CUSTOMER CASE STUDY

Powered by data: ArcelorMittal's integrated remote operations center

ArcelorMittal Mining Canada G.P.
Industry - Mining, metals and materials

Goals

- Increase production from 16 million to 24 million tons
- Reduce bottlenecks in operations and logistics

Challenges

- Small loading facility couldn't be physically expanded
- Using assets designed for a 16-ton operation to produce 23-30 tons

Results

- $120 million additional revenue
- 300% reduction in concentrator slowdown
- 5% increase in conformity to mine plan

Solutions

- AVEVA™ PI System™
- AVEVA™ PI Vision™

ArcelorMittal Mining Canada G.P. (AMEM) is one of the main Canadian suppliers of iron ore products for the national and global steel market. The company has impressive facilities in Quebec on the north shore of the Gulf of St. Lawrence, and provide steel for many industries, including construction, automotive, energy, transport and packaging.

AMEM produces more than 26 million metric tons of concentrate a year from an extensive deposit in Mont-Wright and its mine in Fire Lake. All AMEM's concentrate is carried by rail to Port-Cartier, where part of it is processed at the company's pellet plant. With an annual capacity in excess of 10 million metric tons, the plant produces various types of pellets to meet its customers' demands.

Better data, better efficiency

In 2010, ArcelorMittal invested in an expansion project at the mine to increase annual production from 16 million to 24 million tons. When the project culminated in 2012, the price of ore had dropped significantly. AMEM knew it had to find a way to push the extra tonnage through its transportation infrastructure with no additional capital investments. “We haul ore from our production facilities and mines along a railway out to the port,” said Michel Plourde, director of innovation and technology at AMEM.

“There is only one loading facility,” he added, “and because the port was designed for smaller ships and cannot be modified, you cannot move multiple ships at a time – they just won’t fit.” AMEM had assets designed for a 16 million-ton operation and was producing between 23 million and 30 million tons a year, resulting in severe bottlenecks. “We had to push more ore through with no additional capital investments,”

Plourde recalled. “All we could do was apply a bit of smarts to what we had and see what we could do.”

The answer was to create an Integrated Remote Operations Center (IROC) and implement AVEVA PI System. Integrating all the company’s operational information into one system – making easy-to- understand data accessible to everyone – put employees in a new collaborative mind-set. Employees of all levels engaged with the data. “We met our targets in 2015 – 26 million tons was quite a challenge for us and translated to about $120 million of additional revenue,” said Plourde. Instead of investing in infrastructure, the company met its increased operation load simply by leveraging the data and streamlining port logistics. Since then, AMEM has had many more improvements in the works.

Single source of truth for real-time data

“We needed to build this ability to optimize better decision-making in order to enhance logistical decisions along that value chain,” said Plourde. His team solved the bottleneck issue at the port. It was now ready to chase bottlenecks across the entire value chain.

Using the asset framework, the contextualization layer in AVEVA™ PI Server, engineers created a digital twin of the entirety of pit-to-port operations. “We can basically represent and position just about any piece of equipment,” said Plourde. “It’s all running through AF [the asset framework].”

AVEVA PI System allowed engineers to identify the Mont-Wright mine as a major bottleneck site. What they needed, according to Plourde, was “to bring in the tools to provide us with real-time analytics.” The team created AVEVA PI Vision dashboards for management, analysts, supervisors and truck operators, offering users a single source of truth for real-time operations data.

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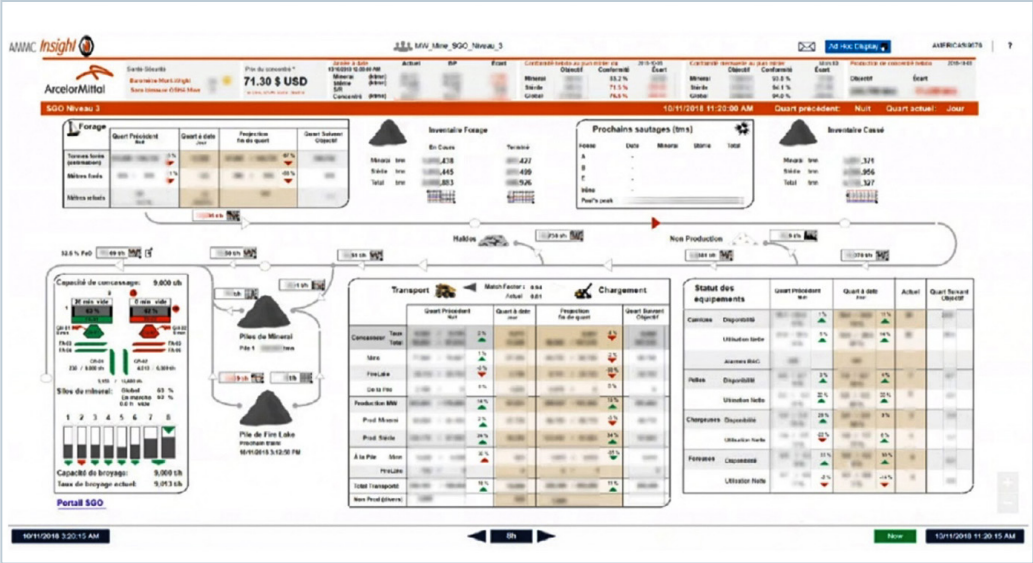
Michel Plourde,
Director of Innovation and Technology, ArcelorMittal



Relying on AVEVA PI System, analysts, managers, and operators can view and analyze the data they need to help them detect and solve problems in real time

Supervisors began using data to determine whether they had the correct number of mining trucks in relation to the shovels in operation. Real-time data displays allowed engineers to deploy more trucks when necessary, or park trucks when they weren't needed, saving on maintenance and fuel costs. Suspension-system data from Caterpillar trucks were fed into a system that analyzed hot spots on the roads. That way, crews could be deployed where they were needed most to fix the roads on any given day. Relying on sensor-based data, image-analysis programs began to catch large, incorrectly blasted rocks in individual truckloads.

Analytics allowed these loads to be intercepted before the large rocks could jam up the crushing machinery, eliminating hours of maintenance delays and improving safety conditions.

The new IROC significantly increased the daily hauled tonnage due to greater truck productivity. It also reduced by 300% concentrator slowdowns due to low feed at the crushers, and increased compliance to the mine plan by 5%. These improvements saved time, money, and resources across the board. With much more predictable results, AMEM is now able to identify and solve bottlenecks in real time, making its data-driven business plan the key to a successful future.

For more information about AVEVA PI System please **click here.**