



# New Product Release

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ISSUE 2

Newsletter

# RCT TIMES

## Maxi Vision Waterproof 7" monitor



The **AusProTec™** Maxi Vision waterproof 7" monitor is robust in design and is ideally suited to industrial and mining applications. Housed in an aluminium casing and rated to IPX5 this monitor is designed to stand up to the harshest of environments.

This multi voltage unit comes complete with heavy duty mounting, auto dim function and four camera inputs, so no additional hardware is required. View individual cameras full screen or view 2, 3 or 4 cameras simultaneously on split screen layouts, user selectable. Widen your view towards machine safety and productivity!

### FEATURES & BENEFITS

- ▶ 7 different screen layouts
- ▶ Full screen 2, 3 and 4 split screen functions inbuilt
- ▶ Complete with heavy duty mounting, sun visor and all cabling
- ▶ 4 standby wire function
- ▶ 2.5m sealed connection lead
- ▶ Dimmer sensor inbuilt (day/night function)
- ▶ Internal mirror image settings
- ▶ Easy to navigate menus via on screen display (OSD)

## Fuel Cap Isolation system

The **Muirhead®** Fuel Cap Isolation system has been designed to prevent the machine operator from starting the machine and driving away with the fuel filler still attached. This will eliminate damage to machines, refuelling stations, hoses and prevent hazardous fuel spills.

The system inhibits the operator from starting the machine, without firstly ensuring the fuel cap has been placed securely back onto the quick fill adaptor on the fuel tank.

The **Muirhead®** Fuel Cap Isolation system has an intrinsically safe circuit design with supporting certification conformity for use in zone 0 applications.

### FEATURES & BENEFITS

- ▶ Intrinsically safe circuit design
- ▶ High quality connectors and wiring components
- ▶ Water and vibration resistant
- ▶ Certification conformity for use in zone 0 application
- ▶ Prevents damage to the refuelling station
- ▶ Prevents refuelling accidents
- ▶ Reduces contaminants entering tank
- ▶ Maintenance free operation
- ▶ Easy to install
- ▶ In dash visual indication



## Familiar quay drivers led to technology gold mine



### Newsletter content

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#### New product releases:

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It may be a positive sign for the mining industry that one of the world's most technologically advanced automated stevedoring operations also features remote control systems adapted from Australian mines.

In Brisbane, Queensland, where Patrick Stevedores' groundbreaking automated straddle carrier (AutoStrad) terminal is servicing all Patrick container volume through the port, remote control technology is the vital enabling channel between people-free container handling areas and the interface with manual transport loading bays. It keeps people and robots separated.

Rio Tinto is among the mining heavyweights that sees automation as pivotal to its concept of "The Mine of the Future". Like a lot of other miners it has been using remote control technologies for some years, but unlike Patrick at Brisbane, it is only taking first tentative steps into the world of automation for mobile equipment.

Remote control and in particular Teleremote Control technology is, however, seen by miners as pivotal transitional and complementary technology in the move to safer and more productive mines.

Robert Davie, automation manager – terminals division with Patrick, has been a key figure in the company's switch to automated stevedoring at the Brisbane port. He says miners have been frequent visitors to the world-first Patrick AutoStrad terminal in recent times as plans to insert automation technology into dynamic mining environments advance.

"This is the only port in the world that uses this type of technology," Davie said. "There are other automated ports, but this is really a first for Australia and a first for the world."

"We have two main uses for remote control technology within the automated terminal.

"The reason we looked first at the use of remote control in mining was because they were already well down the development path of utilising Teleremotes in an operational sense. It was safe and reliable. We approached Remote Control Technologies because they are a large Australian provider with a proven track record.

"We changed some aspects [of the existing technology] to meet our circumstances ... but fundamentally they had the capabilities in their organisation to build what we wanted and they had the experience in mines to know what was safe; what worked and what didn't."

Davie said the Patrick system, currently with 23 AutoStrad units, could be controlled by one operator at a control centre on site. Remote control systems provided a control interface between the autonomous operations, and manual road transport, in loading pens.

"As in mining, no doubt, a good manual operator will probably always do better than the autonomous unit. It's in the average performance where you definitely see improvement [with automation] and you don't get that associated loss and cost through driver error."



## Bulldozer operators can work safely, right?



Thousands of bulldozer operators will face some danger when they go to work today. But a growing number won't.

"Remove the people, remove the risk,"

RCT is an international leader in remote control technology development, application and training and have converted dozens of different bulldozer types to remote control since 1988. More than 50 bulldozers converted for remote work are in use in seven countries: Australia, Papua New Guinea, Chile, Peru, Indonesia, New Caledonia and New Zealand.

The population of remote bulldozer continues to grow as customers develop more operating experience, giving them confidence to alter long held conventional mechanised bulldozer techniques to execute dangerous or tedious bulldozer work with less risk under remote control. It is possible to deploy a remote controlled bulldozer to perform most common bulldozer tasks.

