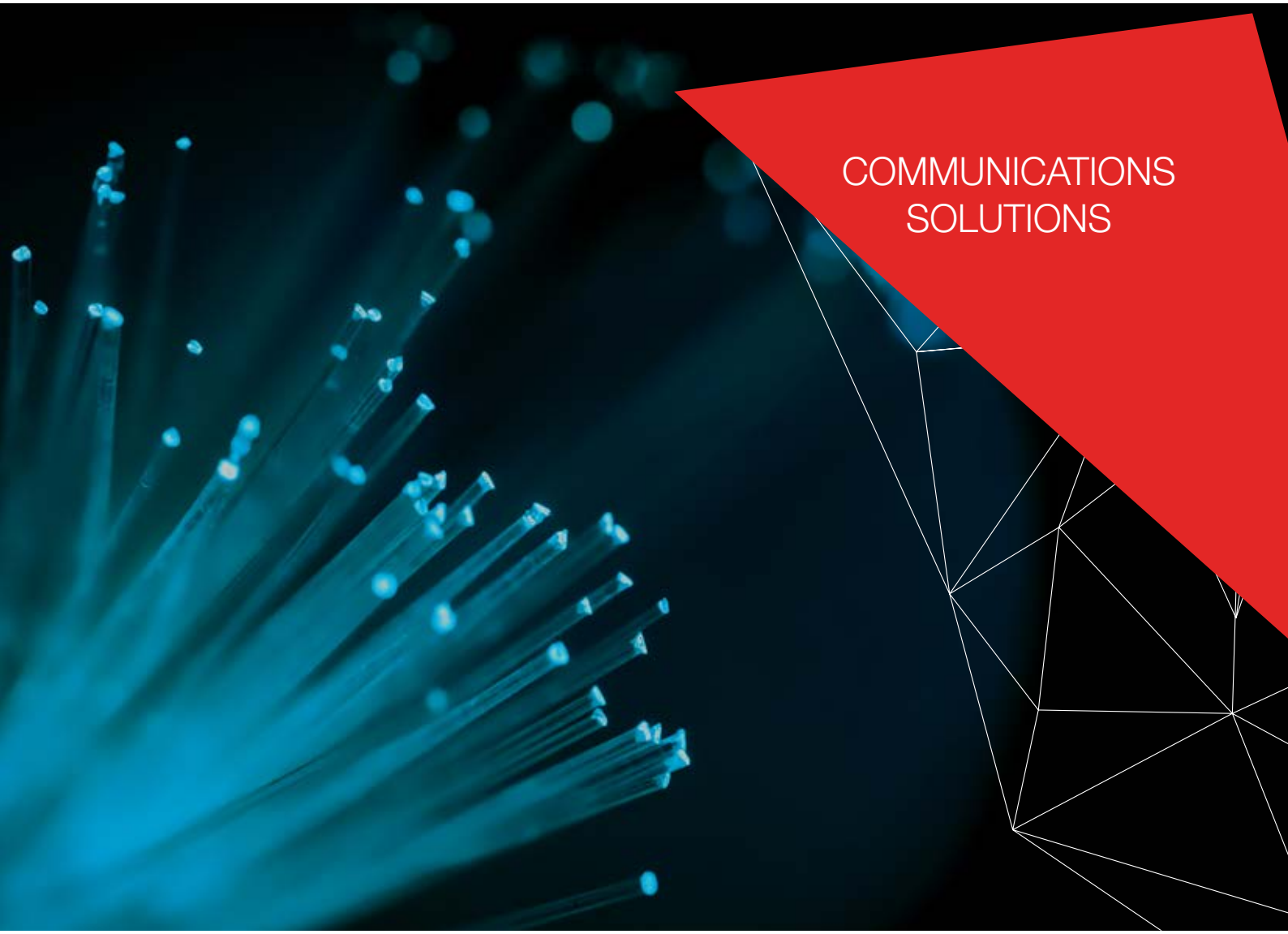
CONTROLMASTER®

SMART AUTOMATION & CONTROL TECHNOLOGY **BY RCT**

COMMUNICATION SOLUTIONS TO SUIT EVERY MINE SITE



rct-global.com

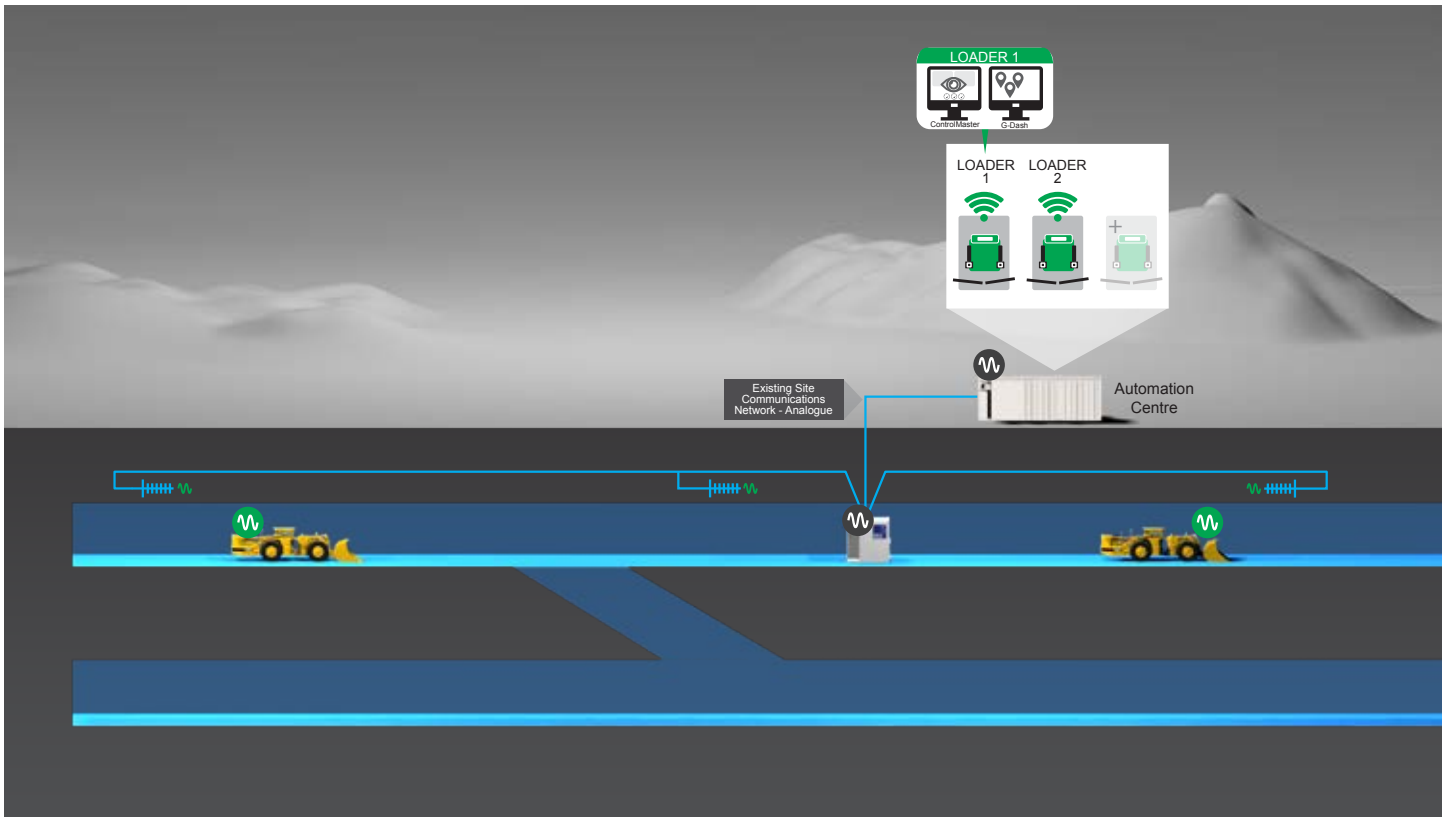
RCT has control and automation communication solutions to suit all mine site's needs ranging from analogue control, to a hybrid of both analogue and digital, right through to a fully integrated digitised solution.

