MUIRHEAD®
SMART PROTECTION SYSTEMS BY RCT

RCT
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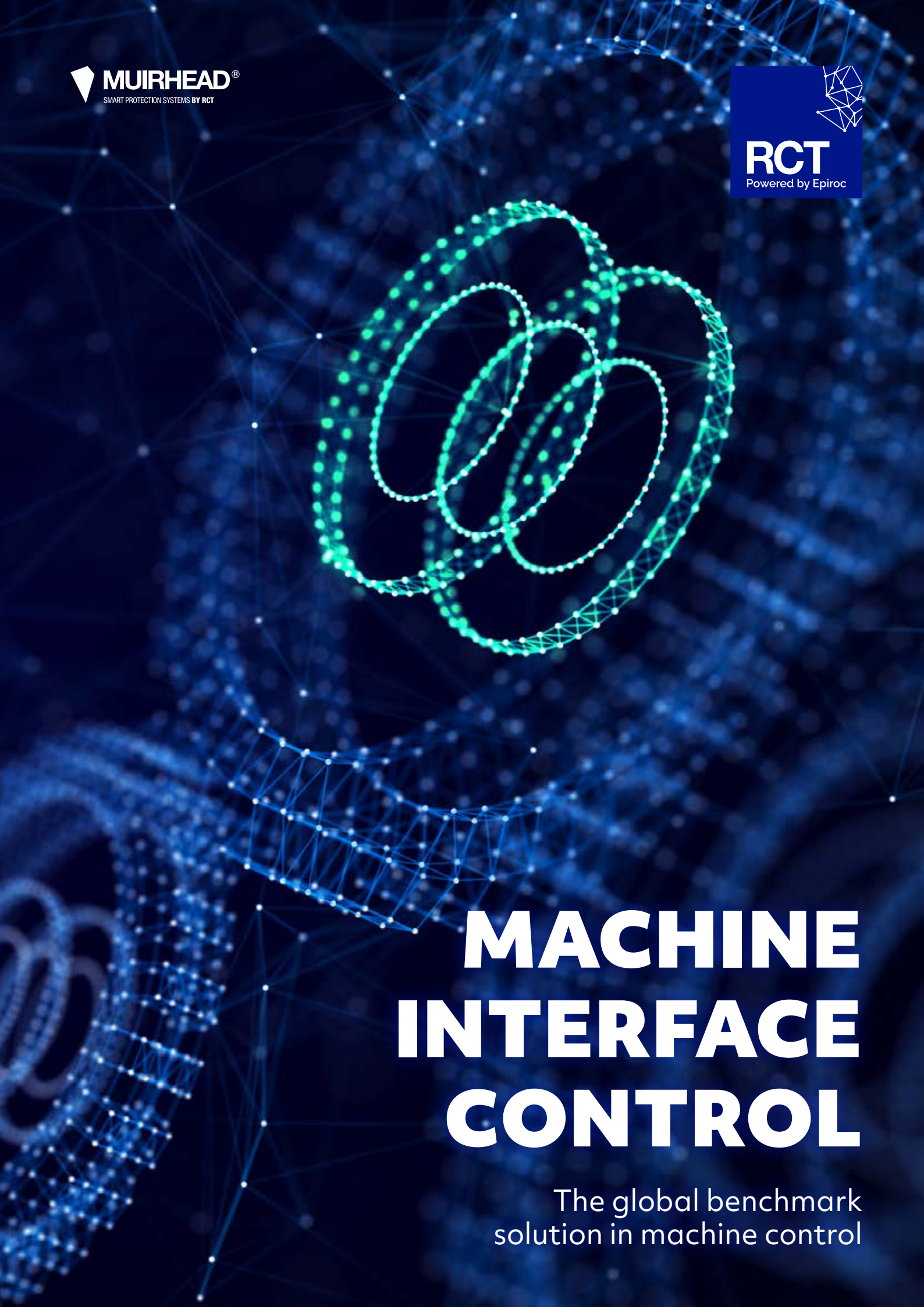


MACHINE INTERFACE CONTROL

The global benchmark solution in machine control

RCT enables intelligent vehicle control. Allowing our clients to deliver the **greatest level** of safety solutions for their project.