Operators take up remote control of the bulldozer from a safe location within line of sight of the machine. From here they can see the entire machine – unlike sitting in the bulldozer cabin. They can perform all normal work with full vision of the machine. And a range of precision tasks, such as discrete ripping or finish blade cutting, are only possible because on remote control the operator can now see the ripper pick or blade. Teleremote systems are also used where line of sight operation is not ideal, such as stockpiles or in high altitude cold or hot, dusty environments.

Here the work can be safely and productively carried out with the remote bulldozer using a machine specific camera and operator station. Operators undertake bulldozer tasks observing the machines on colour monitors showing dedicated machine images or full birdseye views of the job site. The bulldozer's dash instrumentation can be displayed with or without audio feedback. Pitch tilt and roll telemetry can be included in the visual displays to provide more precise machine control where required.

RCT can convert any bulldozer to remote control and have converted at least 17 different bulldozer types on remote.

RCT has developed a world leading design, installation and operator training capability in the field of remote control systems for bulldozer applications. This business process has been proven converting hundreds of underground and surface machines.

### Why Remote Bulldozers are safer

- ▶ Improves operator safety in high risk working conditions
- ▶ Minimises operator fatigue
- ▶ Prevents repetitive stress injuries
- ▶ Maximises bulldozer utilisation
- ▶ Greater overall operator vision
- ▶ Improved ergonomic working environment for the operator
- ▶ Less idle time between production cycles
- ▶ Easy to operate and maintain



## RCT enters Chinese market

Remote Control Technologies have entered the Chinese market and see a great potential in China for advanced mine remote control systems after landing a breakthrough deal with SinoGold at its White Mountain underground gold mine in Jilin Province, in north-east China.

SinoGold technical manager Dr John Chen's previous experience with RCT technology at Mount Isa in Queensland led him to consult RCT's Phil Goode on a loader remote – then Teleremote – solution at White Mountain. An RCT **Control Master®** Series 2000D remote control system allowed operators to control the R1700G loader from safe ground. A barrier system was also set up to ensure the loader was only operated in the designated area.

SinoGold, China's largest foreign owned gold producer, subsequently decided to upgrade from line of sight to Teleremote control.

Training of local operators to use the remote control systems safely was also conducted by RCT.

"These are our first remote control systems in China once customers see the safety benefits we are confident they will take many more," Goode said.

## Operators out of chute hazard zone

Haul truck drivers at Newcrest Mining's Telfer underground gold mine can now activate block cave chute doors from a safe location after the company adopted an innovative infrared remote control system from Remote Control Technologies (RCT).

RCT and Newcrest commissioned the chute remote control systems about 12 months ago and have since enjoyed reliable, valuable use of the technology.

Instead of chute operators standing on an overhead gantry near the trucks and activating the chutes via adjacent hard wired umbilical controls, they now tele-operate the chutes from the safety of their truck cabs. Control is through an infrared TX/RX system that obviated the need for radio signals and licences. The short-range system suffers no interference from mine radio or other signals.

RCT also incorporated a vision solution in the form of a Maxi Vision camera system featuring its 5555 underground **Control Master®** specification camera, mounted above the chutes for the truck operator vision.

"Infrared was seen as the only solution due to the relatively short-distance operating range," said RCT mining area sales manager in Western Australia, Phil Dean.

"There is no risk of false signals and interference from neighbouring chute systems.

"The system has proved to be of great benefit. There is no need for operators to be exposed to heat, dust, fumes, poor ventilation, the possibility of mechanical failure of the chute system or complete a very repetitive process pressing a button to open and close the chute lip raise lower operation."

Telfer now has six underground trucks drawing ore from five chutes using the remote control systems.

"RCT have a similar system installed at Freeport in Indonesia with four chutes being used. The system in Freeport is also utilising a radar to monitor the ore levels inside the ore passes," Dean said.



## Remotes work wonders on sink-hole stockpile



A clever communication solution was part of the remote control package supplied at a South African gold mine run by industry heavyweight Gold Fields.

Remote Control Technologies (RCT) supplied a line of sight remote control system to contractor SPH Kundalilla, to ensure operation of a Caterpillar 980H Front End Loader (FEL) on ground above known "sink-holes" could be done safely. Retrieving gold ore stockpiles with the FEL became hazardous as below-ground workings were dewatered and sink-holes formed in the ground above.

As water drained away, the ground above became unstable and brittle, meaning it could cave. One previous incident saw a gold plant topple into a sink-hole area, claiming six lives.

The answer was to put the loader on line of sight remote control. The remotes were set up with a 900MHz communication channel, which was license free and spread spectrum, enhancing the communication protocol for quicker machine operation and feedback.

Autodig technology was also employed to improve FEL production, with the operator remote controlling the loader able to switch, via the remote transmitter, to an automatic digging cycle to load the bucket. Once filled the bucket is raised to a pre-set height and the operator resumes remote control to reverse the machine to a dumping location.

RCT also gave the operator a "trigger mode" option so that once the remote controlled loader is in the stockpile dirt and the bucket is lined up precisely, the operator simply pushes a button on the remotes to activate Autodig. The option was designed for clean-up activities.

RCT completed **Control Master®** levels one and two line of sight training with all loader remote operators, who had a test area to hone their skills before moving into an actual production environment. A second loader has been requested.