CONTROLMASTER ®
SMART AUTOMATION & CONTROL TECHNOLOGY **BY RCT**

RCT

AUTOMATION & CONTROL UNDERGROUND

Leading the way in unlocking the potential of your machine.

The world's most **trusted automation** platform

With more than 7.5 million operating hours of automation, RCT's ControlMaster® Automation and Control are setting the benchmark for productivity and safety on a global scale. Empowering clients to improve efficiencies and effortlessly meet production targets.

Our Automation and Control range is versatile enough to cater to specific requirements, ranging from the automation of a single machine to a fully autonomous fleet and beyond.

The **benefits** of automation

When operations are automated, machine performance improves dramatically because discrepancies are eliminated.

The implementation of ControlMaster® technology will assist in boosting productivity and safety within the operation, resulting in increased corporate profitability.

✓ Improve Operations

- Automation can help accelerate digital transformation, build sustainable sites, and reduce carbon emissions for a better workplace and environmental habitats.

- Increase machine operating hours per shift by operating from the surface, including operating during planned downtime and shift changeover.

- During shifts, face-to-face communication between the operator and supervisor is constant which allows for a safer operation.

✓ High Performing Employees

- With simple-to-use technology, you can remove workplace barriers to entry and have a more inclusive hiring policy for your workforce.

- One operator can multitask and operate multiple vehicles at the same time, increasing their productive output.

- Data analytic skills gained during the reading of data and logs will improve planning and decision-making.

- Maintenance staff can have more time to focus on preventative measures for their assets.

✓ Improve Operator & Machine Safety

- Move the operator from a dangerous work area to inside the safety of the automation cabin, which will also reduce fatigue.

- Technology creating a platform to create consistency and optimise performance over time, increasing fuel efficiency.

- Negate machine damage when tramming as the automation system drives the machine on the optimal tramming path.

- Increase the working life of the assets by driving the machine within recommended OEM parameters.

✓ Interoperability Digital Platform

- In real-time, collect data from machines to analyse productivity and potential maintenance issues.

- Create a transparent work environment for the operation, with all events happening available for viewing and analysis in real-time.

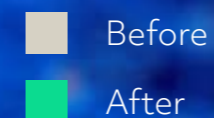- Flexibility to select the assets you want and apply state-of-the-art of technology.

RCT is **revolutionising** the mining industry as a **trusted** technology partner

50% ⇧

80% ⇧

30% ⇧

PROFIT
Increase your yearly revenue

SAFETY
Improve operational safety and equipment damage

PRODUCTIVITY
Expand your fleets productivity and minimise downtime

☐ Before
🟩 After

The above is based on data provided from RCT customers using AutoNav automation systems. Profit 50% increase revenue. Safety 80% increase due to reduction in accidents and equipment damage. Productivity 30% improvement based on increased operations hours, minimised downtime and faster cycle times

From the simplest to the most sophisticated, RCT offers **multiple levels** of automation.

LEVEL **1**
LINE-OF-SIGHT (RADIO)

Entry level option:

Allows operators to remotely control machines from a line-of-sight distance of 10-200 metres.

LEVEL **2**
TELEREMOTE (VIDEO)

Relocates operators to a secure location:

Where they remotely control the machine with the help of multiple cameras and sensors.

LEVEL **3**
AUTONAV LITE

Setting the global standard in Automation:

- Automation Centre
- Automated Steering
- AutoTram
- Guidance Dash (G-Dash)
- Machine Containment System

LEVEL **4**
AUTONAV

Options to further enhance AutoNav:

- Multi Machine Select
- Multi Machine Control
- AutoTram Plus
- AutoDump
- Protection Systems
- Guidance Data (G-Data)

LEVEL **5**
AUTONAV PLUS

The future of mining which integrates:

- Multi Fleet Select
- Mega Wall Streaming
- Machine Positioning
- Traffic Management
- AutoDig
- Integration

Line-of-Sight (radio)

Work from a safe distance, reduce operator fatigue, improve operator safety, and prevent repetitive stress injuries with this solution.

RCT's entry-level option for businesses considering transitioning to automation. Allows machine operators to manage any type of equipment by utilising a handheld device and controlling machine functions within a visual range from 10-200 metres.

✓ **ATX 2200**
A powerful remote-control unit. It can be used on all mining machines, regardless of type, brand, and age and supplied to all mining regions globally.

✓ **Rugged and Sleek Design**
Heavy duty, lightweight and compact, this ergonomic remote is designed for operator comfort with a protected internal antenna.

✓ **Internationally Friendly**
Globally recognised symbols, colour graphical display and frequency compliant.

✓ **Long-life Battery**
16-hour continuous operation lithium-ion battery with a voltage of 12V to 16V.

✓ **Dust and Waterproof**
Coming in an impact and dust-sealed casing, this remote has a waterproof rating of IP65.

