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

RCT

AUTONAV

Guiding the way to
infinite mining possibilities.

RCT have the only **proven** interoperable automation platform.

Moving your mine into the future with RCT's ControlMaster® AutoNav solution. Take control of your machines to reach greater heights in safety, productivity and profitability.

Our automation and control portfolio are adaptable enough to meet a variety of needs, from the automation of a single unit to a completely autonomous fleet and beyond.

RCT's ControlMaster® AutoNav pathway is a combination of all the latest technology available, to deliver a **full autonomous** solution for your mine.

Digitisation
Future proof your mining environment to support machine control and data capture.

Adaptability
Ability to customise our solution to suit clients specific mining operations and project needs.

Interoperability
Have technology that can be applied across any make and model of equipment.

Information
Leveraging our solution platform to unlock and harvest data across the various assets across the mining fleet.

Scalability
We offer flexible and adaptive pathways to higher levels of automation and control.
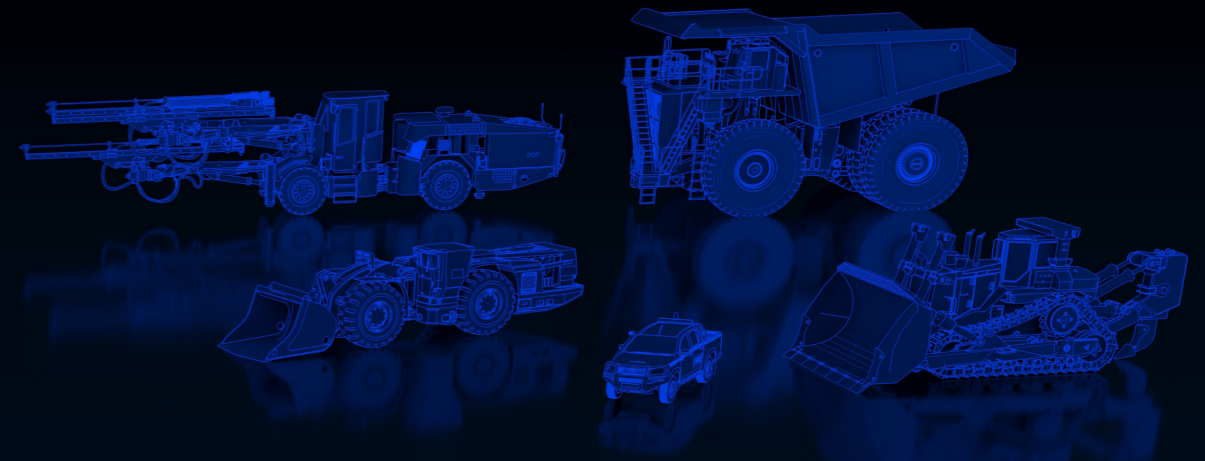
Get all the **benefits** from automation.

When operations are automated, machine performance improves dramatically because discrepancies are eliminated. The implementation of ControlMaster® AutoNav will assist in boosting productivity and safety within the operation, resulting in increased corporate profitability.

✓ **AutoNav can increase your yearly profit by**
- Increased run time on machines
- More buckets per day
- Reduce machine damage
- Eliminate unplanned downtime
- Less wear and tear
- Increase fuel efficiency

✓ **AutoNav can expand productivity and minimise downtime**
- Operate multiple machines
- Faster tramming
- Hot-seat transition
- Remove disparity between operators
- Improved overall efficiency
- Faster cycle times

✓ **AutoNav can help improve operational safety and equipment damage**
- Better operator health
- Easy-to-use system
- Avoid unforeseen accidents
- Improved working conditions
- Reduced fatigue
- Anti-collision intelligence

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

The ControlMaster® AutoNav range is scalable. With upgrades you can go from our Lite solution through to a fully autonomous fleet, with Plus. In addition, RCT's Automation path allows the combination of all the latest technology available to deliver the full solution including Traffic Management, Integration, and much more.

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
- FMS Ready

LEVEL 4 — AUTONAV

Options to further enhance AutoNav:

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

LEVEL 5 — AUTONAV PLUS

The future of mining which integrates:

- Multi Fleet Select
- Mega Wall Streaming
- Fleet Monitoring
- Traffic Management
- Protection Systems
- Integration

We **understand** that mine sites and the needs of a project are **different**.

