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Let's Solve Water

Clean water products & solutions for mining applications

March 2025

Presenters

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Host & housekeeping

Everyone is in listen only mode

Your cameras are turned off

Raise your hand for technical support

Q & A

● REC

This webinar is being recorded!

A follow up email will be sent to all registrants and will include:

- A link to the recording
- A link to the presentation in PDF format

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Agenda & panel speakers

- Guest Speaker introduction
- Key application overview
- Typical installations and products in use
- Roadmap from an enquiry to a solution
- Case stories
- Question & Answers

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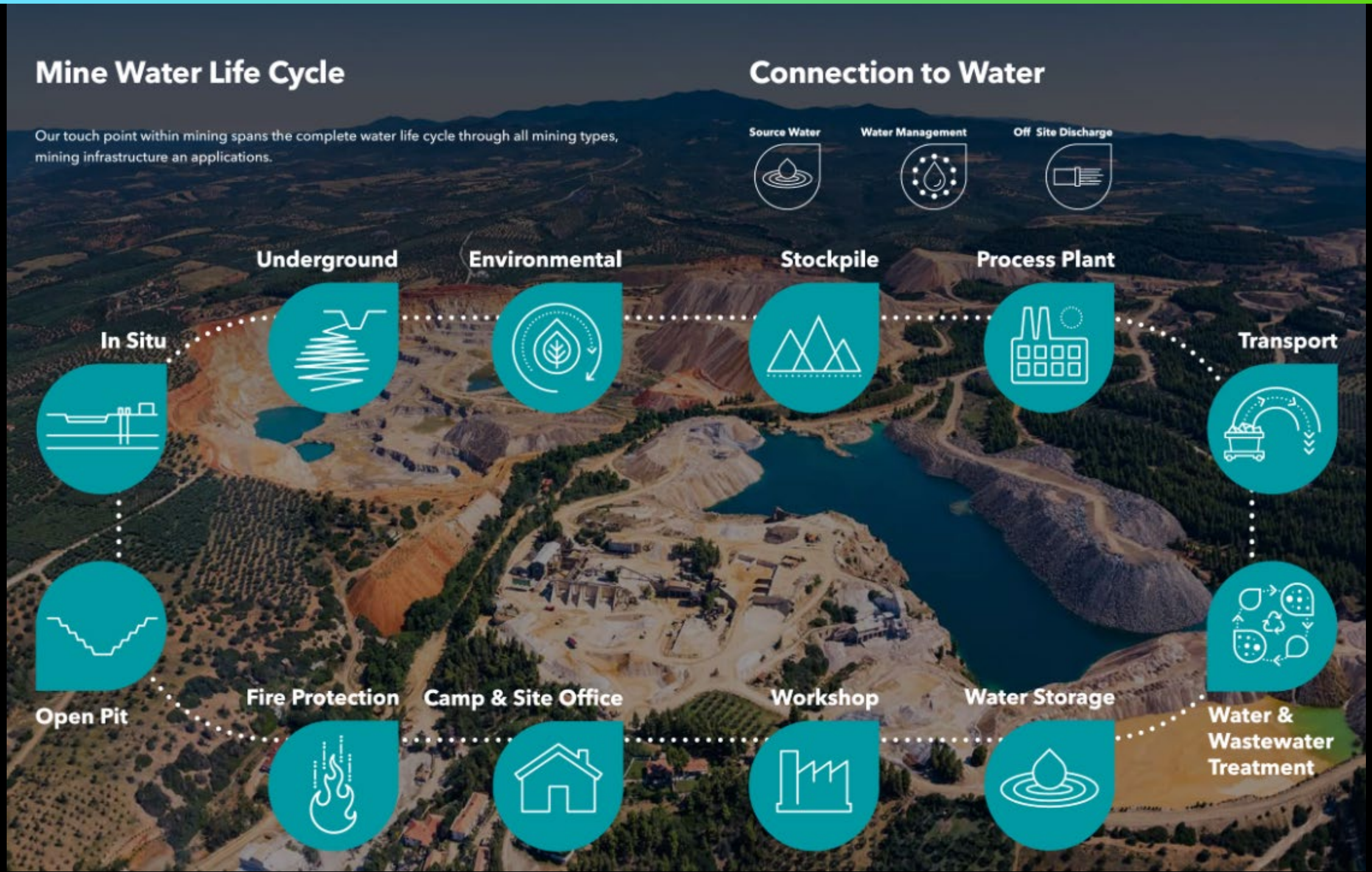
Mine Water Life Cycle
Our touch point within mining spans the complete water life cycle through all mining types, mining infrastructure an applications.
Connection to Water
Source Water
Water Management
Off Site Discharge
Underground
Environmental
Stockpile
Process Plant
In Situ
Transport
Open Pit
Fire Protection
Camp & Site Office
Workshop
Water Storage
Water & Wastewater Treatment

