

# Argyle Diamond Mine

Improved efficiency for the world's largest diamond supplier



Argyle Diamond Mine, East Kimberly region

Argyle Diamonds is the world's largest supplier of diamonds, producing approximately 30 million carats each year from its operations in the remote East Kimberley region of Western Australia. The company's production accounts for approximately one-quarter of the world's natural diamond production, with the mine occupying over 450,000 square meters.

The Argyle diamond mine is a fully automated, open cut mine, characterized by a high level of efficiency, safety and productivity, a commitment to quality management, a skilled workforce and state-of-the-art technology.

Argyle operates an open pit mine, alluvial mine and a processing plant 24 hours a day, 365 days a year. Each year, some 80 million tonnes of material is extracted with the plant processing approximately 10 million tons of ore, liberating around 30 million carats (equivalent to 6 tons) of diamonds.

## The Challenge

Argyle Diamonds' management needed centralized visibility of mine operations, as well as the ability to compile and disseminate valuable production data for key operational personnel working at various locations around the mine.

Furthermore, given the size of the mine's operations, Argyle sought an automation solution that was reliable and robust enough to manage the various processes of such a large scale operation.

## The Solution

The solution was a fully automated integrated monitoring system with 33 PLCs connected to a 40-workstation PC network. The workstations, which controlled and monitored 32,000 digital points, 12,000 analog words and 6,000 trends, were connected with an Ethernet LAN.



## The Challenge

Argyle Diamond Mine sought an automation solution robust and secure enough to monitor all facets of their large scale operations, whilst being simple to configure and operate.

## The Solution

CitectSCADA was implemented as the complete automation solution, seamlessly integrating with the existing hardware and providing complete visibility across all areas of Argyle Diamond Mine's vast operations.

## The Benefits

Argyle Diamond Mine has increased efficiency and reduced downtime as a result of the automation solution. Management now has a consolidated view of valuable real-time data from across the mine, with site personnel able to immediately respond to issues before they impact production.



Centralized operational control at the mine



Graphic display of the mine's automated treatment process

In reconfiguring the mine's automation system, CitectSCADA software was installed at Argyle, together with a fully re-vamped configuration and totally new server hardware platform. This upgrade was engineered and managed by the local professional services team, with cutover to the new platform achieved over a scheduled 36 hour shutdown, with no additional downtime.

The upgrade included the complete integration of two hitherto detached systems on the site to achieve an overall system size of:

- 2,350 graphical pages
- 48,000 variable tags
- 2,578 trends
- 10,800 Argdig alarms
- 6 I/O servers
- 2 RAT servers
- 2 file servers
- 30 CitectSCADA workstations
- 6 WAN workstations
- 46 PLCs, GE Series 6, AB Pyramid Integrator and PLC5, Omron, Siemens

Advances in server hardware allowed for the existing 20 CitectSCADA servers to be rationalized to just 10 low profile units, whilst still keeping the server CPU utilization to an average of just 21%.

Using its proven client-server architecture, the CitectSCADA software graphically displays and reports on every aspect of Argyle Diamond Mine's automated treatment process, from ore screening and crushing, to diamond recovery and tailing, power generation, transmission and distribution.

#### The Conclusion

CitectSCADA provides information to Argyle Diamond Mine's personnel working at a number of operational and managerial levels around the plant. Using this information, they can respond immediately to any problem in the mine's operation.

Argyle is now implementing a CitectHistorian solution to replace the data pipeline to their existing downtime monitoring system. This reporting tool will integrate with the automation software and enable Argyle Diamonds to optimize data usage by providing an enterprise-wide tool, compiling and storing meaningful data from multiple, disparate systems.

This in turn will help Argyle Diamond Mine increase ROI and make more effective business and strategic decisions that optimize operational performance and profitability.



**"CitectSCADA allows us to visualize the plant from one end to the other, all from a master location in only a few keystrokes.**

Rob Kefford  
Senior Process Engineer  
Argyle Diamond Mine

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**CitectSCADA**