



BRAKEiQ

Autonomous Braking with Collision Avoidance System (CAS) Level 9



WHAT IT IS

BrakeiQ by Advanced Braking Technology

The South African Department of Mineral Resources and Energy (DMRE) has taken a significant step towards improving safety in underground mining operations with a new mandate requiring the use of Level 9 Collision Avoidance Systems (CAS) for all diesel-powered trackless mobile machines. This regulation addresses a critical concern within the industry – a high number of fatalities linked to failures in vehicle interaction controls. In response to this mandate, and in line with enhancing safety in mining operations, ABT launches BrakeiQ.



BrakeiQ is designed with consideration to ISO 21815-2 standards, and EMESRT Level 9 intervention, ensuring seamless integration with your vehicle's existing Proximity Detection System (PDS). Its versatile design allows application across various machine types, supporting compatibility with more than 30 Caterpillar wheel loader and dozer models like CAT 938-994 Wheel Loaders, CAT D6-D11 Dozers and Komatsu large wheel loaders.

While the system is instantly compatible with over 30 Caterpillar models, it only requires 4–6 weeks to create, develop, and deploy a BrakeiQ system for other global OEMs.

HOW IT WORKS



When the vehicle reaches a risk area, the brake automatically applies.

ABT's BrakeiQ can integrate with your existing third-party proximity detection system to automatically slow down mining vehicles and brings them to a controlled stop when it detects a potential collision. BrakeiQ uses an electric motor to activate the brake pedal, simulating human input for remote or autonomous brake activation.

WHAT IT DOES

Safety

Automatic Braking with CAS Level 9 Compliance

• ISO 21815-2 Standard:

- Sets international standards for interoperability of proximity detection systems.
- Ensures that the Proximity Detection System can communicate effectively with truck OEM interfaces.

Implementation and Application

Minimal Implementation

Requires an existing Proximity Detection System (PDS) for BrakeiQ to be applied.

Wide Application

Can be applied to most machine types with some mounting design alterations. Core motor, motor control, and digital interfaces are standardised.

BrakeiQ enhances existing Proximity Detection System (PDS) by enabling autonomous braking capabilities.

Openness and Interoperability

Seamless Integration

Seamlessly integrates with existing Proximity Detection System (PDS).

Easy Connection

Connects with global communication standards such as CAN, RS485, and RS232 and other existing sensors and systems.

Enables Configuration

Allows the user to configure machine dynamics to determine brake application motion:

Other Options

Proportional Control

Replicates the pedal actuation mechanism to also apply to throttle application. This allows the machine to enter "coast" or "crawl" mode to decelerate.

Optional Interlocks

Parking Brake Interlock

Using the park brake switch as an interlock input ensures that the pedal will not actuate when the park brake is active. This ensures that the vehicle is in a stationary and controlled state prior to disabling the Autobrake system. This is the recommended solution for interlock control.

Seat Belt Interlock

Using the seat belt switch as an interlock input ensures that the pedal will only actuate if there is an operator in the seat.

BRAKEIQ MODULE

The BrakeiQ controller is a single control module featuring dual redundant circuits, known as the Brake Controller and Brake Supervisor. These circuits are equipped with advanced self-checking and cross-checking mechanisms. If the Brake Supervisor detects any abnormal behavior, it can override the system or shut down the module while sending an alert to the PDS. Additionally, both circuits are designed for self-recovery, ensuring continuous operation in all scenarios.

Each redundant circuit operates with its own independent power supply, communication system, and data circuitry, guaranteeing both functional independence and full electronic redundancy.

BRAKEIQ COMPATABILITY MATRIX

Manufacturer	Dozer	Grader	HYD Excavator	Wheel Loader	Dump Truck
CATERPILLAR	6-9-1 LT	5 D		₽¢ ₽¢	
KOMATSU	6 T	5 B		₽¢ ₽¢	
LIEBHERR	6 Tubu	5 B		₽¢ ₽¢	F
HITACHI	6 Tubo Tubo	5 D		₽¢ ₽¢	F
BELL Mining & Construction	6 Trè-0	5 B		₽¢ B¢	



Disclaimer: While the system is instantly compatible with over 30 Caterpillar models, it only requires 4–6 weeks to create, develop, and deploy a BrakeiQ system for other global OEMs.



Vehicle Safety Innovation

1800 317 543 ☑ info.perth@advancedbraking.com advancedbraking.com