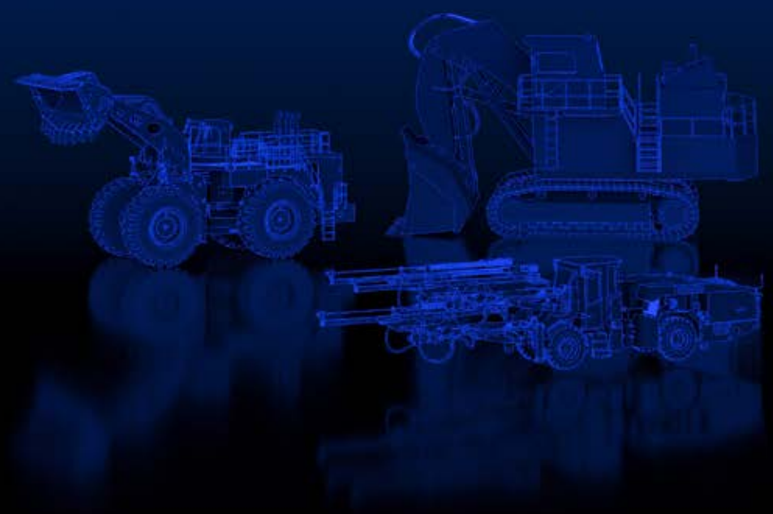
RCT is your first choice in any **machine control** and **automation** decision.

RCT is the undeniable industry leader in the design and integration of interoperable machine control packages.

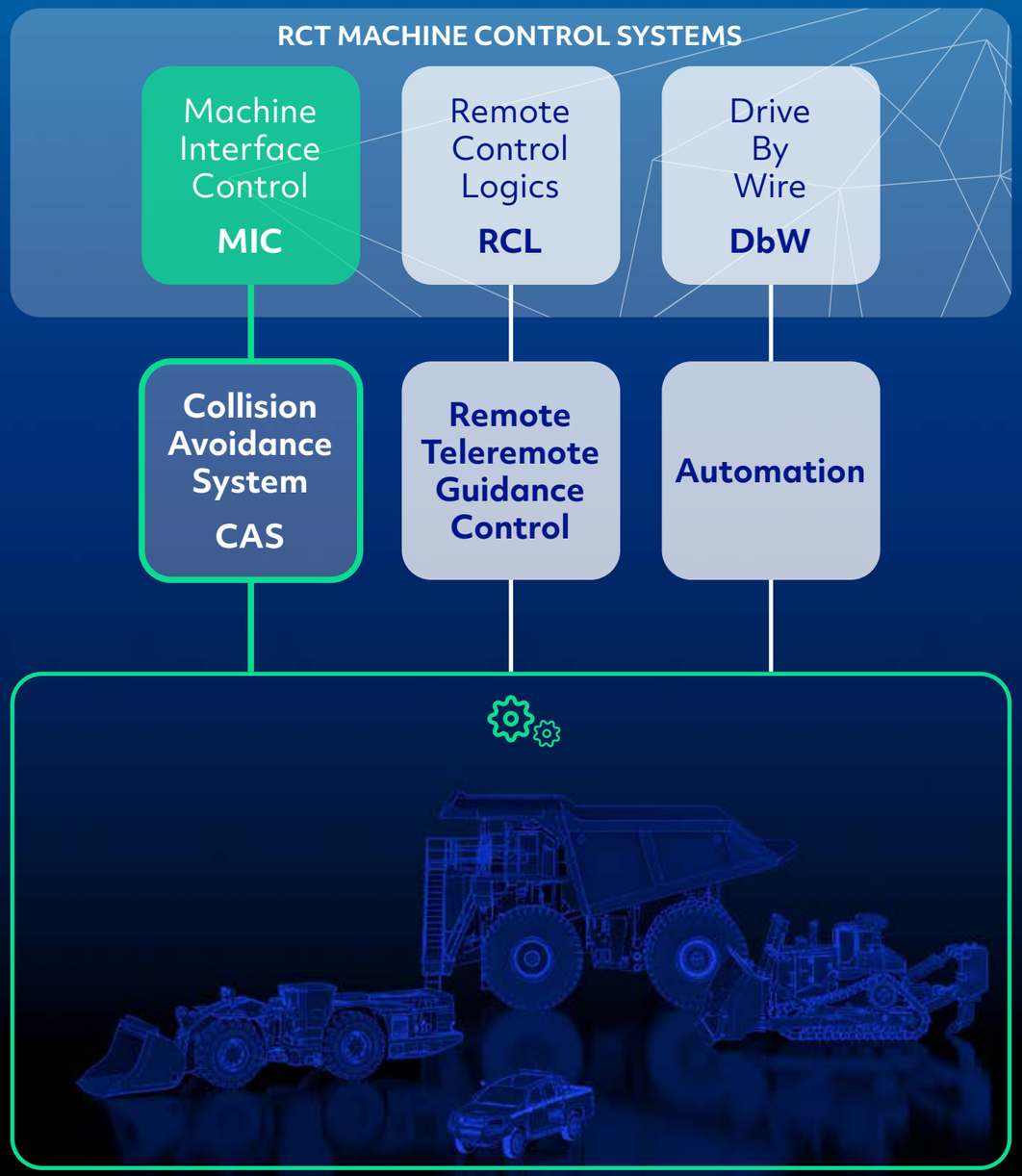
RCT's cutting-edge capabilities enable us to provide Automation, Remote Control, and Collision Avoidance solutions to any mobile equipment.

