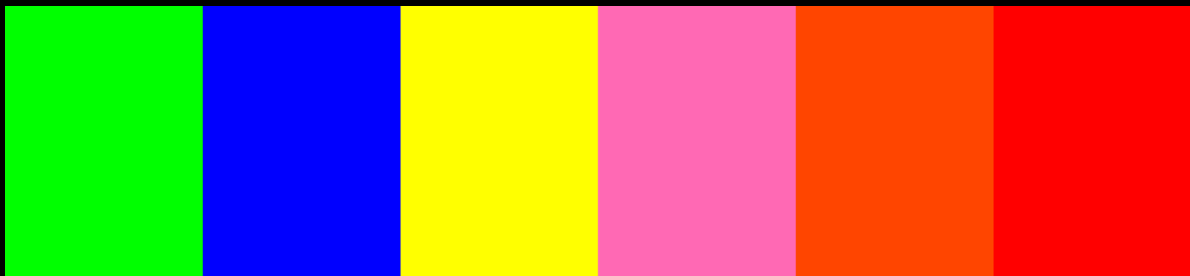


# WearVue Colour Guide

## WearVue Colour Selection Guide

The WearVue colour selection aligns with the ISO 3864-1:2011 standard as closely as possible, even though WearVue uses a single-colour system instead of graphical symbols.

- **Green** : Signifies safety and normal operation, suitable for indicating optimal conditions or early wear stages.
- **Blue**: Can be utilised for specific instructions or actions, such as “Inspect Now” or “Replace Soon,” as suggested by safety standards.
- **Yellow**: A classic high-visibility colour, excellent for general warnings and cautionary indications across various mining contexts.
- **Pink**: Offers excellent contrast against darker materials like magnetite and blue rock, ensuring visibility in those specific environments.
- **Orange** : Provides strong contrast against earthy tones like iron ore and coal, making it ideal for critical wear levels or immediate action alerts.
- **Red**: Reserved for the most critical warnings or imminent danger situations, demanding immediate attention.



The human eye is naturally drawn to bright, saturated colours, especially in complex or low-light environments. WearVue indicators with a glossy finish and UV resistance, further improves the visibility of these colours. WearVue indicators stand out against various backgrounds, even under challenging conditions.

The colour palatte choices empowers your team to identify wear levels quickly and take proactive maintenance action. WearVue indicators are customisable to your enviroment, we will work closly with you to acheive the best options.

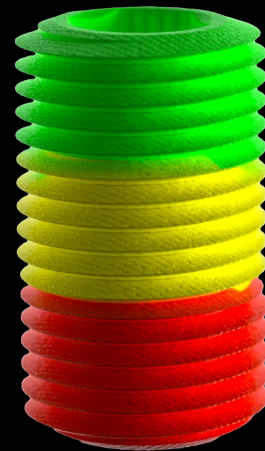
# Adaptable Manufacturing



## Manufacturing Options

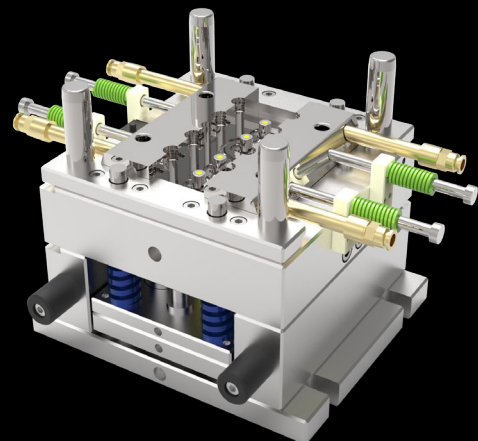
### 3D Printing

3D printing offers unparalleled flexibility and customization for WearVue sensors, enabling rapid prototyping and production of intricate designs tailored to specific applications. This additive manufacturing process precisely layers material, achieving complex geometries and internal structures that would be challenging with traditional methods.



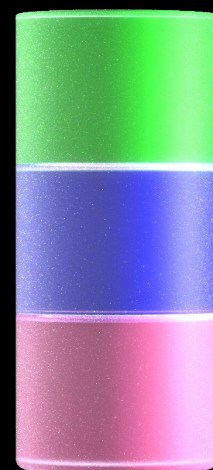
### Plastic Injection Molding

Plastic injection molding delivers exceptional efficiency and cost-effectiveness. Molten plastic is injected into a precision mould, creating consistent, high-quality parts with intricate details. Injection molding also offers a wide selection of plastics with properties like durability, chemical resistance, or UV stability, optimising indicator performance in demanding mining environments.