Teleremote (video)

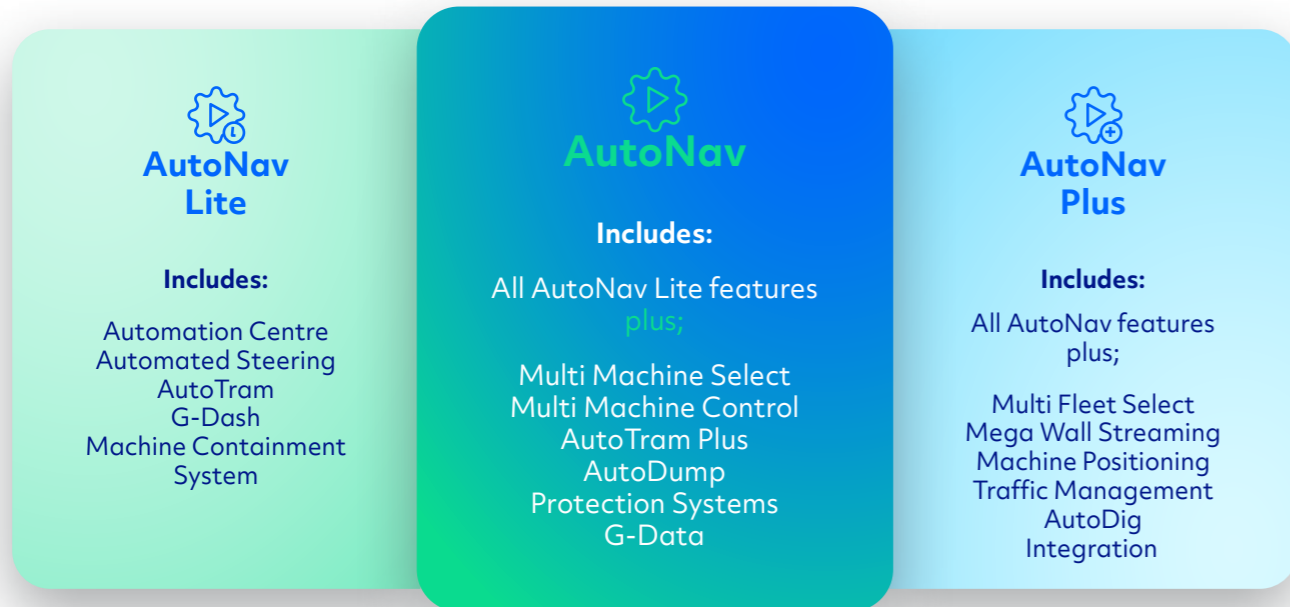## Relocates operators to a secure location

Removes the operator from the hazardous area and relocates them to a secure and protected location where they can control the machine via remote with the help of multiple cameras and sensors.

RCT understands that every mine site is different. Therefore, we have multiple options for relocating operators to a safe location to ensure we can meet the site's specific needs.

✓ **Control Centre**
Strong steel exterior, which can withstand the harshest of mining conditions.

✓ **Trailer Cabin**
When added with vision technology the Trailer Cabin permits to control of mobile equipment with the use of screens placed in front of the operator.

✓ **Mobile Station**
Can be placed in your mobile unit (truck, van, etc).

AutoNav

AutoNav Lite

Includes:

Automation Centre
Automated Steering
AutoTram
G-Dash
Machine Containment
System

AutoNav

Includes:

All AutoNav Lite features
plus;

Multi Machine Select
Multi Machine Control
AutoTram Plus
AutoDump
Protection Systems
G-Data

AutoNav Plus

Includes:

All AutoNav features
plus;

Multi Fleet Select
Mega Wall Streaming
Machine Positioning
Traffic Management
AutoDig
Integration

This scalable automation solution guides the way of the future of mining, tailored to your individual mine's needs.

RCT's ControlMaster® AutoNav is setting the global standard for productivity and safety, enabling clients to optimise efficiencies and exceed production targets with ease. Intended for high-precision guiding for all fleet equipment, allowing operators to operate and monitor various underground and surface machine operations from the comfort and safety of a control centre.

✓ **Automation Centre**

Numerous options from customised solutions to prefabricated rooms, surface solutions and more. Portable options are available – see Line-of-Sight and Teleremote.

✓ **Automated Steering**

Delivers consistent machine operation and cycle times by significantly reducing damage and unplanned downtime caused by a machine impacting with surrounding infrastructure.

✓ **AutoDump**

Utilising physical waypoints and odometry, it trains the loader to dump into a stockpile, fixed point, ore pass or even a truck.

✓ **AutoDig**

Will ensure the operator is in the optimal position for the ideal dig, ensuring their bucket is filled on the first time, every time.

✓ **AutoTram**

Operator simply lets go of the joystick and the machine navigates itself to the destination; steering, braking, and speed are automatically controlled. The system utilises scanner technology to ensure the machine remains in the centre of the drive, avoiding walls and other major obstacles.

Solutions for all mobile machines

There are hundreds of systems RCT has delivered worldwide to all the machines listed below, with our technology fully customisable. If your machine isn't listed below, that's ok, RCT can integrate with any machine make and model.