We offer three tier levels at RCT:

The basic AutoNav Lite, the most popular AutoNav package and AutoNav Plus, our premium solution.

AutoNav Lite

Includes:

Automation Centre

Automated Steering

AutoTram

G-Dash

Machine Containment System

FMS Ready

AutoNav

Includes:

All AutoNav Lite features plus;

Multi Machine Select

Multi Machine Control

AutoTram Plus

AutoDump

AutoDig

G-Data

AutoNav Plus

Includes:

All AutoNav features plus;

Multi Fleet Select

Mega Wall Streaming

Fleet Monitoring

Traffic Management

Protection Systems

Integration

AutoNav

Our standard automation system is tailored to your individual mine's needs.

RCT's ControlMaster® AutoNav is 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.

✓ **Multi Machine Select**

Allows an operator to switch from controlling one machine to another from the one operator station

✓ **Multi Machine Control**

Allows one operator to control multiple machines on site: delivering better visibility of the work area, maximum operator comfort and safety, all while lowering operating costs.

✓ **AutoTram Plus**

Choose where you want the machine to travel, and it will navigate the drive itself to multiple locations.

✓ **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.

✓ **Guidance Data (G-Data)**

Provides relevant Guidance data. Machine diagnostics and production-related data are gathered and displayed via EarthTrack® reporting to empower mine sites to make informed decisions.

AutoNav Plus

The world's most comprehensive automation system for a fleet of mining machines working in the same automated production area.

Plus combines autonomous mission control and traffic management for the equipment fleet, while system operators may remotely supervise the process from a remote location.

✓ **Multi Fleet Select**
One operator can simultaneously control an entire fleet of different machines on-site.

✓ **Integration**
Bring together all existing and new systems for a streamlined solution.

✓ **Protection Systems**
Integrated protection technology to safeguard people and equipment across operations.

✓ **Traffic Management**
Optimise fleet operation across any site.

✓ **Vehicle Monitoring**
Relevant fleet data delivered to any smart mobile device.

✓ **Machine Positioning**
RCT will ensure the operator is in the optimal position for the ideal dig, ensuring their bucket is filled the first time, every time.

✓ **Mega Wall Streaming**
Bring your entire operation to life, where staff can observe and monitor data and information in real-time in a control centre.

AutoNav Lite

The no-fuss automation solution guiding the way of the future of mining.

RCT's ControlMaster® AutoNav Lite is setting the global standard for productivity and safety, enabling clients to optimise efficiencies and exceed production targets with ease.

Eliminate machine damage, tram faster and increase overall productivity.

✓ **Automation Centre**
Numerous options from customised solutions to prefabricated rooms, surface solutions and more.

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

✓ **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 on the centre of the drive, avoiding walls and other major obstacles.

✓ **G-Dash**
Real-time information offering operators a graphical representation, conveniently and clearly displayed on a separate designated display.

✓ **Machine Containment System**
Prevents driverless machines from leaving the operations area and restricts personnel from entering.

Client Testimonials

"With no prior remote experience, my operators embraced the opportunity; quickly adapting to the new technology & the transition was surprisingly quicker than anticipated. This technology allows us to operate safely in a controlled environment outside of harm's way. Also, the multi-machine select feature has proven to be invaluable. During operations, our production is not sacrificed if a machine needs to go offline because we have a standby machine available at the push of a button"
– Western Contracting Services

"All in all, the systems are trouble-free & easy-to-use. It's provided US with the tools necessary to carry out high-risk work, while keeping our people safe, allowing them to operate mobile machinery from either the automation centre or a Toyota Land cruiser troop carrier."
– Grange Resources

"We're working to improve operational continuity – implementing automation for mining equipment for safety & to improve the productivity. For this reason, Codelco worked with RCT."
– Codelco

"RCT are a very professional company with a reliable product – I'm very pleased. The CAT D8R is an older machine & it was a much more intense installation, but RCT did a really good job in setting it up within a couple of weeks."
– Alliance Resource Partners L.P.

"The project provided an opportunity to evaluate technologies and capabilities of AUTONOMOUS systems. It improved safety of mining processes in challenging mining & geological conditions of the Olimpiada Mine."
– Polyus

"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 per cent."
– Barrick

"The perceived benefits in productivity were estimated between 25-30 per cent, meaning the system would pay for itself in less than six months."
– EldoradoGold

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.

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