

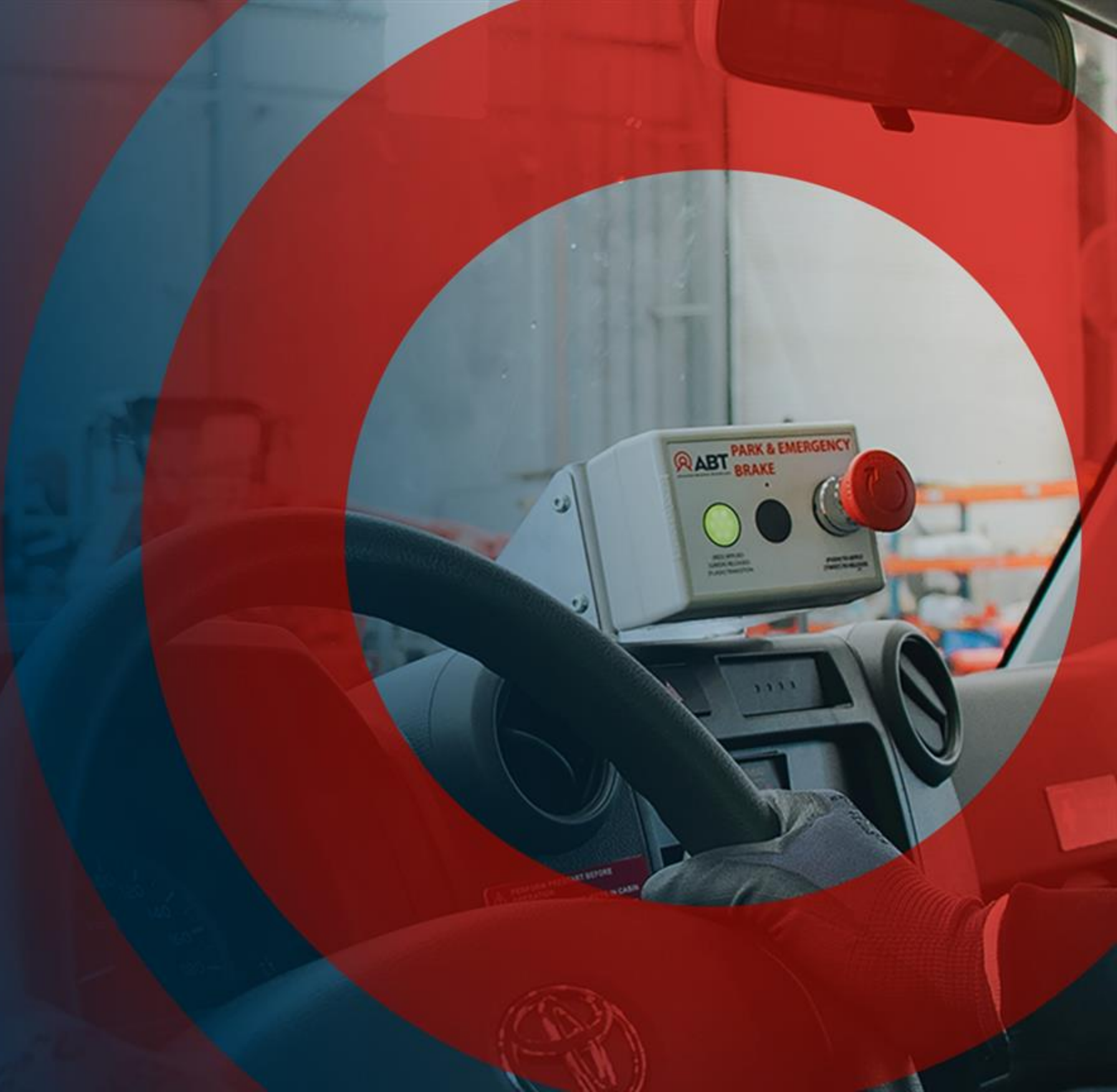


“BRAKING” RANKS

How ABT Innovation helps clients improve safety, optimisation, and emissions minimisation through Failsafe Braking Technology.