### Fluorescent: Strontium Aluminate

To further augment visibility, especially in low-light conditions, WearVue indicators can be enhanced with strontium aluminate ( $\text{SrAl}_2\text{O}_4$ ), a photoluminescent phosphor. When activated by light, this compound emits a long-lasting glow, ensuring the sensor remains visible even in dimly lit areas.





# WearVue Installation

## WearVue Indicator Installation Guide

WearVue indicators are designed for seamless integration into your equipment, ensuring optimal performance and longevity. We offer versatile installation options to accommodate various applications:

- **Threaded Indicators:** Ideal for applications requiring frequent indicator replacement, these indicators are securely installed by drilling and tapping a hole, then fastening the indicator with threading and adhesive.
- **Housed Indicators:** Providing added protection, housed indicators are available in threaded or plain versions. Threaded housed indicators are installed similarly to threaded indicators, while plain housed indicators are welded into place after being inserted into an engineered hole.

Depending on the specific product and its wear patterns, multiple indicators may be required for comprehensive monitoring. We will provide a detailed indicator placement map, recommending optimal locations and sensor lengths to ensure accurate wear assessment across the entire component.

To guarantee the structural integrity of your equipment, we utilise Finite Element Analysis (FEA) to determine precise hole placement, shape, and transitional surfaces, minimizing any risk of crack propagation.

## Adhesive Selection and Supply

We understand that proper adhesion is critical for indicator performance and longevity. Therefore, we carefully select adhesives based on the specific application, materials involved, and environmental conditions. Our local partners will supply the appropriate adhesives, along with any necessary auto epoxy mixing guns, ensuring a seamless and efficient installation process. Comprehensive procedures and Safety Data Sheets (SDS) will accompany all adhesive products, prioritising safety and compliance.

We are committed to providing comprehensive support throughout the installation process. You will receive detailed, application-specific procedures and sign-off sheets, along with welding procedures for weld-in sensor housings, which are manufactured from suitable weldable materials.



# Example Applications

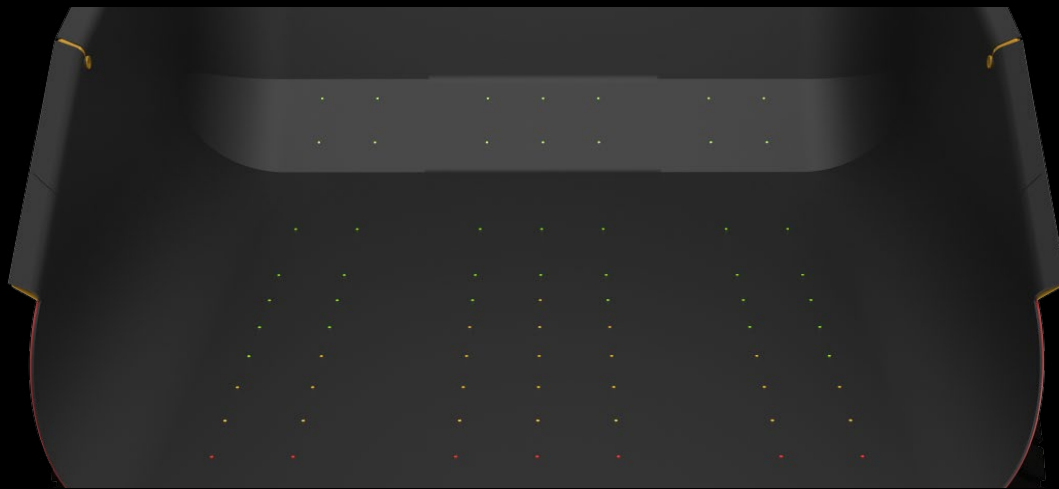
## WearVue in Action: Real-World Applications

WearVue isn't just a concept; it's a patented technology already making a difference in diverse industries. Our innovative, colour-coded wear monitoring system is transforming how businesses manage their critical assets, leading to safer operations, reduced downtime, and significant cost savings.