Mining Applications

34 Apps

- Source Water Supply
- Mine Site Runoff Discharge
- Water Desalination
- Ground Water Resources
- Underground Mining (Hardrock) Sump and Face Dewatering
- Underground Mining (Hardrock) Staged Dewatering
- Underground Mining (Hardrock) Shaft Dewatering
- Underground Mining (Hardrock) Water Boosting
- Open Pit Dewatering
- Hydro Mining
- Active Dewatering
- Settling & Tailing Ponds Dewatering
- Potable Water Pumping
- Underground Mining (Hardrock) Raise Bore Feed/Flushing
- Underground Mining (Hardrock) Underground Infrastructure
- Mineral Processing - Reclaimed Water Pumping
- Post Grinding Circuit
- Leaching
- Cyanide Destruction
- Solvent/Acid Drainage Extraction
- Chemical Mixing/Dosing
- Dust Suppression
- Fire Suppression
- Washdown Water/Truck Wash
- Evaporation
- Water Cart Fill
- Wastewater Pumping
- Wastewater/Grey Water/ Mine Water Treatment
- Water Quality Monitoring
- Ponds and Reservoir Monitoring
- Offsite Discharge Monitoring
- Transfer Stations - Conveyor Tunnels Washdown
- Car Dumper Washdown
- Dust Suppression-Conveyor/ Stockpile Areas

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Xylem Clean Water Pumps (Lowara and Goulds series)

The term "**Clean Water**" refers to a liquid without suspended solids (<200ppm)

Lowara/Goulds Bore pumps and Vertical Turbines

Lowara Booster pumps

Lowara end suction pumps

Lowara Multistage pumps

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Source surface water supply

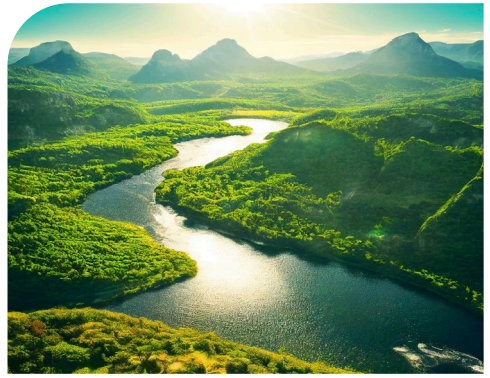
Mine sites require a large inflow of water for their processes. Water intake stations handling inflows to the plants must keep the processes working. Since water is required for the operation, reliability and high pump efficiency are essential.

Equipment offering

- End Suction Centrifugal Pumps
- Multistage Booster Pumps
- Vertical Turbine pumps
- Automatic Self-Priming Pumps
- Hydraulic Submersible Pumps
- Submersible Pumps
- Pump Floating Modules
- Fire Pumps
- Level Sensors
- Borehole Pumps
- Flow Switches

Source surface water types

Source water refers to bodies of water and can be classified as:
seas, **rivers**, **streams**, **lakes** and **reservoirs**



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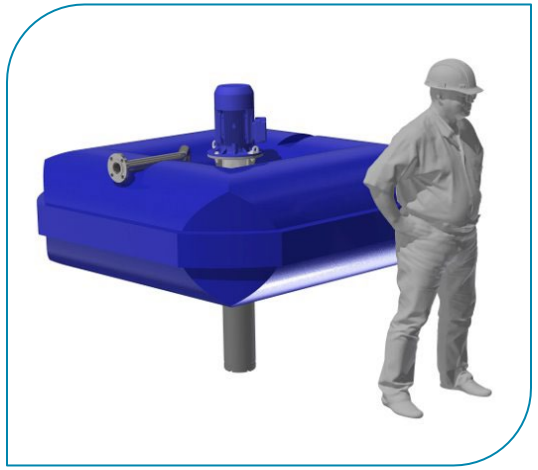
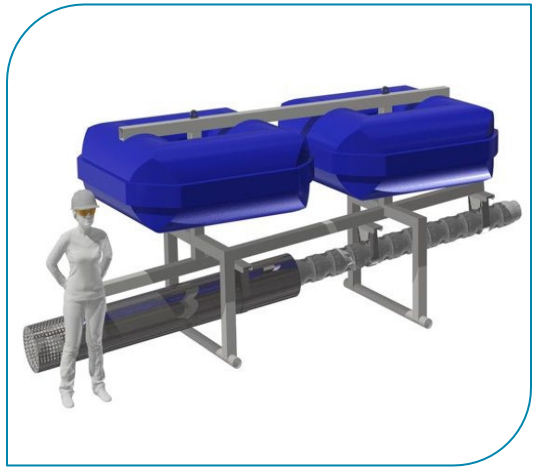
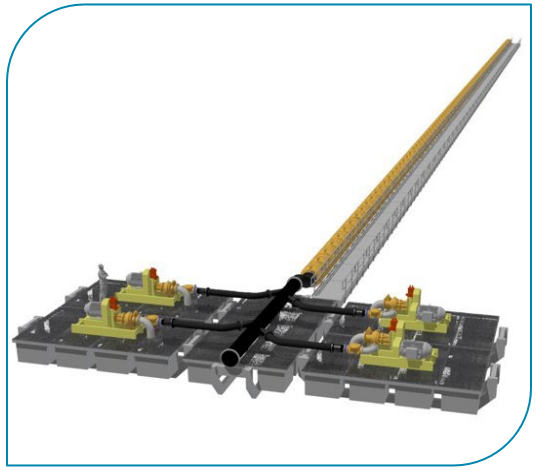
Typical installations- Source surface water supply



