Metso:Outotec

Case study

Hybrid CC filter plates

New innovative plate design improves profits through an increase in capacity, easier, safer maintenance and reliability.

Metso Outotec started piloting their new Hybrid CC Filter Plates at First Quantum Minerals´ Pyhäsalmi mine in northern Finland since January 2016. The results have exceeded all expectations providing "improved reliability" and "cost effectiveness" for slurry filtration. After piloting the hybrid plates, Pyhäsalmi mine placed a five year annual order for CC plates to support their five Outotec Larox CC filters.

Pyhäsalmi Mine, the second deepest metal mine in Europe, produces copper, zinc and pyrite. In 1962 it was initially developed as an open pit mine by Outokumpu Oyj, followed by the first underground development.

It has been a key site for the development of many Outotec technologies such as Courier, Millsense and now Metso Outotec´s new Hybrid CC Filter Plates.

Cooperation was a key driver in product development

Aki Tuikka, Pyhäsalmi Mill Manager, has high expectations when it comes to the safety and reliability of equipment. In 2015, Tuikka met with Metso Outotec engineers to discuss methods to improve the performance of Pyhäsalmi´s ceramic filter plates. Through open and honest communication, Metso Outotec was able to develop a new Hybrid CC plate concept that met Tuikka´s expectations.

"It looks like this new hybrid filter plate will be an excellent solution," says Tuikka. "When the CC plates are working well, it is the most economical way to do filtration."

But communication is a two-way street, and according to Henri Hellman, Metso Outotec´s Head of Service Product Management for Beneficiation services, this new hybrid design would not have been possible without close cooperation with First Quantum Minerals.

"To be honest, we developed this product in conjunction with our customer" Hellman said. "It was critical for us to obtain a sample from the Pyhäsalmi site to facilitate the development our filters with the correct material suitable to the current conditions. From my point of view, this is an excellent example of good cooperation.

Reliability at the forefront
The first ceramic (CC) filters were installed at Pyhäsalmi in the mid-1980s, so Pyhäsalmi´s operators are experts in optimizing the filtration process. According to Tuikka, the most important aspect of efficient filtration is reliable equipment.

"One of the most important aspects for us in terms of equipment is reliability," Tuikka said. "Of course, know-how and quality of equipment are also important, but reliability is number one, and I am confident with the reliability of Outotec´s new hybrid plates."

Compared to other filtration methods that involve pumps, motors or vacuums, Outotec Hybrid CC Filters have fewer moving parts, which leads to increased energy efficiency, ease of operation and reliability of equipment.

Improved residual moisture
Reduced residual moisture levels is key to the filtration process. Plant Foreman Janne Soudunsaari at Pyhäsalmi continually monitors moisture content of the cake with the aim to reduce dust and ensure that the content is dry enough for the flash smelting process.

"The moisture content is currently much easier to control with the new Hybrid CC Filter plates," says Soudunsaari. "The moisture % has been clearly lower with these new filters. The capacity is also much better, and we can see much thicker cake. I am satisfied with all the aspects of these new plates," Soudunsaari concludes.

Designed for safety
The new Outotec Hybrid CC Filter plates are significantly lighter than others in the market, which makes

installation easier and safer. Lighter plates also decreases the likelihood of damaging the plate during installation. "Safety of our products, employees and contractors is of utmost importance to us at Outotec, and we are proud to say that our new Hybrid CC Filter plates are among the safest on the market," reports Hellman.

Read more at mogroup.com

Case: First Quantum Minerals´ Pyhäsalmi mine in northern Finland

The most economical way to do filtration

Challenge

- Reliable, cost effective filtration method for dewatering slurries
- Reduced maintenance costs
- Demanding residual moisture requirements (< 8%)
- Capacity improvement of CC filtration in copper circuit

Solution

- Product development driven by close customer collaboration
- Innovative hybrid plate design with increased and stable filtration capacity
- Easier and safer maintenance
- Close communication with customer was a key driver for success

Results

- Extremely reliable
- Reduced operational costs due to improved mechanical life
- Low residual moisture
- Improved capacity (which is required especially in copper circuit)
- Easier and safer plate handling

Improve profits, capacity, maintenance and reliability

economical