



DE BEERS GROUP

OPTIMIZING ARCTIC MINING OPERATIONS WITH SAP® MII

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Lorenzo Plaath, Manager of IT Service Delivery, De Beers Canada Inc.

QUICK FACTS

Company

- Name: De Beers Group
- Location: Johannesburg, South Africa
- Industry: Mining
- Products and services: World's largest diamond producer
- Employees: Over 13,000
- Web site: www.debeerscanada.com
- Implementation partner: RTS Consulting Inc.

Challenges and Opportunities

- Manage energy and fuel costs in arctic mining operation
- Establish reliable planning and management data
- Reduce dependence on manual reporting and analysis processes
- Improve visibility into daily rough diamond production

Objectives

- Gain real-time insight into and control of mine operations and energy consumption using a comprehensive plant-monitoring solution
- Provide operators, planners, and managers with reliable, highly available information using interactive dashboard interfaces that leverage deployed enterprise software

SAP® Solutions and Services

SAP® Manufacturing Integration and Intelligence application

Implementation Highlights

- Close collaboration with RTS Consulting, an SAP partner
- Phased facility-by-facility implementation
- Joint-facility blueprinting session to consolidate requirements and streamline deployment
- Strong project leadership to meet change management and training challenges

Why SAP

- Integration with the SAP ERP application
- Interactive and simplified interfaces
- Partner expertise and reliability
- Strong demonstration project
- Real-time, bidirectional communication with plant equipment
- Custom-configurable solution

Benefits

- Reliable planning, management, and operational data
- Improved uptime through continuous monitoring of critical plant equipment and streamlined maintenance response
- Remote, real-time monitoring of energy and fuel consumption
- Spreadsheet-based, manual reporting processes eliminated
- Daily insight into rough diamond production and processed ore
- Fast recognition of high- and low-yield mine deposits
- Carbon emissions reporting

Existing Environment

SAP ERP application



When your mining operation is near the North Pole, everything you do requires extensive planning and high cost. For example, the fuel to operate your mine has to be trucked in across hundreds of kilometers of ice road. To optimize its operations, De Beers Group deployed the SAP® Manufacturing Integration and Intelligence (SAP MII) application. It monitors critical operations in real time to enable the highest levels of production and energy efficiency while eliminating the cost and risk of highly manual, error-prone processes.

Finding Rough Diamonds in the Remote North

Established in 1888, De Beers is the world's leading rough diamond company with expertise in the exploration, mining, and marketing of the precious stones. Recognizing that diamonds are often gifts of love, celebration, and commitment, the people of De Beers live up to those values by making sustainable contributions to the communities in which they live and work. This commitment has helped establish operations in more than 20 countries across 6 continents.

These operations include the Snap Lake diamond mine located in the Canadian Northwest Territories. This is De Beers' first mine outside of Africa and Canada's first completely underground diamond mine. The nearest source of electricity is 220 kilometers to the south. What's more, access to the mine is only permissible by air or by a custom-built ice road that is open just a few weeks in the winter. "Snap Lake relies entirely on fuel trucked in

across the ice road," says Lorenzo Plaath, manager of IT service delivery at De Beers Canada Inc. "It takes 600 million liters of fuel to operate the mine for three years. It's crucial from both a cost and sustainability perspective that we carefully monitor our fuel and energy consumption."

To perform this monitoring, De Beers relied on highly manual, spreadsheet-based processes. Staff traveled to the mine on a weekly basis to read fuel and other critical meters from the fuel tanks. Those figures were manually entered into spreadsheets, which were then used in additional management and planning reports. "This process created a high potential for errors and introduced uncertainty in our reporting," says Plaath.

Demonstrating Powerful Functionality Through a Child's Toy

De Beers recognized that its Snap Lake mine and Victor mine needed a less manual and more reliable approach to ensure efficient mining operations and accurate, reliable planning and manage-

ment information. After evaluating other solutions, De Beers selected the SAP MII application.

Plaath and his team first recognized the potential benefits of SAP MII after a unique demonstration conducted by implementation partner RTS Consulting Inc. The partner connected SAP MII to a slot car racetrack and configured the dashboard interface to track each car, measuring the number of laps, calculating car speed, and even invoking cars to enter the pit stops. "We wanted to show how using SAP MII for something as simple as a child's toy can represent the processes, information, and analytics of a plant environment," explains Vic Briccardi, president and CEO at RTS Consulting. "Car speed could equate to the cycle time of a piece of equipment. Meanwhile, the ability to use SAP MII to send cars into the pit stop represents the tremendous control that plant operators could gain over their equipment."

