

Mine Water Remediation Project



The challenge

Minera San Xavier, a subsidiary of New Gold Inc., has a gold mine that was closed and in reclamation near San Luis Potosi, Mexico. To enable the mining operation to produce permeate for leach pad rinsing, eliminating salts from process solution and avoiding the use of well water to comply with Mexican standard NOM-155-SEMARNAT-2007, the company selected Aria Filtra® and ChemTreat Mexico to provide a mobile temporary deployment of microfiltration (MF) and high-recovery reverse osmosis (RO).

The solution

Raw water was sourced from the process water pond and heap leach pads and flowed through carbon columns before being fed to Aria FAST™ and IMPRO™ RO mobile membrane filtration systems from Aria Filtra. The mobile systems treated the process water from the heap leach pad without using well water to minimize the water footprint in the biophysical closure stage. Additionally, the mobile systems enabled the mine to reduce energy consumption and decrease the detoxification time of the leaching yard.

The mine made the decision to implement the Aria FAST and IMPRO systems during the COVID-19 outbreak in the United States and Mexico. Facing travel restrictions and social distancing requirements, Aria Filtra worked remotely with local ChemTreat teams to commission the systems and meet the mine's project timeline. Upon startup, the mine reached its nominal capacity and achieved consistent results.

According to Angel Chung, general manager of New Gold, "ChemTreat and [Aria Filtra's] personnel exhibited professionalism, commitment, support, and effort to get the MF and RO plant running despite the limitations and obstacles due to the COVID-19 pandemic. We expect to continue receiving their excellent service, great support, and teamwork."

Project benefits

- RO concentrate is sent to evaporators, minimizing waste generation.
- Compliance with Mexican discharge standard NOM-155-SEMARNAT-2007 is met.
- Total suspended solids removal produces 1.15 million gallons per day (mgd) (181.7 m³/hr).
- Water recoveries exceed 95%.
- Turbidity is below 0.20 NTU at all times and less than 0.10 NTU 95% of the time.
- RO permeate capacity is:
 - Up to 0.92 mgd (145.3 m³/hr).
 - Up to 80% recovery and total dissolved solids, mainly salts.
- Cleaning frequency:
 - Enhanced flux maintenance is every 48 hours.
 - Clean-in-place is every 90 days.
- Secure, remote monitoring through Aria SMARTBOX™ enables ongoing process optimization and evaluation.

Project highlights

- **Rapid deployment during the COVID-19 pandemic**
- **Partnership with ChemTreat Mexico for local on-site commissioning with remote virtual commissioning provided by Aria Filtra**
- **The first mine in Mexico to utilize MF/RO membranes in a heap leach closure and reclamation application**



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