IMARC 2023

Presented by: **Andrew Booth, CEO**



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Our Objective



- Improving safety.
- Reducing operational costs.
- Increasing the profitability of a mining operation.

- ABT has grown over a number of years of continual improvement and industry learnings
- Now experiencing a period of rapid development
- Exciting time to be involved in the mining industry during a technological boom

Our Customers

Global Mining and Mining Services Operators



About: Advanced Braking Technology (ABT)

- All the inbuilt safety systems (conforming to Best Practice Regulations) that are standard in "YELLOW" fleet applied to Road Vehicle fleet.



- Australia is a World Leader in Mine Safety.

ABT Exports Brakes to 7 Continents:

From Finland in the North to Antarctica in the South....
We've got you covered.

40%

of revenue from
comes from overseas
locations including:

- North America
- Europe
- Asia-Pacific
- South Africa
- South America
- Antarctica



60%

of the Australian Market



Company Overview



Innovative braking solutions that protect people, assets and the environment

**>20 years original
manufacturer of
sealed wet brake
technology**

- ASX Listed
- Designed, developed, tested and manufactured in Australia

Sealed Integrated Braking System (SIBS)

What is SIBS?



Failsafe

Hydraulic Release/
Spring Actuated
Energy On = Brake Off
Energy Off = Brake On
When all else Fails..... the brake
engages



Wet Brake

Fluid Based Wet Disk Brake
Provides optimal thermal
performance where overheating
and brake fade is common