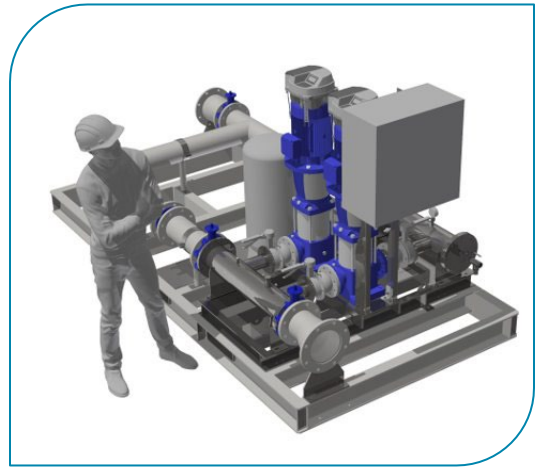
VIT under float



Lowara bore pump under float



End suction pumps on pontoons



Booster pumping

Key points and challenges to consider:

- High flows are often needed
- Reliability and redundancy are important since pump failure may jeopardize operations
- Continuous operation
- Energy efficiency
- Chloride level may vary from10 ppm-30000ppm depending on the water source

Turbine Pumps on pontoons

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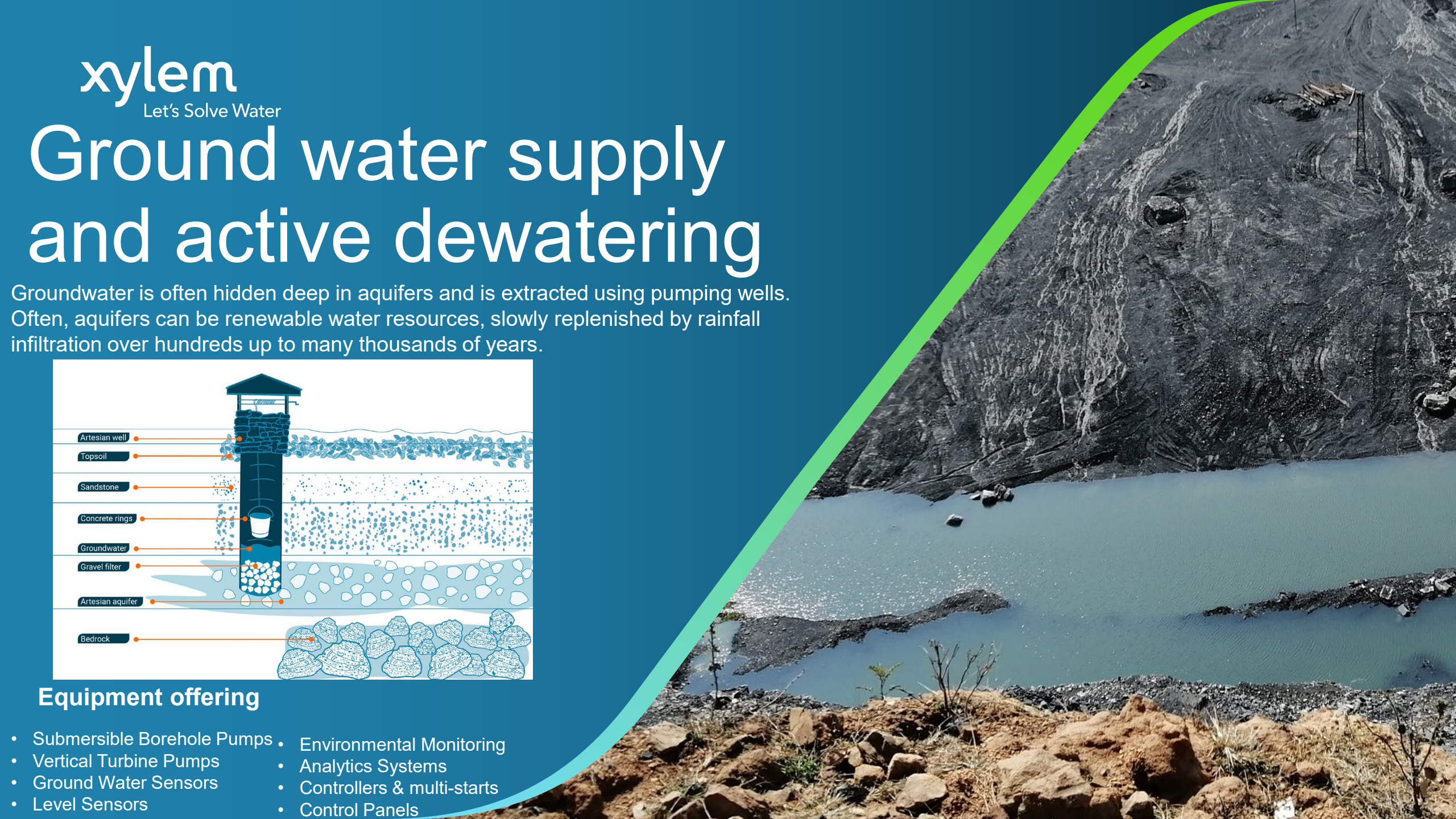
Ground water supply and active dewatering

