



MULTI-AWARD-WINNING MAINTENANCE TEAM PROVIDE TANGIBLE IMPROVEMENTS IN FILTER PERFORMANCE AT SMELTER IN SOUTH AFRICA

The refurbishment of PF filters, inventory management, and maintenance agreement resulted in greater throughput with a significant improvement in equipment availability and reliability. Inventory holding costs significantly

reduced, saving costs and decreasing downtime.

The refurbishment of PF filters has substantially increased efficiency and asset utilization through optimized and safer operations.

CHALLENGES

- Poor contracting model
- Low filter efficiency
- Consistent unplanned breakdowns
- Poorly maintained equipment
- Lack of spares
- Loss of customer revenue
- Negative profitability to OT

SOLUTION

- Implement alternative contracting model
- Refurbishment program to restore filter quality to an acceptable standard
- Dedicated mechanical and operations team on site now insourced, under full-time OT site management
- Maintenance execution system implemented and linked to the inventory system

RESULTS

- Increased production
- Improved operational performance and reliability
- Lower operating costs
- Decreased downtime

An asset performance service agreement was signed in September 2016 for a period of 5 years with a major Platinum producer in South Africa.

We had been providing services to our customer on an outsourced model for many years prior to the asset performance service agreement. Various sites concerning the filter performance were faced with many challenges. Some of the challenges included unclear roles and responsibilities, undefined KPIs for both parties and a lack of site presence. One of the causes was a poor sub-contracting model which resulted in low filter efficiency and lower production volumes. The filters were poorly maintained with numerous unplanned breakdowns, lack of planning and low spares availability on site.

THREE FOCUS AREAS ENSURE OPTIMAL PERFORMANCE AND IMPROVEMENT

FOCUS AREA 1 | REVAMP AND REFURBISH

A team of Outotec filter engineers and specialists were tasked to conduct an in-depth audit to determine the cause of the problems and how to effectively overcome them.

We engaged in discussions with our customer to gain an understanding of their requirements, coupled with findings in the detailed audit report to tailor a service offering and solution that addressed these needs and met our customer's expectations.

The technical audit revealed the poor condition of the filters. The analysis of the performance on site was a clear indication of excessive consumption of spares, the low MTBF resulting in decreased production volumes.

A refurbishment intervention to refurbish twelve of the PF filters on five sites in South Africa was required to achieve the necessary results.

The filter refurbishment included:

- Plate packs
- E&I components
- Cloths
- Key upgrades

FOCUS AREA 2 | MAINTENANCE AND CONTINUOUS IMPROVEMENT

Further to refurbishing the filter, we also undertook to operate and maintain the filter taking full accountability for the equipment availability and performance. This was achieved through meticulous maintenance planning and process improvements by employing a fully dedicated mechanical and operations team on site.

The site team is supported by a dedicated back office team who ensures that maintenance planning and scheduling is conducted daily. This team also ensures that the Remote services portal is set up and that information is being analyzed for continuous improvement efforts on site. They also assist with process and reliability issues and monthly reports are generated to provide feedback to our customers.

Continuous improvements are critical to ensure progress on site. Digitalization tools to enhance our performance and provide our customers with the following benefits:

- Saves time and increases efficiency by providing automated real-time information
- Early detection regarding any irregularities resulting in diminished productivity and downtime
- Essential insight into the overall health of equipment and areas that require improvements
- Minimized business disruption by proactively alerting the team to address issues

Benefits since implementing our connected services to one of the smelters:

- 10% Production increase
- >90% Operational performance and reliability improvement
- Lower operating costs and total cost of ownership
- >8% Reduction in downtime
- Strategic maintenance and spares replacement
- Increased smelter efficiency and improved moisture levels
- Reduced inventory holding costs
- Greater efficiency, asset utilization, and reliability

The average cycles per day have declined, without compromising the production output resulting in less wear on components. The moisture is still a target we would like to improve, although various external factors such as material quality and auxiliary requirements also play a role. Equipment availability, MTTR, Tons/cycle and the average production per day have all improved.



FOCUS AREA 3 | INVENTORY MANAGEMENT AND SUPPORT

Forecasting models were presented in an analytical method to identify wear and demand patterns to provide a proactive spare part availability by means of an automated reordering system to maintain the specified performance levels, filter availability, and reliability. We implemented additional digitalization on site by connecting the site to our Remote Services Portal, a remote monitoring system to achieve the desired results and reduce costly downtime.

Notable improvements:

- We implemented an automated reordering system, specifically for the filters, which ensures spares availability on site
- Spare and wear parts required for normal daily operations are kept on-site decreases downtime

The smelter has not experienced a filter breakdown in more than a year where spare parts have not been readily available. We stock a wide variety of filter spares stored on-site where our site team follows a strict inventory management system.

Safety is our number one priority. We have implemented a dedicated in-house mechanical and operations teams on-site with full-time site management improving all aspects of safety on site. Our team at the smelter has also surpassed the 9-year LTI Free milestone as a result of our high safety standards.

AN AWARD-WINNING TEAM

Our customer hosts an annual awards event that recognizes their best performing teams. Our team has been recognized by our customer and has received various prestigious awards Service Provider of the Year Award over the last couple of years at several smelters.

Overall a considerable and tangible improvement achieved in filter performance across the board since the new O&M contract became effective at the smelter. We have additionally signed an agreement to rebuild the slag furnace at one of the smelters.



Outotec develops leading technologies and services for the sustainable use of Earth's natural resources. Our 4,000 top experts are driven by each customer's unique challenges across the world. Outotec's comprehensive offering creates the best value for our customers in the mining, metal, energy, and chemical industries. Outotec had sales of approximately EUR 1.3 billion in 2018, and its shares are listed on NASDAQ Helsinki.

www.outotec.com

Outotec

Outotec® is a registered trademark. Copyright © 2019 Outotec Oyj. All rights reserved.