Because of its ability to intervene in dangerous situations, operations around the world are relying on technological advancements to play a critical role in safeguarding personnel now more than ever.

CAS is becoming an essential component of modern operations and is even becoming a legal requirement in certain countries.



The **smartest** vehicle control interface in the world.



Levels of Collision Avoidance Systems

CAS mitigates the risk of collisions between site personnel, other machines, and site infrastructure

These potential safety hazards are immediately identified so that corrective action can be taken, ensuring all customers can achieve the highest level of safety compliance.

RCT's MIC can achieve Level 9 CAS and can be fully customised for a wide range of applications and industries. The system is adaptable to any mobile device, regardless of age or model.

LEVEL 7

DETECT

Proximity Detection System

Covers proximity detection using cameras and radar, with the ability to see around.

LEVEL 8

ALARM

Proximity Warning System

Allows to predict the future and provide a collision avoidance alarm to the operator.

LEVEL 9

STOP

Collision Avoidance System

Builds on Level 8 by intervening in a hazardous situation.

A CAS installation is a joint venture that consists of three fundamental parts

1 COLLISION AVOIDANCE SYSTEM **CAS**

CAS, is the system monitors the external environment with the use of GPS and other sensors to detect objects and evaluate collision risk.

2 MACHINE INTERFACE CONTROL **MIC**

MIC monitors the operator's controls and intentions, and passes this information to the CAS, which compares it with the external environment.

3 MACHINE FUNCTIONS

The CAS uses this information to provide warnings to the MIC which is then passed on operator or an automatic machine functions (eg Slow Down or Stop functions) to execute interventional collision avoidance actions.

Think RCT MIC.
Before you think CAS.

We are aware of the difficulties and complications that are involved in installing a CAS project at any mine site.

A CAS is nothing without an intelligent and expandable framework. With the most innovative, standardised interface available, RCT MIC can assist you in streamlining your project and achieving Level 9 CAS.

False Starters

Delayed implementation with long timelines from project start to project delivery.

Selective Machinery Only

Only selective mobile machinery can be equipped with the CAS which leads to frustration or high expenses in upgrading the existing fleet.

System Constraints

Other suppliers may not be able to be ISO 21825 compliant or able to meet EMESRT Level 9 requirements which are the industry benchmarks for safety.

No Standardisation

The supplied interface across the machine fleet is not standardised which means that multiple interfaces are installed on machine equipment and additional training needed for the entire workforce.

Any CAS, Any Machine, Any Mine.

RCT's MIC is the most intelligent and safest vehicle interface for any Collision Avoidance System (CAS).

This is due to RCT's success is due to its cutting-edge engineering capabilities to deliver interoperable Machine Control packages to any mobile equipment.

Nimble Installation

Ability to be flexible with customers to meet tight deadlines and streamline projects with easy-installation.

ISO 21815

Setting the standards for machine control, RCT's experience includes EMESRT Level 9 machine intervention technology with ISO 21815 coming standard.

OEM Agnostic

RCT are the world leaders at agnostic technology, with our MIC system you will be able to operator on your entire fleet.

No System Constraints

We can partner with any Sensor and OEM supplier to guarantee the best Interface for your machine fleet.

Proven Expertise

We have over 50 years of proven results in safety technology with hundreds of systems active in surface and underground operations around the world.

