Sustainable Water Solutions for the Mining Industry
Creating Water Solutions for the mining industry

Veolia Water Technologies specializes in potable water, process water and wastewater treatment solutions for all types of mining sites (such as gold, copper, nickel, bauxite, iron, coal, uranium, phosphate, potash, zinc, silver and rare earth metals).

Meeting your needs

- To improve productivity by treating water for production process requirements
- To manage environmental risks by treating contaminated water to achieve water quality suitable for reuse or for safe discharge into the environment
- To add value to the bottom line by treating sludge streams to recover suspended and dissolved constituents
- To secure high quality drinking water, even at remote mining sites
- To have robust and reliable equipment requiring minimal unplanned maintenance
- To cope with production peaks while complying with stringent regulations
- To guarantee long-term efficiency and cost control through operations services

Dedicated experts at your service

Specialized expertise

We provide specialized water systems, thanks to our understanding of the unique requirements of mine operations and our worldwide expertise in mine water issues.

Focusing on system performance, compliance with process and environmental requirements and long-term cost-effectiveness, we are able to meet the demanding reliability, safety and quality standards of the mining industry.
1. **PRE-TREATMENT**

- Ground water, surface water, grey water
- Seawater desalination
- Pipeline supply
- Process water treatment

**POTASH CORP - AURORA PHOSPHATE MINE**
North Carolina, USA
- Design and build a boiler feed water pretreatment plant
- Capacity: 340 m³/h
- Process: Multimedia filtration, double-pass RO and ion exchange

2. **LEACH LIQUOR FILTRATION**

- Recovery of precious metals from leach stream

**BARRICK GOLD**
Pascua Lama, Chile/Argentina border
- Filters supplied for Merrill-Crowe process for a gold mine
- Capacity: 316 m² of filter area each x10
- Process: Ten Filtra-Matic™ precoat filters for gold cyanide clarification

3. **PROCESS WASTEWATER TREATMENT**

- Removal of contaminants: suspended solids, heavy metals, cyanide, arsenic, selenium, iron, manganese, chromium, etc.

**SASOL EDR BRINE**
South Africa
- Design, supply, installation and commissioning of a system for desalination and reuse of mine water
- Capacity: 3,240 m³/d Electro-dialysis Reversal (EDR) brine feed
- Evaporation capacity: 134 T/h
- Process: The largest forced circulation evaporator in Africa along with three crystallizers

7. **SERVICES**

- Complete water cycle management & outsourcing
- Mobile and temporary solutions

**WHEAL JANE MINE**
Cornwall, England
- Operate and maintain a treatment plant that extracts water from a closed tin mine until 2020
- Capacity: 405 l/s (max)
- Process: Sludge recirculation, reaction using lime addition, lamella clarification, sludge management
in the mining industry

4 TAILINGS POND
- Dewatering and drying
- Water Recovery and Reuse
- Discharge compliance
- Positive water balance control

GOLDcorp Marlin Gold Mine
Guatemala
- Design and procurement of a cyanide oxidation and metals removal plant to treat tailings impoundment
- Capacity: 500 m³/h from tailings impoundment
- Process: Actiflo® clarification and Hydrotech™ discfilter

5 ACID/ALKALINE MINE DRAINAGE
- Mine water control
- Positive water balance control
- Groundwater reclamation

MEPCO, LLC
Pennsylvania, USA
- Design and procure an AMD treatment plant for a coal mine
- Capacity: 910 m³/h
- Process: DenseSludge™, maximizing water recovery and minimizing sludge volume

6 SOLUTIONS MINING and/or RESOURCE RECOVERY
- Production systems and product recovery

American Soda
Parachute, CO USA
- Crystallization system for production of sodium carbonate monohydrate, sodium bicarbonate, and recovery of sodium carbonate decahydrate from purge stream
- Capacity: Na₂CO₃.H₂O = 1 million tons/year, NaHCO₃ = 150,000 tons/year, Na₂CO₃.10H₂O
- Process: Production from solution mined nacholite

Water treatment chemicals
- Spare parts and consumables
- Local support staff

NIOBEC Mine
Quebec, Canada
- Temporary treatment system, operation and chemical supply for a WWTP for a niobium mine
- Capacity: 417 m³/h
- Process: Actiflo® clarification for TSS removal and Hydrex™ chemicals
Proven technologies

- Water recovery system for Acid Mine Drainage: **AMDRO™**
- High speed clarification & softening: **Actiflo® and Actiflo® SOFTns™**
- Enhanced clarification & softening for higher TSS waters: **Multiflo™**
- Reverse Osmosis membranes for high water recovery: **OPUS®**
- Membrane filtration (Micro-, ultra- and nano-filtration, Reverse Osmosis (RO))
- High density sludge process: **DenseSludge™**
- Ion exchange
- Discfilters: **Hydrotech™**
- Sulfate Removal: **LoSO4™**
- Water treatment chemicals: **Hydrex™**
- Moving Bed BioReactor biological treatment for nitrogen and selenium in mine effluent: **AnoxKaldnes™**
- Merrill-Crowe clarification filters: **Auto-Jet™ and Filtra-Matic™**
- Zero Liquid Discharge (ZLD): **HPD® Evaporators and crystallizers, Evaled™ Evaporators**
- Adsorption process for the removal of heavy metals to an active media surface to minimize sludge and residuals: **MetClean™**
- Mobile services for temporary or emergency water needs: **Aquamove™**
- Zero Liquid Waste (ZLW) solution creates a clean water resource and meets new discharge limits for TDS and chlorides
- Desalination for make-up water and process water: **Sea water Reverse Osmosis (SWRO) and Thermal Distillation (MED)**
- Pipeline supply and conveyance

NEW DECISION-MAKING TOOLS FOR SUSTAINABILITY:

- **Total Carbon Cost Analysis:** Quantifying the CO₂ emissions of our solutions and technologies in order to optimize processes and reduce costs.
- **Water Impact Index (WIIX):** Quantifying water footprint by incorporating additional factors like resource stress and water quality.
- **True Cost of Water:** an economic evaluation of risks and benefits related to water use.
Resourcing the world