Plaath immediately saw the applicability to mining operations. "SAP MII met our key requirements of real-time monitoring of plant operations, energy consumption, and other critical processes using interfaces our business users could understand," he explains. "We could replace the in-person monitoring we've been doing with more accurate remote monitoring." The integration of SAP MII with the company's deployed SAP ERP application was another critical advantage – enabling captured data to be used with other business processes and made available to De Beers' managers and planners.



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Establishing Common Requirements for a Phased Implementation

Plaath and his project team collaborated closely with RTS Consulting to help ensure that the implementation of SAP MII remained on time and within budget. Given the mine's remoteness and the fact that it is staffed in two-week shifts, the incoming shift had to be fully briefed on the implementation to ensure project continuity and knowledge transfer. “Both RTS Consulting and our internal team have been very proactive throughout the project, enabling us to overcome challenges around change management,” says Plaath.

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Lorenzo Plaath, Manager of IT Service Delivery, De Beers Canada Inc.

De Beers also implemented SAP MII at its Victor mine in Ontario, Canada. To maximize lessons learned and reduce overall risk, the company completed the software deployment at Snap Lake before moving on to the Victor mine. Prior to both deployments, the project team convened a design and requirements blueprint session that involved key stakeholders from both facilities. “Our plan was to standardize across both mines as much as possible so that the implementations would proceed smoothly,” says Plaath. Although there were significant differences between the operations, common reporting and

monitoring requirements emerged in key areas including energy management, carbon reporting, and fuel management.

Improving Planning and Control with Real-Time Visibility

With the deployment of SAP MII in both facilities, De Beers has significantly improved operational insight and control, making a big difference in the company's ability to manage and plan mine operations effectively. The solution has greatly reduced manual efforts required to compile reports and run analytics. “The real-time visibility into our plant systems and production status is a critical bene-

fit,” explains Plaath. “We are continuously improving energy efficiency and fuel management and receive instant alerting of plant equipment issues. At the same time, our planners and managers can completely trust the data from SAP MII.”

Enhancing Decision Making with Interactive Dashboards

By using custom-configured interactive dashboards that constantly monitor programmable logic controllers (PLCs) deployed throughout the plant, SAP MII helps management instantly answer

critical questions including: What is the current and projected fuel inventory versus consumption? How many tons of ore have been treated through the plant on a given day? And are there any critical or emerging safety or environmental issues that need to be addressed?

If planners want to know the status of a particular process, they can click the appropriate metric in the dashboard interface and then select a time range to view trends. “Our department heads no longer need historical reporting that's been manually compiled,” says Plaath. “They can walk into a meeting, pull up the appropriate dashboard, and see what's happening instantly.” To get that analysis before, the planners would go to the plant control room and ask the operators to run several reports manually. Now planners can get what they need without leaving their desks.

Using Daily Production Insight to Identify Rich Deposits

A critical daily requirement for De Beers was to establish the total number of rough diamonds produced compared to the total tonnage of ore processed. Previously, planners had to go through extensive manual reconciliation in spreadsheets to get this information. Now it's available to planners instantly. “Because SAP MII can tell us how many rough diamonds were produced from a given day's processed ore, we have insight into which specific areas of the mine produce the highest yields,” explains Plaath. “This helps us validate our mining plan and fine-tune our operation to ensure that we are mining the richest deposits.”



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Streamlining Equipment Monitoring with SAP ERP

Mine operators are also using the real-time bidirectional communication of SAP MII to take action when they receive dashboard alerts indicating specific plant equipment failures or meter readings that exceed thresholds. By leveraging the solution's integration with their deployed SAP ERP, operators can speed issue resolution and prevent outages in plant operations. "We have the entire mine management model in SAP ERP, including individual part and model numbers," says Plaath. "So when a piece of equipment fails, we can automatically generate orders for our maintenance department."

Expanding SAP MII Beyond Mining Operations

Other departments and facilities at De Beers are taking notice of the successful use of SAP MII at the Snap Lake and Victor mines. A dam operated by De Beers' safety, health, and environment department is now using SAP MII to remotely monitor dam levels and respond more rapidly to any changes. The company is also deploying SAP MII to establish real-time monitoring and reporting in its core sampling plants. "The ability to implement SAP MII on a facility-by-facility basis is a huge benefit for us," concludes Plaath. "It minimizes our risks, and we can continuously streamline our implementation as we standardize user interfaces and requirements."



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