Here are just a few examples of how WearVue is being applied in real-world scenarios:

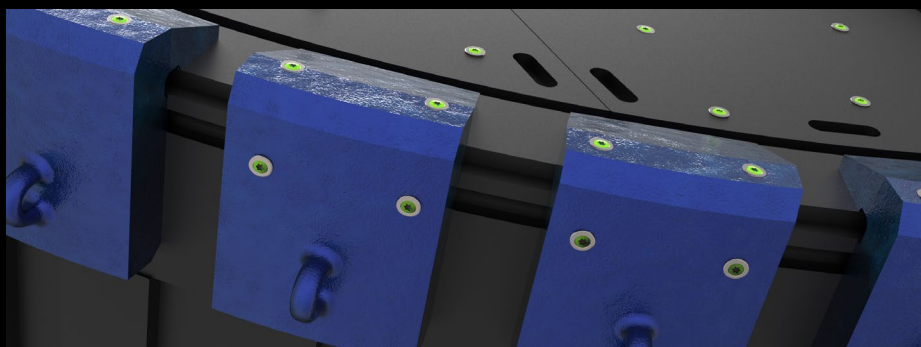
### Haul Truck Trays

WearVue indicators, strategically placed on the tray floor providing a continuous and visual indication of wear. This allows for proactive maintenance, preventing costly tray failures and maximising the lifespan of these critical components.



### Excavator Buckets

WearVue indicators can be embedded in the shell, wear plate, routers and sidewalls of excavator buckets to monitor wear patterns and optimise replacement schedules. Control your GET, with indicators on bucket teeth and heel blocks.



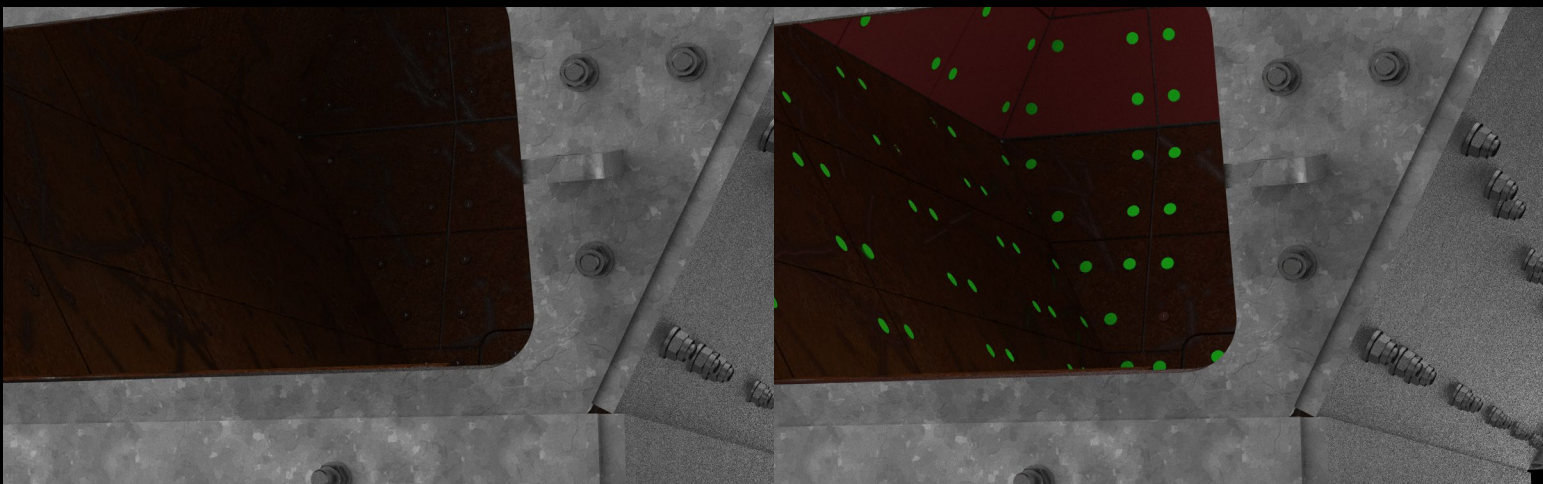
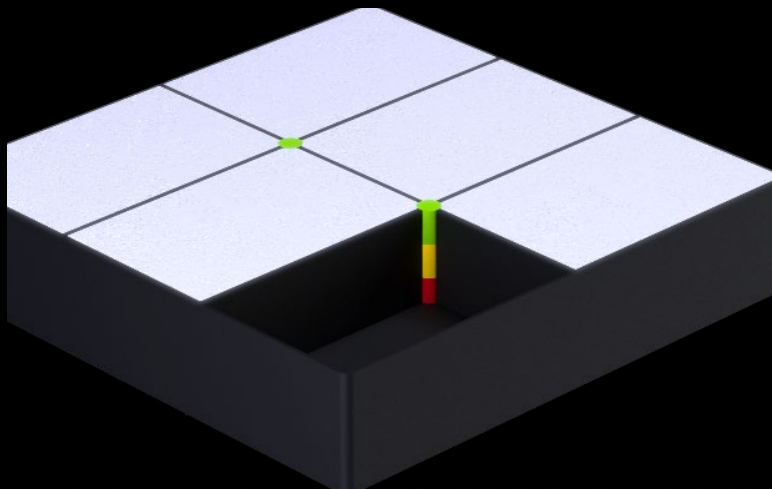
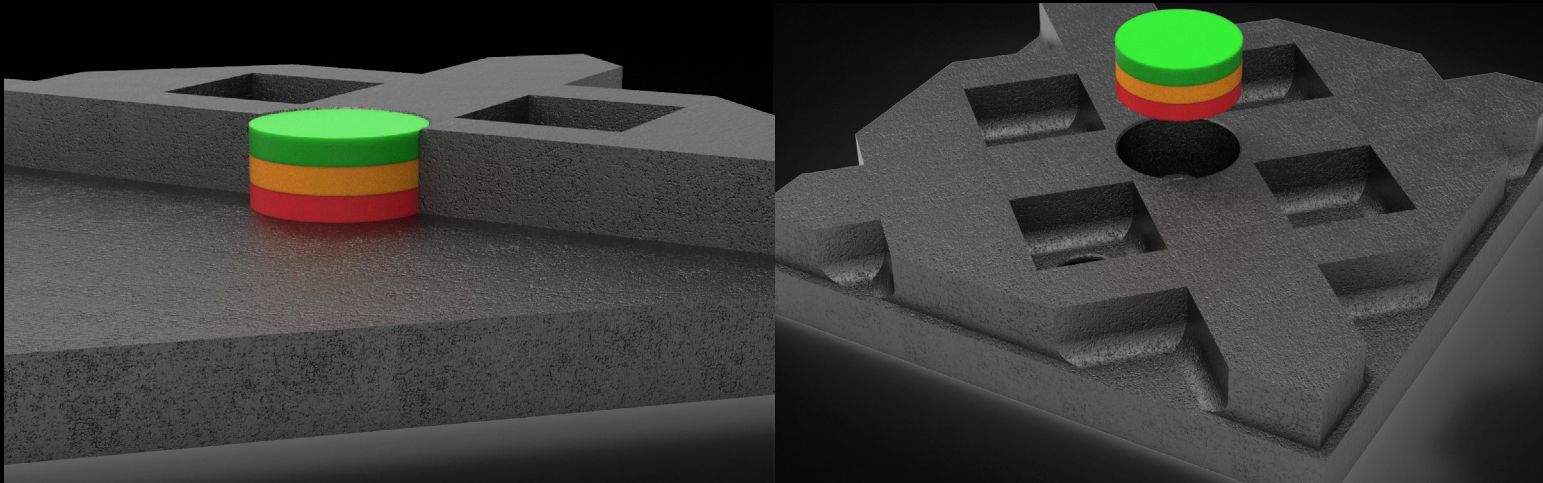