Groundwater is often hidden deep in aquifers and is extracted using pumping wells. Often, aquifers can be renewable water resources, slowly replenished by rainfall infiltration over hundreds up to many thousands of years.

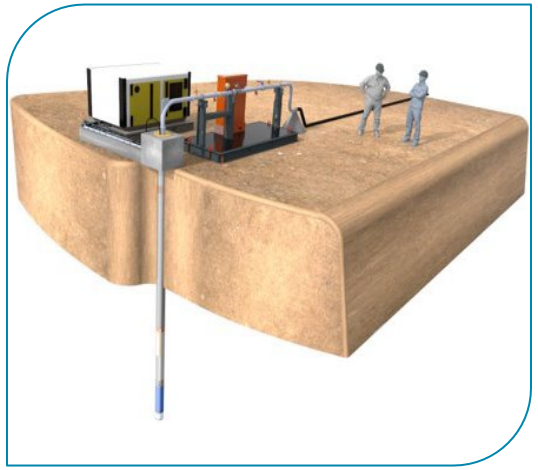
Equipment offering

- Submersible Borehole Pumps
- Vertical Turbine Pumps
- Ground Water Sensors
- Level Sensors
- Environmental Monitoring
- Analytics Systems
- Controllers & multi-starts
- Control Panels

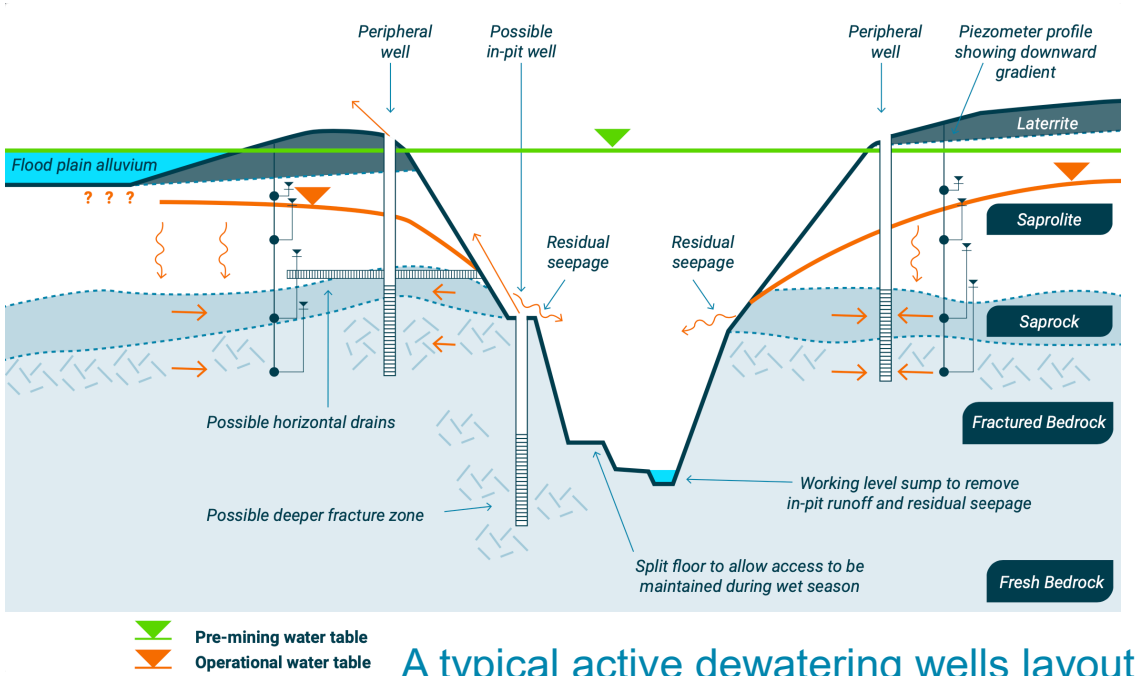


Groundwater supply and Active dewatering

Media can range between hyposaline water to hypersaline brine water depending on the source.