Loaders

Caterpillar
R1300, R1300G, R1500, R1600, R1600G, R1600H, R1700, R1700G, R2800, R2900, R2900 5TW, R2900G, R2900G EXTRA, R3000, R3000H

Sandvik
LH203, LH208L, LH307, LH410, LH514, LH517, LH517i, LH621

Toro
006, 0010, 0011, 1400, 1400D T150D, T151, T151D, T301, T350, T400, T500CD, T500DL, T501, T650, T650DL, LH514, LH517, LH621, T150D

Atlas Copco / Wagner
ST2, ST2-D, ST3.5, ST6C, ST6C-11, ST7.5, ST8B, ST18, ST710, ST1030, ST1520, ST1530, ST1800

EIMCO
913

JCI
125M, JCI100

MIM UGL
UGL

Javis Clark
JS100

Joy Global
LT270

Rham

Drills

Atlas Copco
SIMBA

Sandvik
COMMANDO 300DC

Maclean
BH3, BH03

Cubex

Excavators/Rockbreakers

Hitachi
EX400, EX1200, EX1900-6

Transminn

Teledyne

NPK
GH-12

BTI

Trucks

Caterpillar
AD30, AD45, AD55, AD55B, AD60, AE45

Sandvik
TH663

Atlas Copco
MT6020

SVS
WR820

Water Cannons

Getman
A64HD

Elphinstone
WR820

Other Machines

Concrete Pump Roboshot

Caterpillar Tele-handler

Zephir Shunting Vehicle

Chutes

Projects

Read how our customers have had their projects turned into success stories through RCT's Automation and Control

Mandalay Resources' Costerfield Gold Mine (Australia)

Solutions:
ControlMaster® Teleremote,
ControlMaster® AutoNav

Outcome:
RCT's systems increased ore recovery to 95% in blind up hole stopes at the Costerfield mine site.

Aeris Resources' Tritton Mine (Australia)

Solutions:
ControlMaster® Teleremote,
Surface Control system

Outcome:
Record tonnages achieved

Barrick Gold's Porgera Joint Venture (Papua New Guinea)

Solutions:
ControlMaster® Line-of-Sight, Teleremote, AutoNav

Outcome:
"This change is obviously safer for the operator but also provides the operation with increased utilisation as we can now continue working over shift change resulting in an operational efficiency improvement of 16%."

Eldorado Gold's White Mountain Mine (China)

Solutions:
ControlMaster® Teleremote

Outcome:
"The perceived benefits in productivity were estimated between 25-30%, meaning the system would pay for itself in less than six months."

Testimonials

"We've increased operation to 22 hours out of 24!"

"We have improved production per shift"

"Increased mechanical utilisation by between 25% - 50%"

"A decrease from 2 hours to minutes during the day/night equipment operator shift change over as no underground travel time was required"

"Saved 1-1.5 hours per blast downtime as the operator does not need to move to a safe location and then wait for the dust to clear"

"We were changing a window in the cab every 2 to 3 days, now we are lucky to change one a month"

"It has made my life very easy as downtime has been near to none"

"We don't require as many of our staff underground improving our production and meeting our KPI's"

"Results have shown a return on investment can be achieved in a very short period of time"

Comprehensive Services

All solutions are backed by RCT's leading support model and ever-expanding service network; aimed at providing local support, using local people.

Site Audit & Consultation

RCT can perform site audits to ensure the safest and most productive approach is taken. RCT provides consultancy services, including feasibility studies and strategies to improve technology and optimise operations.
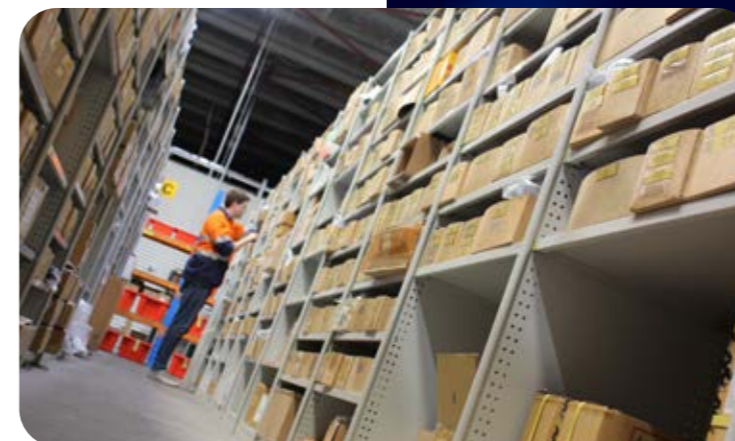
Customised Solutions

RCT Custom is a department specialising in the delivery of bespoke solutions to address vital operational improvements. The team has the expertise and resources to resolve challenges, regardless of the size or scope of the project.

Skills Training

Industry-recognised courses are tailored to suit operators and maintenance personnel, allowing sites to be more self-sufficient. Supported by practical demonstrations and hands-on experience, relevant content is delivered based on the vast knowledge of our trainers and technicians.

Parts

Keep your operation running without disruptions. RCT has you covered with its stock of 2,500+ specialised parts that can be shipped anywhere in the world.

RCT

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