Case Study
Debswana Diamond Corporation

Client Background

Debswana Diamond Corporation Pty (Ltd) is a Botswana diamond mining company in operation for over 40 years. Debswana, currently under the joint ownership of De Beers and the Botswana government, operates the Orapa, Lethakane, Jwaneng and Damtshaa Mines, with Orapa being the world's largest diamond mine by area.
Orapa operates seven days per week and currently produces on average 12 million carats per year. The recoverable ore grade at the mine is approximately 0.87 carats per ton. The processing plant at Orapa processes ore produced at Orapa as well as at Debswana's Lethakane and Damtshaa diamond mines.

Key Challenges

As part of the Debswana Group asset management strategy, Pragma provided specialised training in defect elimination, also referred to as Focused Improvement (FI), and facilitated defect elimination sessions at both the Jwaneng and Orapa mines. Only two weeks were available for the project.
Conveyors are a critical component of the Lethakane mine value chain and are vital to reaching the production targets for its seven-days-a-week operation. The Jwaneng mine experienced frequent repeated cascade conveyor belt failures that resulted in excessive production downtime and obvious related costs. These failures were typically caused by incorrect positioning and allocation overhead of the three bins from where further processing would take place.

"Cost savings from elimination of root causes of incorrect cascade positioning failure are calculated to be approximately 1.5 million pula per annum."

Client

Pragma Intervention

- Presented specialised training in FI and structured problem solving techniques.
- Guided the client engineering team through a problem definition and data gathering phase.
- Analysed available data.
- Conducted root cause analysis.
- Assisted in the development of the proposed solution.
- Developed a detailed action plan for the implementation of the solution and relevant Best Practices.
- Compiled an A3 project report.

Value Add

- Root causes of the incorrect conveyor dumping position were verified by the Original Equipment Manufacturer (OEM). Preventative action can eliminate reoccurrence by more than 70%.
- Cost savings from elimination of root causes of incorrect cascade positioning failure calculated to be approximately 1.5 million pula per annum.
- Best Practices for hydraulic system services were changed.
- Hydraulic service regime with design improvement methodology saves 60% on service time.
- Jwaneng defect elimination champions were identified.
- Outcomes resulted in a 100-day focus programme into cascade conveyor positioning failures and its prevention.

- A culture of root cause problem solving has been fostered based on the DMAIC approach to problem solving.

Tools and Technology

- Microsoft Excel
- DMAIC
- Pareto analysis
- Fishbone analysis
- SAP® PM
- Cause and effect analysis.

- Asset care plan development, contractor management and FI.
- Structured problem solving with root cause analysis.
- Analytical data gathering and segregation of data values and practical prioritisation.