Future Proof

RCT MIC is future ready, allowing expansion for when third party Proximity and collision Avoidance evolves with new features

Standardised Interface

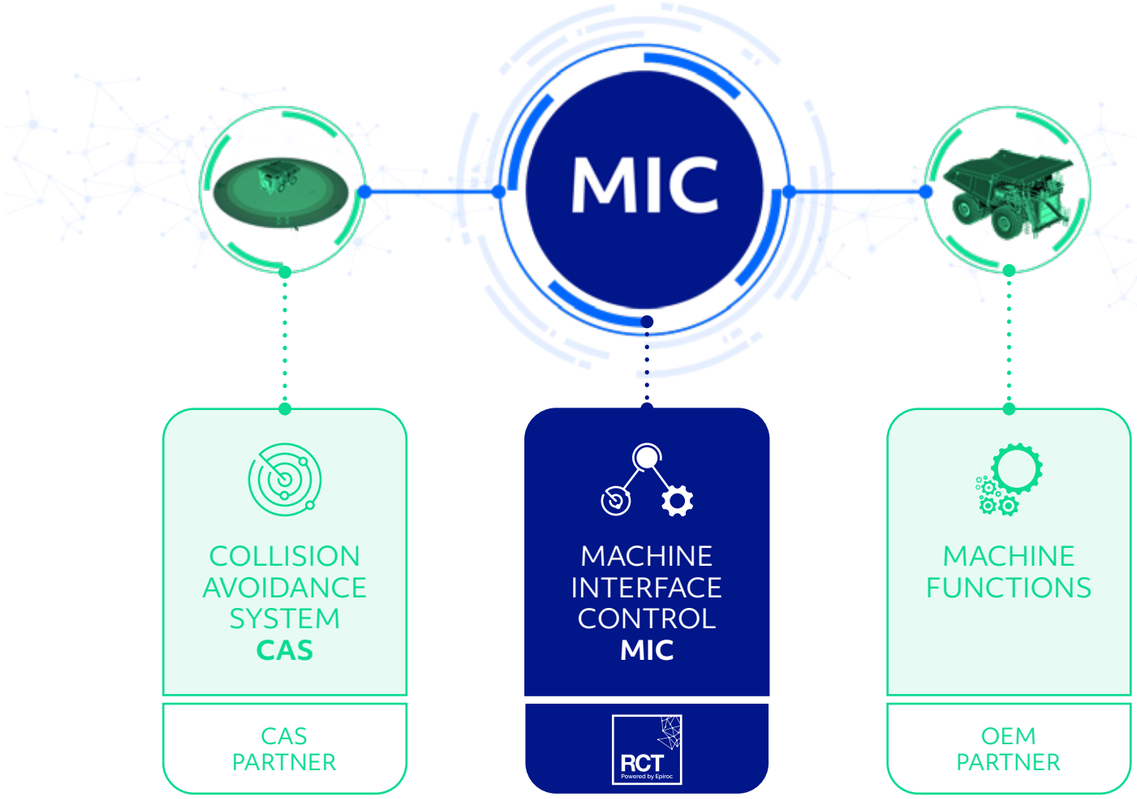
We have standardised interface that is reliable and repeatable across your entire machine fleet.

AS4240 Standard

RCT's success is due to its cutting-edge engineering capabilities and processes to deliver interoperable Machine Control packages to any mobile equipment, at AS4240 standards.

How RCT's Machine Control Interface works

1. The design of the RCT's MIC is to provide an interface between the machine and the Collision Avoidance System allowing the CAS to intervene and take control as required.
2. MIC gathers information from the machine in various forms from the VIS and converts it to a signal that is passed onto the CAS (in accordance with ISO 21815).
3. Via internal relays, the Controller has the ability to isolate the machine sensor eg throttle pedal, while replacing it with the signal level requested by the CAS.



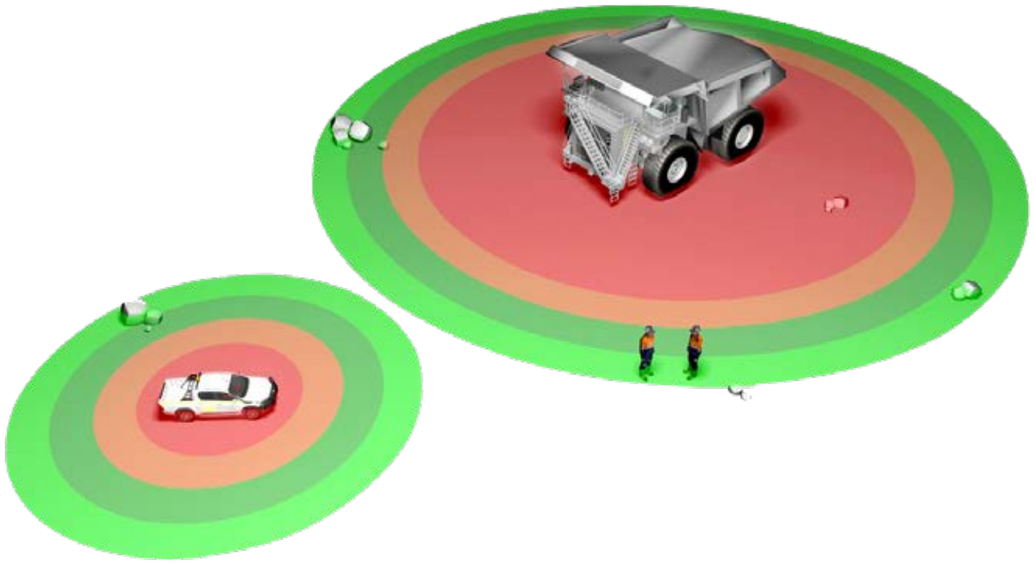
RCT creates innovative solutions for our customers by collaborating with people, companies, and technology suppliers. We will deliver Level 9 Collision Avoidance and can collaborate with any CAS supplier and any mobile mining equipment OEM.