ANALOGUE

RCT's traditional method of Teleremote operation uses analogue control and vision. Video is transmitted between 500-700 MHz and control data between 470-490 MHz. The simple, economical, communication solution for both analogue vision and autonomous machine control encompasses a secure distributed antenna network.

FEATURES:

- Simple to install
- Cost effective
- Maintenance friendly
- Reusable components
- Accommodating under a range conditions; analogue vision and control rarely drops out completely allowing the operator to continue to drive with vision always available
- Lends itself to operating between 100-1000m from the ControlMaster® Automation Centre
- Able to operate from Teleremote through to Independent Guidance
- Can connect to Automation Centre via fibre optic or Internet Protocol



RCT BRIDGE

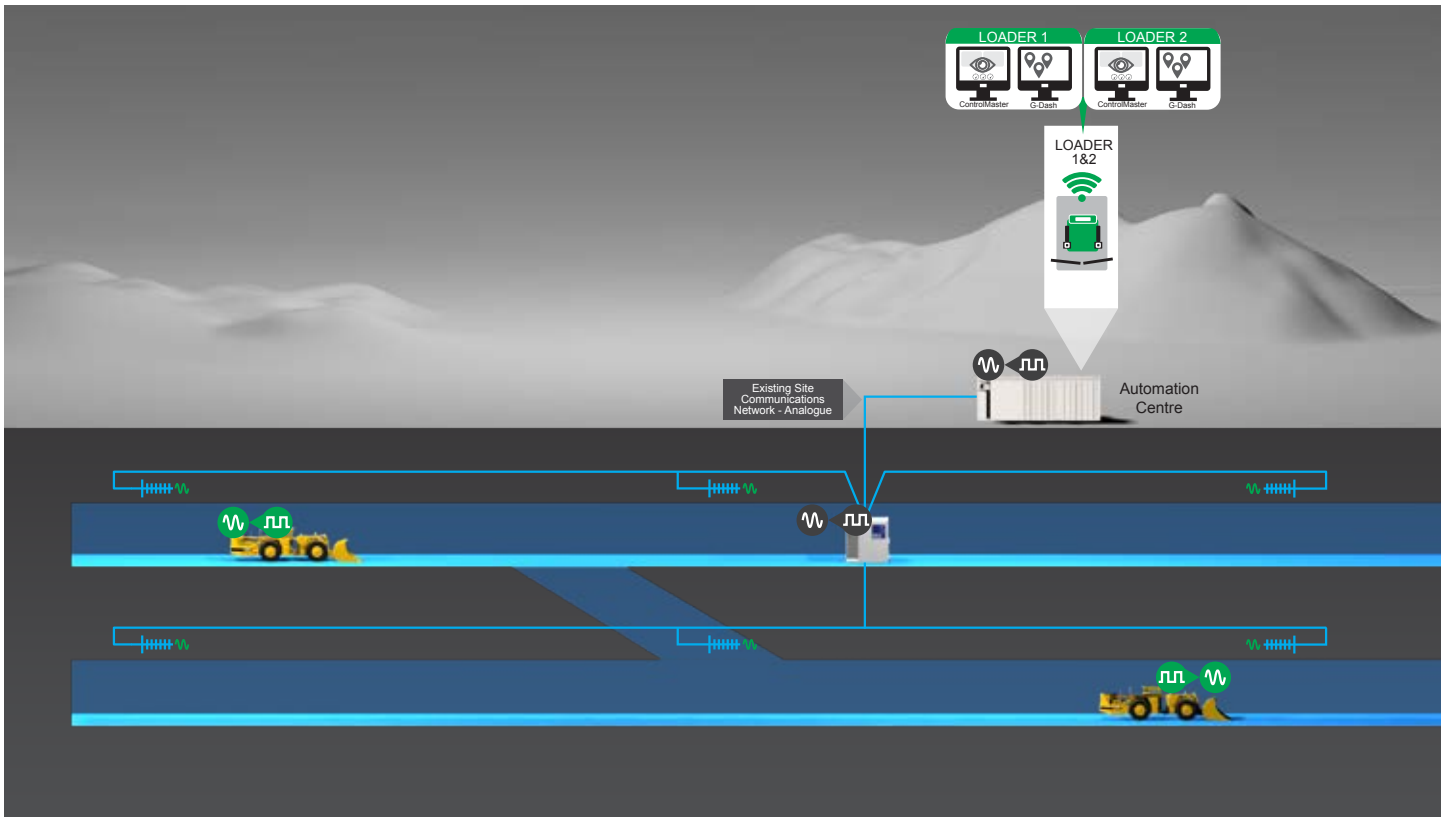
Although the analogue network has served its purpose well, the requirement for autonomous features is continuously growing. In order to deliver some of these features, digital communications is required; enabling large volumes of information to be transmitted and received promptly.

