

Siemens Water Technologies delivers uniquely-focused solutions for the Mining industry

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1 Best Brands in Water Treatment

Siemens Water Technologies was born with the integration of USFilter into the Siemens corporation and incorporates some of the best brands in the water treatment industry. The goal of the Siemens organization is to provide solutions covering all aspects of the water cycle, from process water treatment to waste water treatment and water reuse.

The sheer breadth of technologies and services available within the Siemens Water Technologies organization has given the water industry a unique supplier able to deliver the most technologically-advanced and cost-effective solutions. Siemens I&S MT MI the mining division in Siemens continuously evaluates the suitability of a technology based on functionality as well as capital, operating, and installation costs for process turn key mining solutions. This ability to review and design focused solutions and not simply advocate a single solution is what sets Siemens apart from its competitors in the mining industry.

2 Focus in mining industry

As mining industry sites continue to expand into remote locations, developers are faced with the challenge of minimizing the impact on the local environment. Large volumes of water are produced from drainage and run-off at the sites and contain contaminants ranging from heavy metals to sulfates and to chlorides. Historically, Siemens has provided equipment-based solutions centered on technologies such as clarifiers, thickeners, and filter presses. More recently, technologies and services have been added that are designed to meet the continuous changes in environmental regulations, which have resulted in customers demanding a more solutions-oriented approach. Siemens Water Technologies' value now lies in providing complete, high quality process solutions from start to finish under so called turn key projects.



3 Leveraging expertise to meet the demands of different regions

Because the Siemens name is synonymous with quality around the world, demand remains strong from various regions. Regional requirements differ with respect to discharge regulations, availability of water, overall climate, and the demand for service and operating contracts. North America, for example, is more apt to require a service contract with the technology, whereas other geographies generally opt for technology alone. By working with a single water treatment company, such as Siemens Water Technologies, for the entire system, mining customers from different regions save time and money and are able to get their system up and running faster under a single process warranty. Capacities for these systems range from a few hundred gallons per minute to many thousands. The overall volume reduction of the waste streams ranges from 98 to 99%, depending on the salinity of the incoming water. With the high price of commodities, customers are increasingly looking for fast-track solutions. The quicker they complete a new mine or processing operation and get the product to market, the sooner they are able to realize earnings on their investment. A single supplier with multiple integrated solutions, such as Siemens, enables the customer to streamline the building and procurement process and take advantage of synergy savings. Equally important, customers prefer working with companies that are based in the same geographical area and understand local cultural and environmental challenges. As a global company with strong local capabilities, Siemens understands these requirements and is able to meet them – whenever and wherever they arise.

4 Ultra-high recovery in integrated membrane systems for Mine Water Treatment

Siemens Water Technologies provide a variety of state-of-the-art pretreatment technologies that can be selected according to the incoming feed water chemistry and the target water quality required to feed a reverse osmosis (RO) system.

- The Trident® HS system offers four barriers of treatment protection. These innovations allow the system to handle very high raw water turbidity and solids loading, including

iron and organics while maintaining high-quality and low SDI feed to the RO.

- Memcor® ultrafiltration systems provide a verifiable barrier to assure removal of turbidity and suspended solids from the feed stream, providing RO systems with ultra-low SDI. The high-quality feed stream to the RO system enables it to operate at levels from 75 to 90% recovery with limited downtime for membrane cleaning. Ten to 25% of the initial volume remains as a concentrated solution and requires further volume reduction.
- The patented Memtek® microfiltration membrane softening process treats the concentrated waste stream, enabling it to be returned to a RO system for final volume reduction.

Four main issues in water treatment of our customers are in the focus for our Siemens mining port folio:

- the desalination of seawater for process water use
- the process water treatment
- the acid rock drainage (AMD/ARD)
- and the treatment of tailing water for reuse in the mine or discharge in the nature.

Adding some more details to this example of tailing water treatment: most water produced during beneficiation processes worldwide is dumped into large impoundments (tailing dams). Due to the small size of the milled particles and the chemicals added for milling, the toxic metals are more capable of dispersing than in the original ore. Mobile metal ions and various chemical components, e.g. sulfate (CaSO_4^{2-} , 1800 mg/L), are two main characteristics of the tailing water. In recent decades many hazardous contaminations have been caused by untreated tailing water. This has endangered our blue planet.

Tailing water contains a high concentration of various toxic metals and chemicals, e.g. sulfates (SO_4^{2-}), and always large quantities. In addition, new discharge standards are now much stricter than before. Thus, innovative technologies are in great demand and must meet the expectations of private citizens, municipal boards and regulators alike. What you need is a partner you can rely on. The reuse of effluents from the tailing dam is a challenge to all environmental engineers.

5 Our Solution

Membrane technology as a core process ensures a high quality of the effluent. Pre treatment can be performed with low-cost flotation technology (to protect the lifetime of the units) and with the multi-barrier filtration technique TRIDENT®. Compared with the conventional method, our process produces less sludge and requires fewer chemicals. The modular standard design takes up

much less space. Based on the wide-ranging Siemens product portfolio, we can deliver not only a single technology but also a whole lifecycle solution, which together with automation and control systems is capable of meeting any of your demands, including the necessary services.

This kind of case studies will be explained more detailed in the speech in the frame of this "58. Berg- und Hüttenmännischer Tag 2007".