RCT are serious about safety

We are the market-leaders on developing awareness technology that gives world-class operational performance and the highest safety standards.

Our system has been designed in a fail-to-safe manner. Which means if at any time a fault with the system is detected, control will be returned to the operator and the fault condition will be passed onto the CAS.

At the request of the customer, the system can incorporate an override switch that will disable the system if required. The type of switch and level of access will be determined in consultation with the customer. Functionality of the override is controlled by the CAS.

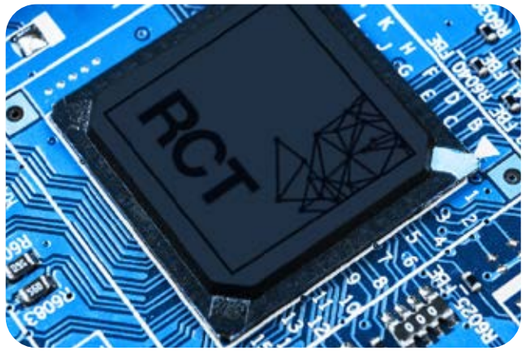


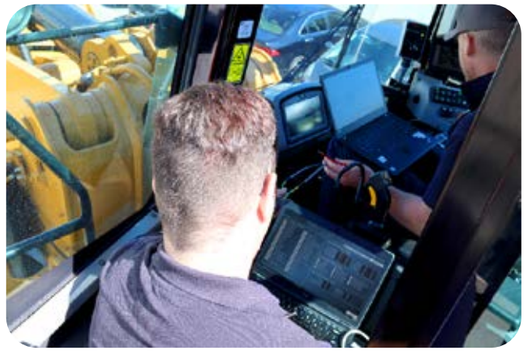
Have your machine fully prepared and ready for CAS using MIC

RCT's machine control packages are the essential vehicle control-enabler, aimed to deliver the required safety solutions, sought after by the global mining industry.

As a worldwide distributor and service agent network to supply lifetime parts and install and service all its proprietary products. We will continue to build on its proven history of creating, installing and servicing these types of smart solutions for entire your mining operations.

Our goal is to provide our customers with the tools they need to use and maintain technology on their own (training, test tools). Additionally, RCT offers local support to customers whenever they need diagnostic support or at scheduled service intervals.





CASE STUDY: AngloAmerican

Dawson and Capcoal Operations

Implementation of Level 9 machine intervention control technology across mobile surface fleet. Muirhead® Machine Interface Controller (MIC) technology delivered across 128 equipment fleet which includes multiple models of Cat, Komatsu and Liebherr trucks.

The Muirhead® MIC was selected due to RCT's comprehensive and extensive engineering and quality management capability. The systems were commissioned across two of the mining company's open cut operations in Queensland's Bowen Basin - Dawson and Capcoal Operations

First deployment of a Level 9 machine intervention technology across a large-scale mining fleet in Australia. The global mining company selected RCT for this project due to our proven history of delivering standardised interoperable technology across any make and model of mobile equipment.

RCT's technology interfaced directly with Hexagon's CAS, and as a result the operations is experiencing improved operations across their mixed fleet including Cat 793Ds, 785Ds, 777Ds; and Komatsu 830Es; and Liebherr T264s.

The MIC solution ensures the safety of site personnel in proximity to the haulage fleet and eliminates damage to the fleet.

In addition to developing cutting-edge technology we pride ourselves on delivering comprehensive service and technical support to our mining clients which empowers them to always maximise mining operations.

128x

Equipment fleet which includes multiple models of Cat, Komatsu and Liebherr trucks

Level 9

Machine intervention control technology across its mobile surface fleet

Mixed Fleet

Including Cat 797, 793, 785, 777;
and Komatsu 830Es;
and Liebherr T264s

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