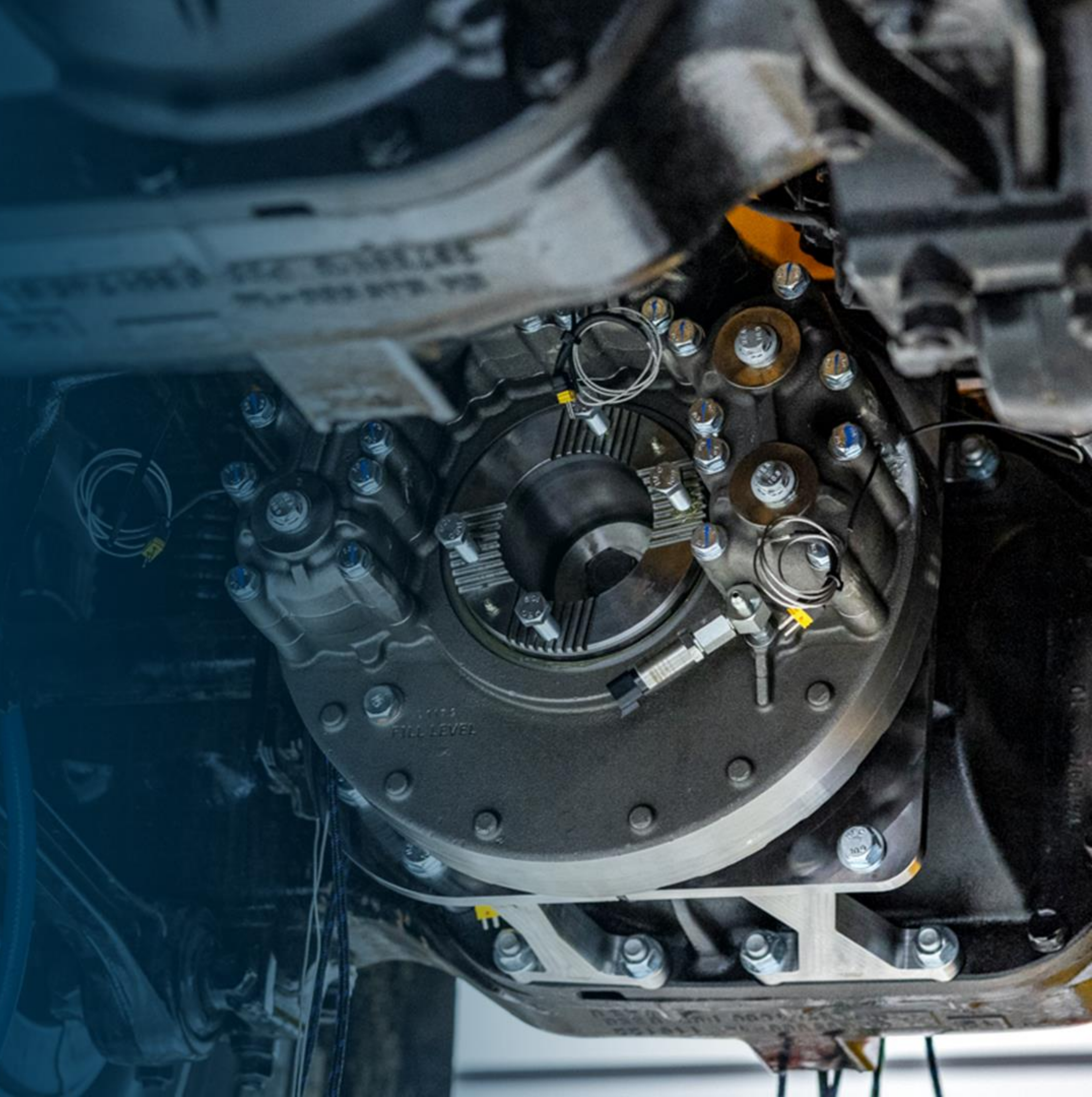
100% Sealed

Keeps external contaminants
OUT
Keeps Harmful Brake Dust
Particulates
IN

WHY ABT?

Improving the safety of miners and the efficiency of mining operations.

- Unintended Vehicle Movement
- Brake Fade / Brake Failure
- Durability
- Environment



Example 1: Unintended Vehicle Movement

Causes



Technical Failure in the
vehicle control system



Operator Error – forgetting
to operate the Park Brake



Example 1: Unintended Vehicle Movement

Safety Issues



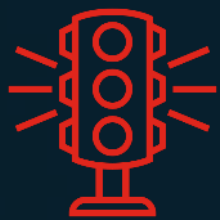
Steep inclines and declines



Heavy Vehicle Traffic



Hard Rock Walls



Stop/Start frequent
alighting vehicles



ABT Solution

ABT Failsafe provides back up activation methods designed to support the operating environment and vehicle operator activities.

Primary Activation Method

- Pressing the ABT controller e-stop button
- Ignition off

Secondary Activation Method – Interlock Systems

- Seat belt removed
- Door opened
- Engine stall

Example 2: Brake Fade and Brake Failure

Brake Fade Issues

Brake failure can occur due to various reasons, including:



Overheating and Inadequate Cooling



Brake Material and Design

Brake Failure Issues

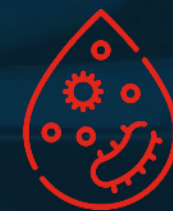
Brake failure can occur due to various reasons, including:



Component Wear and Tear



Hydraulic System Failure



Contaminants



Inadequate Maintenance



Example 2: Brake Fade and Brake Failure

ABT Solution



Wet Brakes provide optimal thermal performance.