A typical Bore pump installation



A typical active dewatering wells layout

Key Water parameters to consider:

- Salinity
- Chlorides
- Temperature
- Sand
- Dissolved gas content
- Presence of iron bacteria

Iron Bacteria growth

Lowara borehole pump installation

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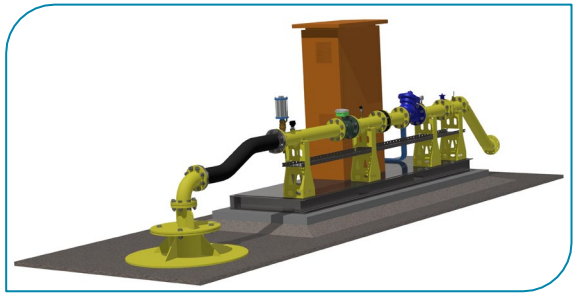
Bore packages

Lowara Borehole Pump & Headworks Mounted on skid including Control Panel & Generator Set, Flexible hose, YSI water quality meter, MJK flow meter, Water level sensor.



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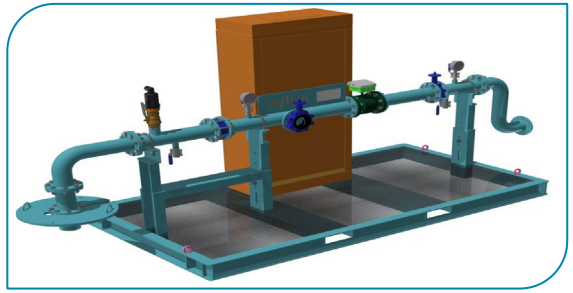

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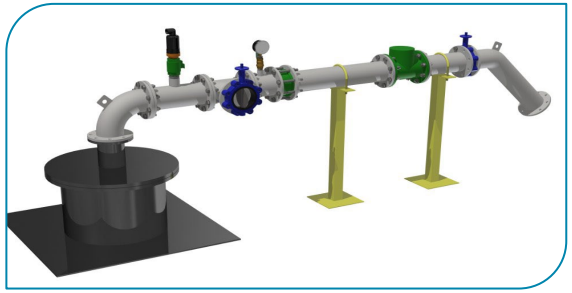

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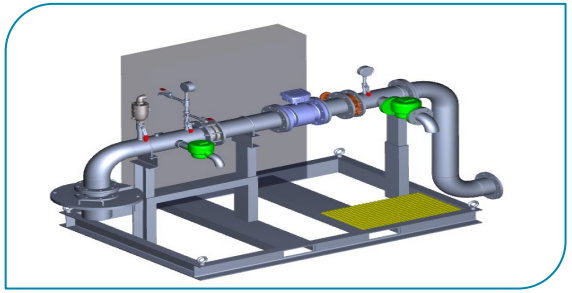

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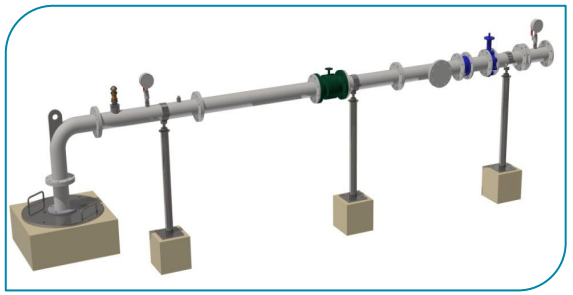

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Headwork Design Examples

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Poll question #1

Do you use bore pumps to source clean water?