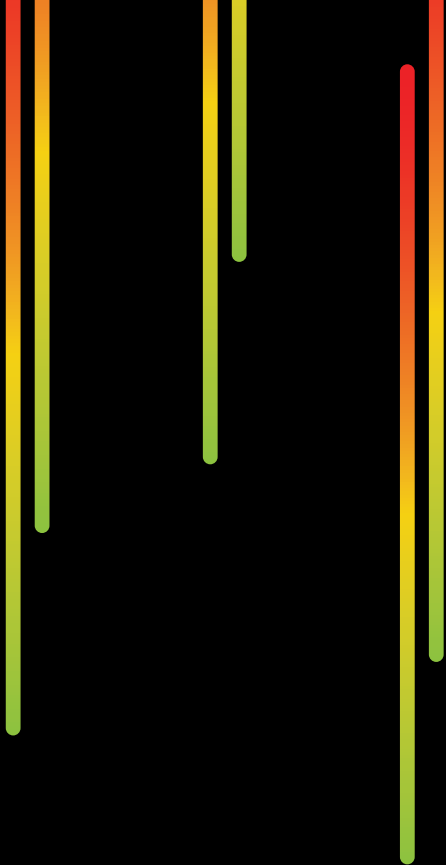


# Example Applications

## Crusher Liners & Wear Plates

Crusher Liners and Wear Plates: WearVue indicators can be integrated into crusher liners and wear plates to track wear and keep people out of confined space inspection risks.





# WEARVUE

Wear Monitoring Made **Visual**

[www.wearvue.com](http://www.wearvue.com)