Specifically designed for mine gradients



Failsafe brake system Independent of the Vehicle



Sealed Brakes prevent intrusion of contaminants



Specifically designed for mine gradients over prolonged distances

Example 3: Open Brake Systems Lack Durability

Weekly and Fortnightly Servicing Required



Component Wear and Tear



Contaminants



ABT Solution



SIBS offers superior Service Cycles



Sealed wet brakes prevent wear and tear in harsh rugged operating environments



Wet brakes offer superior brake pad life



Less downtime = Smaller more efficient fleets



Lower CAPEX / OPEX

Example 4: Cleaner Air Environment

Environmental



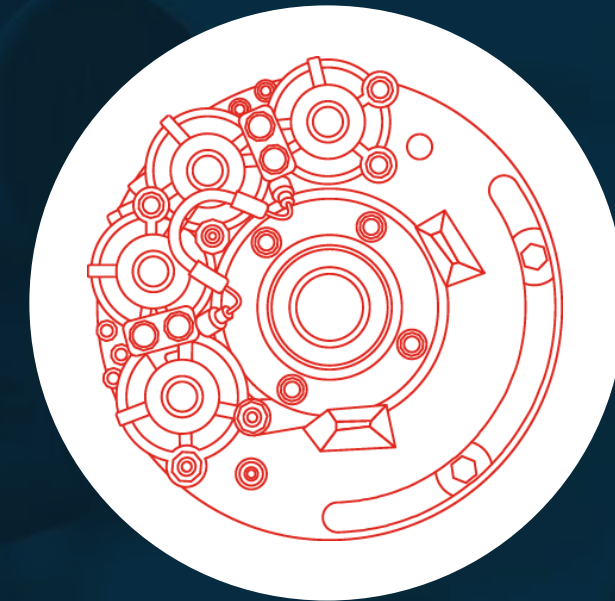
Air filtration represents a significant investment for underground operators



Essential for safety and regulatory compliance



ABT Solution



Our brakes prevent **100% of Brake Dust Particulates** emitting into the environment where clean air is critical

What About Autonomous Vehicles?

Automation and Robotics

- Autonomous vehicles still need Failsafe braking tech.
- Why? Even in complete autonomous areas failsafe is required and accidents due to collision still have massive impacts on production.





What About Autonomous?

Collisions stop operations.

While fully autonomous technology is still years –

or even decades – away from Australian roads,

It's already here and part of mining sites of the future.

Autonomous Ford Ranger developed by Australian mining company - Drive

SIBS Failsafe Braking for Electric



Proportion of emissions emitted by a diesel vehicle.

SIBS = 100% Sealed Brakes can reduce vehicle related greenhouse gas emissions by up to 25%.

The adoption of electric vehicles is likely to continue to grow as technology advances and regulatory pressure to reduce emissions increases.



20 Year Evolution of SIBS | SIBS – Sealed Integrated Braking System



Toyota Land Cruiser
70 Series | Toyota
Hilux



Isuzu NPS



IVECO 8x4



Volvo 8x4
FMX

SIBS Brake Innovation has evolved from light commercial 4x4 vehicles to light medium and heavy trucks.

ABT solutioning for Road Trucks for Mine Haulage

Advantages of Conventional Road Trucks

- Cost – Operating Costs
- Speed – Power to Weight Ratio
- Capital Cost
- Future Electrification and Automation.
- Mine spec / Ruggedising Conventional Road Trucks
- Emergency Braking System (Failsafe Secondary System)

Rio Tinto turns to mining mosquito fleet

[Rio Tinto turns to mining mosquito fleet](#)

- Australian Mining



ABT Solutioning for Road Trucks for Mine Haulage

Road Truck Mine Spec (ruggedised)



- ✓ Sealed Wet Disk Brakes
- ✓ 60T GVM
- ✓ Failsafe Brake System
- ✓ CAPEX
- ✓ Serv/Maint Downtime
- ✓ Running Cost

Yellow



- ✓ Sealed Wet Disk Brakes
- ✓ 60T GVM
- ✓ Failsafe Brake System
- ✗ CAPEX
- ✓ Serv/Maint Downtime
- ✗ Running Cost

Conclusion

- ABT Brake and Safety Solutions cover comprehensive ESG challenges in Mine Operations
- ABT is solutioning for today and Mines of the Future

Thank you for attending

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This presentation has been approved by the Board of Advanced Braking Technology