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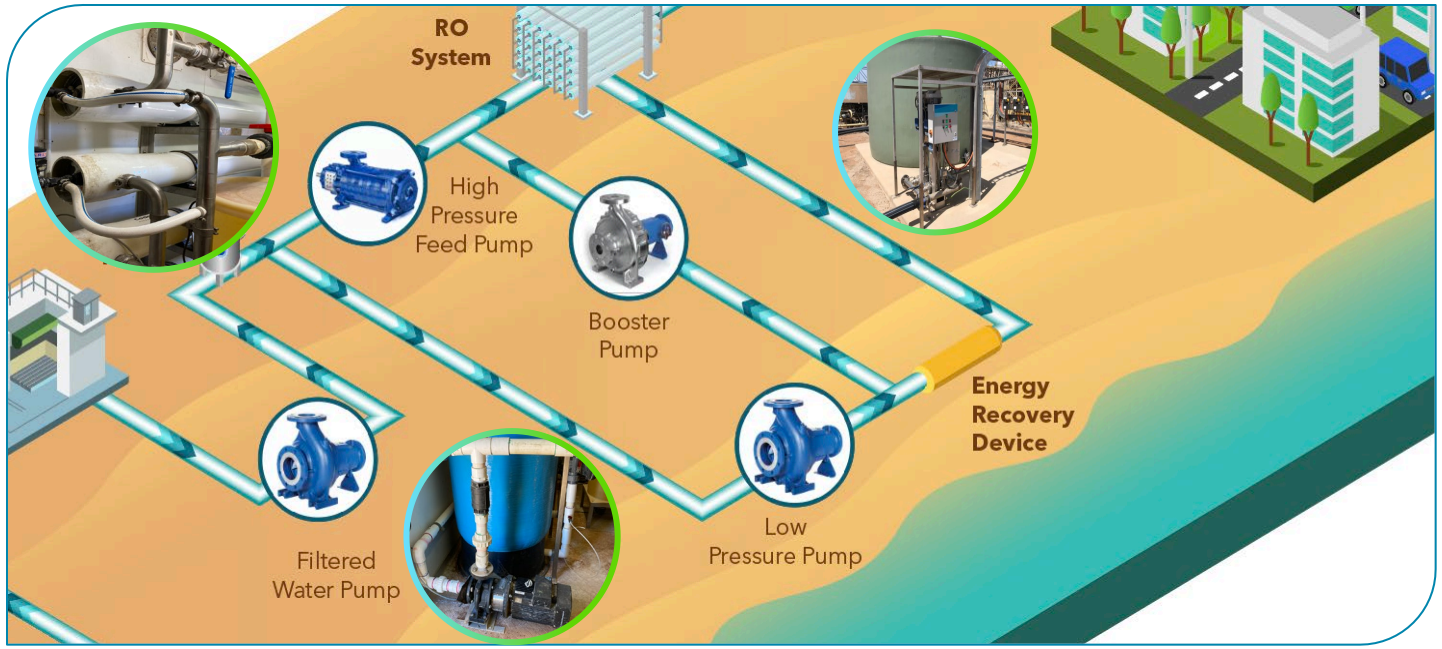
Water desalination

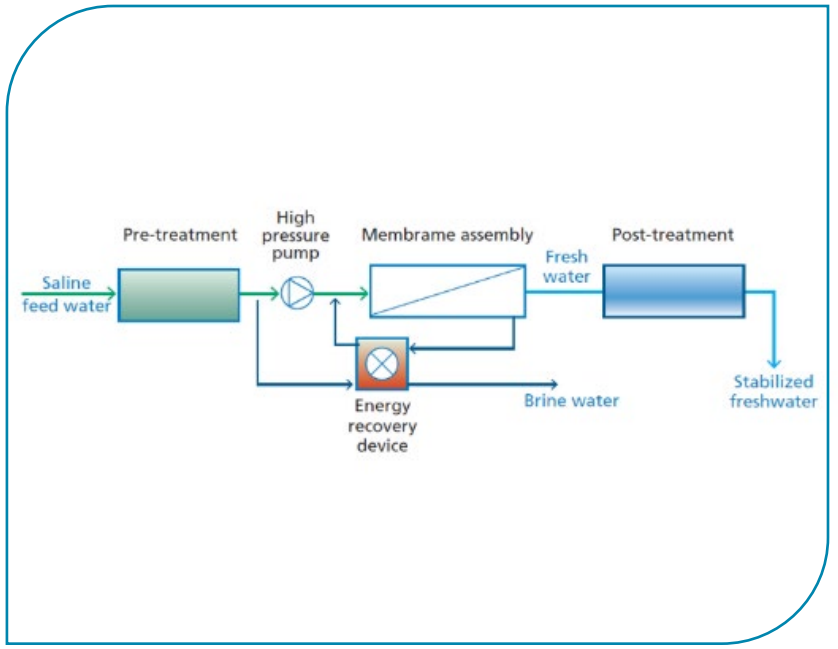
Water Desalination is a process that takes away mineral components from saline water. There are two common types of desalination processes in use today, membrane (Reverse Osmosis) and thermal (Multi-Effect Distillation, Vapor Compression and Multistage Flash distillation).

