

Start-Up Services

An experienced services company rapidly brings a new facility on line and up to capacity

Traditional maintenance outsourcing drives cost cutting and transfers less important activities to a third party while the plant management continues to manage maintenance itself. The problem with this approach is that after limited financial benefits have quickly been realized, there is no room for additional improvement. Suppliers focusing on protecting their thin margins are reluctant to enter a necessary partnership with the company to further improve the customer's processes. ABB Full Service, conversely, is a performance-based maintenance partnership that drives operational excellence through sustainable productivity improvement and reliability excellence.

With ABB Full Service, ABB shares risk by contractually committing to key performance indicators (KPIs), such as increased overall equipment effectiveness (OEE) and reduced total maintenance costs, and assuming full responsibility for customer maintenance. One of the greatest advantages of the ABB Full Service approach is that it enables the customer to focus on what they do best, while ABB concentrates on leveraging maintenance to improve customer profitability.

The approach in a greenfield site includes key additional steps that help accelerate business improvement and minimize risk. At the conclusion of each phase, ABB and the customer discuss goals, accomplishments and next steps:

1. Front-end engineering
2. Detail engineering
3. Equipment selection and procurement
4. Construction
5. Commissioning
6. Startup
7. Operation

For example, Vale Inco is a \$1 billion greenfield nickel mine and concentrator. Remotely located with little local infrastructure, the mine started operations in 2005 and employs more than 350 people with an expected annual production of approximately 50,000 tons of nickel for a minimum of 14 years.

The entire maintenance function is handled by a partnership between ABB and Iskueteu, a local company that specializes in construction and operations support. ABB began by providing reliability consulting for the equipment selection, construction and maintenance planning phases. Additionally, ABB provided training for commissioning, startup and ongoing operations, and through the Iskueteu partnership, is now responsible for maintaining all process equipment, site facilities, the port and the mine. One key challenge was the management's strong desire to "hit the ground running" to achieve very fast plant startup and accelerate equipment performance.

In the commissioning phase, ABB and Vale Inco worked together to facilitate an efficient start to the next phase by ensuring all pertinent equipment, tools, and procedures were prepared, and key contractors were recruited. This involved creating the Maintenance Management Master Plan, a proven ABB methodology that improves maintenance by instituting best practices, and actively participating in the health, safety, and environmental continuous-improvement discussions.

Another key initiative in the commissioning phase was employee training and competency management. This included refining training materials, conducting equipment-specific training and doing company team-building exercises. In addition, Iskueteu/ABB participated in ABB Full Service training, which included defining and developing roles and responsibilities, and training on work-order systems, customer relations and the ABB Full Service agreement. One of the training approaches implemented is ABB's Competency Development Program, where each maintenance employee has a specific personal development program that helps him complete a quality job safely, efficiently and effectively the first time. In Vale Inco, the program methodology identified more than 1,200 specific training programs required for maintenance operations to be successful.

Startup at Vale Inco involved implementing maintenance programs and plans, including condition-based, time-based and breakdown maintenance. During implementation of condition-based maintenance, Iskueteu and ABB introduced new techniques, including ultrasonic testing, and developed an effective inspection strategy for each group of equipment. Furthermore, an Asset Management Program, which included life-cycle costing models and replacement strategies, was developed.

Creating an optimal Asset Management Program for a greenfield site was a significant challenge since there was no historical asset and performance data to perform benchmarks and predict asset failures. So, during the startup, ABB and Vale Inco began measuring all performance indicators, including OEE and relevant operating costs, and developed and implemented continuous improvement programs.

In the final ABB Full Service phase for greenfields, primary maintenance programs were executed, managed, and supervised, and non-routine maintenance activities were performed. Also, KPIs continued to be measured and reported against targets, and root cause analysis procedures were implemented.

Vale Inco's commitment, ABB management expertise and the Full Service methodology helped Vale Inco achieved 90% of rated capacity for the mine concentrator in just three months after startup.

In addition to an accelerated ramp-up, Vale Inco achieved significant performance improvements through incentive-based contracts, and experienced no major disturbance due to heavy investment on employee training. In fact, Vale Inco achieved 1,000 days without lost time due to injury.

Achieving a fast ramp-up coupled with high employee satisfaction drove Vale Inco to realize commercial nickel production significantly ahead of schedule and attain an all-time high production level.

“We achieved commercial production well ahead of our original schedule,” said Peter C. Jones, president and chief operating officer of Vale Inco, in 2006. “Thanks to this excellent ramp-up, we expect to produce some 5,000 tons of nickel more than expected.”