RCT Bridge is the stepping stone to full digitisation. Data is transmitted and received at 530MHz from the machine radio, then integrated to a PC in the ControlMaster® Automation Centre. It has the unique ability to integrate into an already existing analogue network, with the addition of some hardware at the Automation Centre and on the machine.

Adopting a digital data solution to the proven analogue Yagi antenna network will deliver additional automation features, without the need to remove existing infrastructure. RCT's G-Dash, EarthTrack® Fleet Management and remotes diagnostics will deliver further value to the customer with minimal investment or the need to move to a full-scale digital network.

FEATURES:

- Integration with existing analogue network on site
- Ability to maintain existing hardware as it only requires simple upgrades to machine and cabin
- Capacity to transfer large volumes of machine data instantaneously, including diagnostics, production figures, fleet management
- Capability of diagnosing any machine issues from the Automation Centre
- Provides an upgrade path for those customers with a large investment in analogue infrastructure
- The ability to add G-Dash, Auto Dump, Multi-Machine Control and Multi-Machine Selection
- Remote diagnostics



RCT CONNECT

RCT can provide a full-scale digital communications solution to meet the demands of the autonomous machines to provide accurate feedback and information in real-time via a secure communication network from the machine's work area to the ControlMaster® Automation Centre.

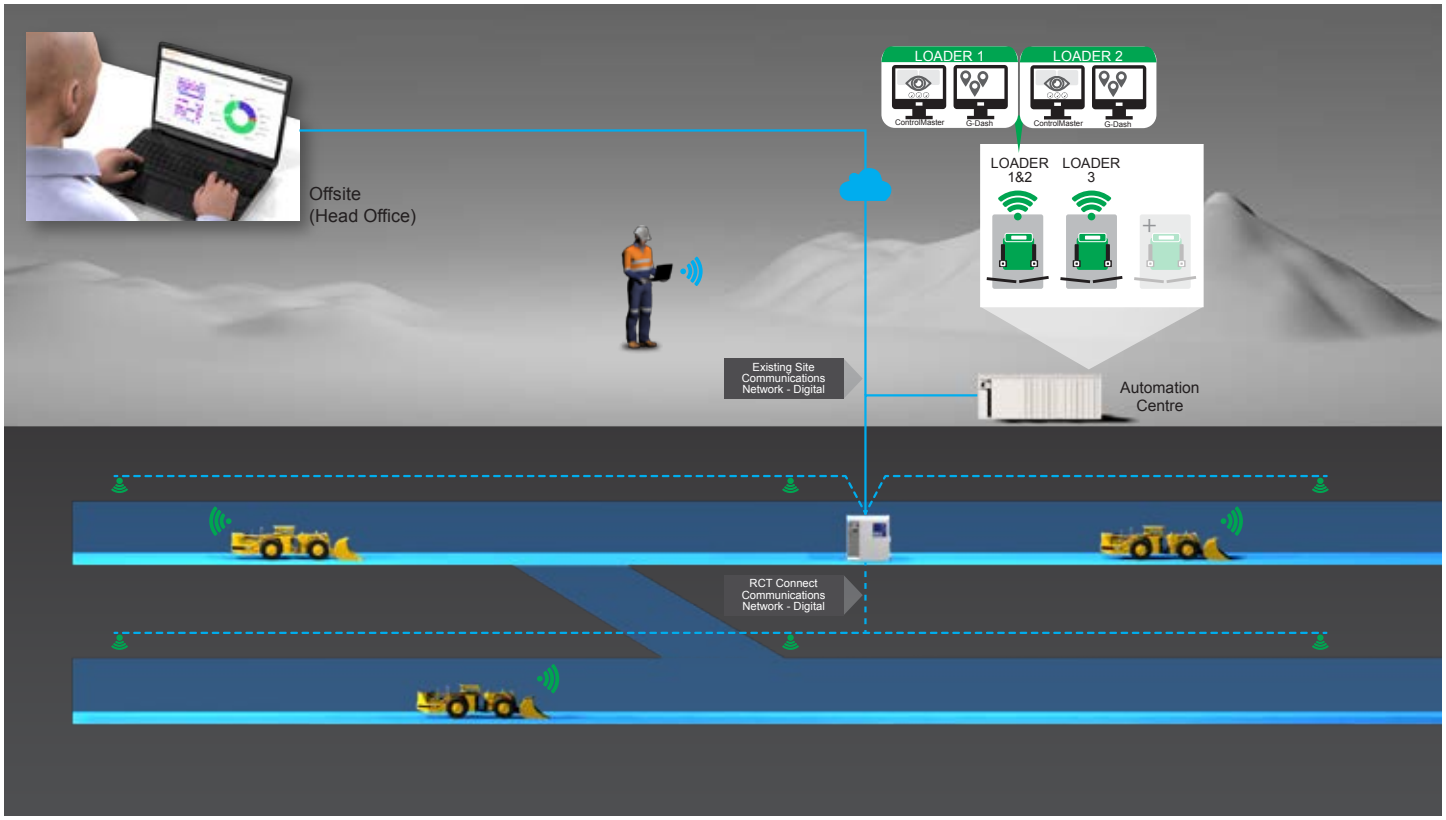
Operating at 2.4GHz, RCT's deliverance of the RCT Connect digital WiFi solution guarantees autonomous machine performance for both existing and future loaders and truck fleets.

On site communication can be interfaced into the RCT Connect digital network via fibre optic or Ethernet; allowing mine operations to clearly view machine operation and performance to ensure long-term sustainable machine production.

With the underground mine landscape constantly evolving to become a high-efficient, low-cost operation, automation and information across the loading and hauling fleet will play a major role in delivering real improvements to bottom-line profit.

FEATURES:

- Capacity to transfer large amounts of data between the machine and Automation Centre
- Full autonomous features able to be delivered
- Expansion and upgrade capabilities
- Remote diagnostics
- Live machine tracking
- Live health and production data from the machine
- Ability to operate from anywhere in the mine
- Capable of connection with the sites existing network for surface control and/or remote operating centres



INTEGRATION

RCT can roll out a full digital communications solution to meet the demands of the autonomous machines to provide accurate feedback and information in real-time through the mines existing digital network.