Equipment offering

- Submersible Pumps
- Pump Floating Modules
- Fire Pumps
- Borehole Pumps
- Vertical Turbine Pumps
- End Suction Centrifugal Pumps
- Multistage Booster Pumps
- Automatic Self-Priming Pumps
- Hydraulic Submersible Pumps
- Ultraviolet Disinfection
- Dissolved Air Flotation (DAF) units
- Disc Filter Ultra Screen
- Flow Switches & Flow Meters
- Quality & Level Sensors
- Environmental Monitoring & Analysis Solutions
- Laboratory WQ Instruments
- Controllers & Control Panels
- Analytics Systems
- Environmental Analysers
- Bathymetric Surveys
- Survey Data Acquisition

Typical installations -Water Desalination





Product	Application	Installation	Water source
Lowara Multistage e-MP, e-SV	Pretreatment high pressure pumping to membranes	Vertical or horizontal , skid mounted	Seawater, brackish water, saline ground water
Lowara ICC end suction high pressure pump	Pretreatment high pressure pumping to membranes	Vertical or horizontal , skid mounted	Seawater, brackish water, saline ground water
Lowara end suction pumps: i-XC, e-XP, NSC	Filter/ circulation pumps	Vertical or horizontal , skid mounted	Filtered water

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Raw & Potable water pumping

Common usage in mine camp sites

- Drinking tap water
- Showers (hot/cold water systems)
- Toilets flushing
- Dishwashing
- Laundry
- vehicle washing
- Sanitation
- Irrigation
- Firefighting systems (sprinklers)
- Swimming pools

Typical installations-Raw & Potable Water Pumping

Water filtration/UV unit+ booster set

Water transfer Lowara Booster pump

- **Transport-** using variety of submersible and dry installed pumps to deliver Raw or Potable water from source to treatment stations or storage tanks
- **Distribution**- Water is pumped by booster pumps from storage tanks and distributed to the campsite using a pressure controlled system.

Water transfer Lowara end suction pumps

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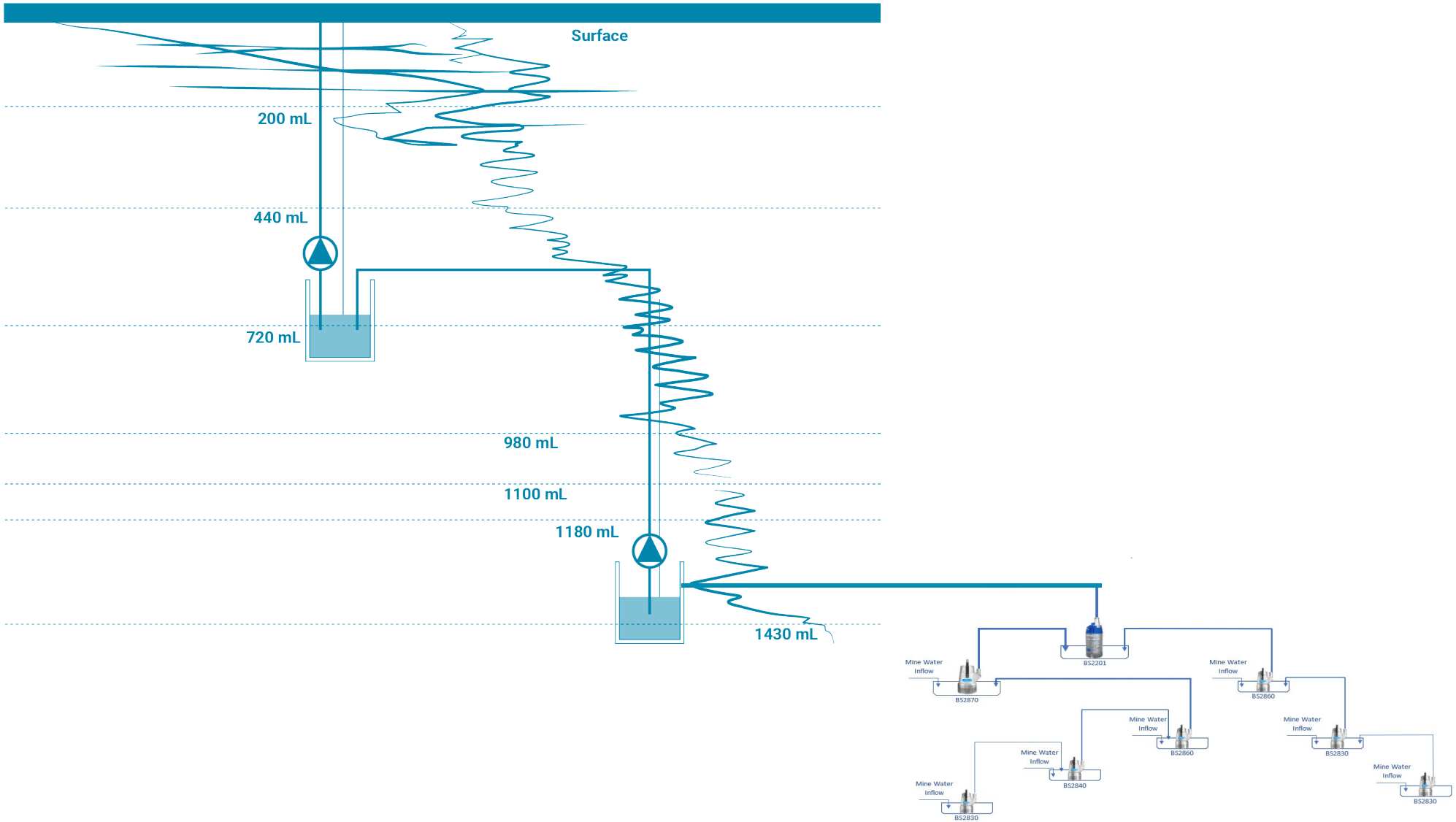
Underground staged dewatering

