ANGLO AMERICAN PLATINUM

Presented at PI World 2018







THE PI SYSTEM MAKES DATA SHINE FOR ANGLO AMERICAN PLATINUM

From running our cars' exhaust systems to beautifying our jewelry collections, platinum is a highly prized material, and the process of refining it is highly involved. Anglo American Platinum, the world's leader in refined platinum, produces around 37% of this precious metal. Unfortunately, platinum extraction provides very small yields. Out of the 29.7 million tons of rock Anglo American Platinum mined in 2017, the company extracted only 78 tons of platinum. Each piece of platinum is smaller than a speck of dust – some are as small as 5 microns – so efficiency in the refinery process is crucial.

To keep all Anglo American Platinum's equipment up and running and maintain ingot quality assurance, the company collected operations data manually, which required many man-hours to extract from spreadsheets. After putting together a list of requirements for a new data platform, the company opted to unroll the PI System™ as their digital transformation solution.

THE COMPLEX DANCE OF RESOURCE MANAGEMENT

Creating high-purity platinum ingots requires a slow cooling of the metal in gigantic concrete molds, taking several days and multiple steps. "You want to know where [the ingots] are in the process," said Warren Armstrong, a Control Technology Specialist for Anglo American Platinum during PI World Barcelona 2018. "If you've cast too many, you don't have any molds available, and production would potentially stop because you've got to wait for those to go through."

Tracking the ingots in real time was vital for engineers who needed to know the answers to critical equipment life cycle questions: How many ingots were casted into a specific mold? How many ingots must be pulled from molds on a given day? How many molds are available for casting? What is the average mold fill?

On top of that, all the company's equipment, from the molds to the ladles used in ingot casting, require regular maintenance and eventually replacement. Managing these assets is a high-stakes endeavor: "If you mess up in this area," said Armstrong, "you've actually messed up the entire process line for the company."

CHALLENGE

Create a platform to access up-to-date ingot and equipment life-cycle information to eliminate a manual process based on spreadsheets.

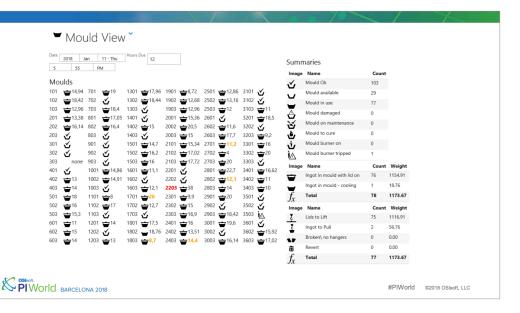
SOLUTION

The PI System gave Anglo American Platinum visibility into their manual process, allowing them to track each step of production.

BENEFIT

By capturing critical process events, the company saved around 400 hours of additional development time.

Using the PI System with
Event Frames, Anglo American
Platinum can now track the
status of its ingots, ladles and
casting molds in real time.



Unfortunately, analyzing equipment performance and life cycle wasn't simple, especially when cross-month comparisons were needed. Armstrong described a familiar situation to many industries: their Excel-based system worked, but "if you wanted to actually find performance metrics...someone would have to dig through multiple Excel sheets and collate the data [manually]." Real-time equipment and ingot statuses were out of the question. The team needed to find a way to have that information at their fingertips sustainably and integrate that solution with their existing data storage and user needs.

A CUSTOMIZABLE SOLUTION OFF THE SHELF

The PI System, in conjunction with Asset Framework (AF), a data contextualization layer of the PI Server, was a perfect fit. Engineers used AF to create a data hierarchy to structure and contextualize the data from ingots and equipment. With AF acting as a digital twin for the plant, the team set up Event Frames to capture critical process events - from casting and cooling to lid removal and crushing. Engineers gave each life cycle event a start and end time associated with specific equipment to get realtime information about the ingots, ladles, and molds. They used Event Frame templates, which were easy to set up and replicate and had all the necessary calculations built in. "It was almost a no brainer to let the Event Frames and Asset Framework do the heavy lifting," said Armstrong. "All the end user needs to do is actually enter

data." Now the team can pull a wide variety of useful searches out of the PI System, from finding out which ingots need to be removed from molds to chemical information on the contents of each ladle.

EVENT FRAMES SAVE TIME AND MONEY

The new system was a tremendous success. For the first time, Anglo American Platinum was able to get live information into its manual process, and dramatically reduce the time required for manual data entry. Using existing tools meant less to implement and less to maintain. "Utilizing existing functionality, we estimated we conserved about 400 hours of development time, because we didn't have to rebuild... you could just utilize it and build the front end on top of it," explained Armstrong. The PI System kept all the data in one place, which allowed users to easily access the information required for critical insights.

Today, the PI System is an integral part of Anglo American Platinum' overall process, from recording furnace pressure events to tracking the efficiency of their trucks. Over the past few years, Anglo American Platinum has generated over 6 million Event Frames. They are now looking to upgrade their architecture and visualization tools, as the PI Web API and other functionality were not available five years ago when they first began to implement their Asset Framework solution.

For more information about Anglo American Platinum and the PI System, watch the full presentation <u>here</u>.



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Frames is a perfect fit.
They have start and end times. They are based on temples...
You can have a whole genealogy... of a piece of an equipment or phases of a life of a product."

— Warren Armstrong,
Control Technology
Specialist at Anglo
American Platinum

Armstrong, Warren. "A Novel Approach At Anglo American Platinum to Enable Life Cycle Management" https://www.osisoft.com/ Presentations/Event-Frames-%E2%80%93-A-Novel-Approach-At-Anglo-American-Platinum-to-Enable-Life-Cycle-Management/>