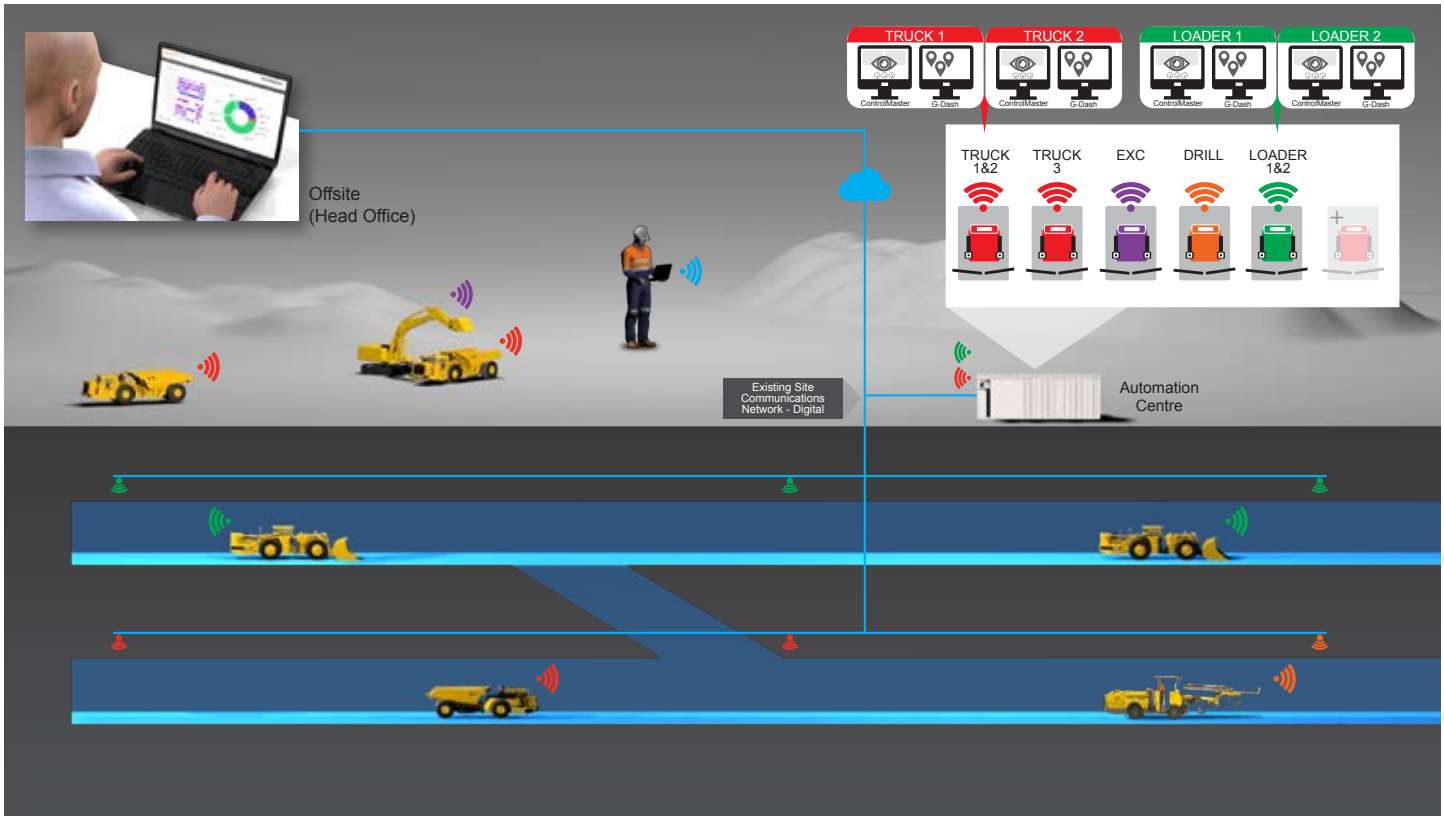
Integration also allows mine operations to clearly view machine operation and performance to ensure long-term sustainable machine production. RCT can collaborate with the customer to interface the technology into the existing digital network; we are able to interface Long-term Evolution (LTE), underground WiFi and mesh networks with fibre optics or Ethernet infrastructure for surface or central control – regardless if its controlled by a third party or the site itself.

In most circumstances there are no added costs for the deployment of this offer as the customer; however, it is the customers' responsibility to ensure the network covers the working area in which the machine operates. The quality of coverage for reliable machine control is critical for this solution and if need be, the customer may be required to modify or update the network to accommodate autonomous machines.

With the underground mine landscape constantly evolving to become a high-efficient, low-cost operation, automation and information across the loading and hauling fleet will play a major role in delivering real improvements to bottom-line profit.

FEATURES:

- Capability to transfer large amounts of data between machine and ControlMaster® Automation Centre
- Expansion and upgrade capabilities
- Remote diagnostics
- Live machine tracking
- Live health and production data from the machine
- Ability to operate from anywhere in the world with reliable connectivity
- Fully autonomous operation possible with the addition of machine collision avoidance and personnel tracking
- Integration to dispatch and traffic control systems



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