Staged dewatering is the removal of water from an underground mine using a series of high head pumps. Water is moved from the lower levels up through a series of pump stations before removal at the surface of the mine.

Typical pumping layout - underground staged dewatering

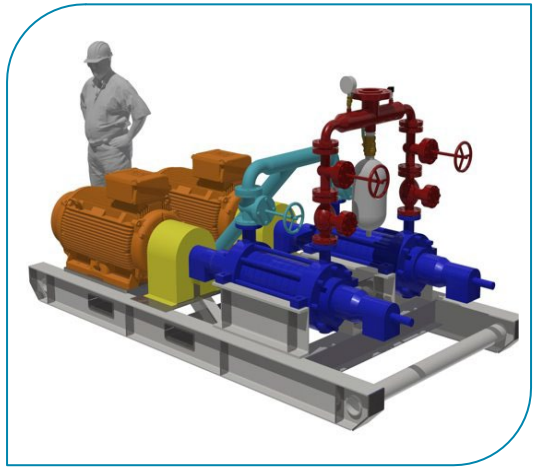


Underground Mining- Staged Dewatering Typical installations

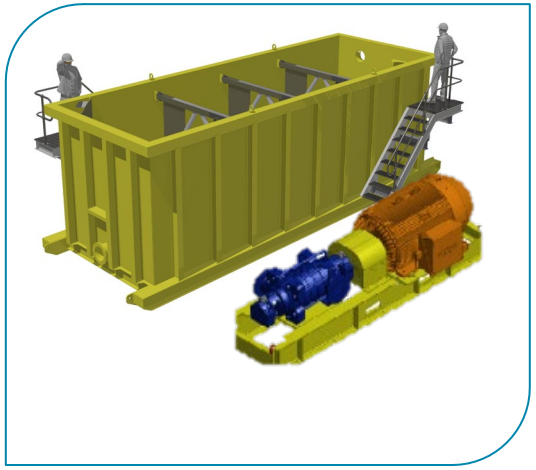
Key point to consider:

Media content: Dirty mine water with suspended solids, the usage of Multistage high pressure pumps will require a settling tank or filtration system prior to the pump intake

Goulds VIT on platform



Lowara MPA pumps on skid



e-MP + Hopper settling tank

e-MP +settling tank

Product	Application	Installation	Water Source
Lowara e-MP Multistage	Staged Dewatering	Settling tanks, or filters together with e-MPD on skid	Dirty mine and seepage water
Goulds VIT (Turbine pump)	Staged Dewatering	Pumps are mounted on a steel platform over the water sump	Dirty mine and seepage water

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Underground water boosting

Multi-stage pumps offer high head capabilities for boosting and distributing clean water for applications, operations, machines or facilities underground.

Equipment offering

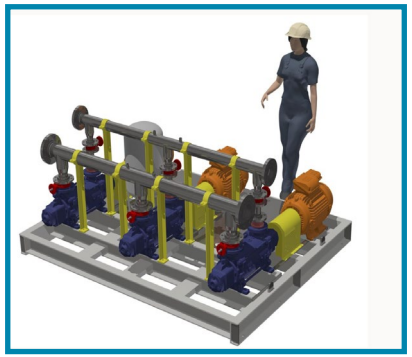
- Submersible Pumps
- Vertical Multistage Pumps
- In-Line Pumps
- Multistage Booster Pumps
- Control Panels
- Flow Switches
- Level Sensors

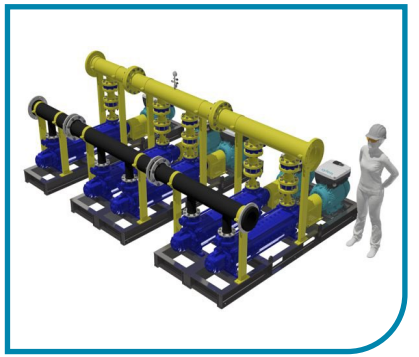
Underground Water Boosting

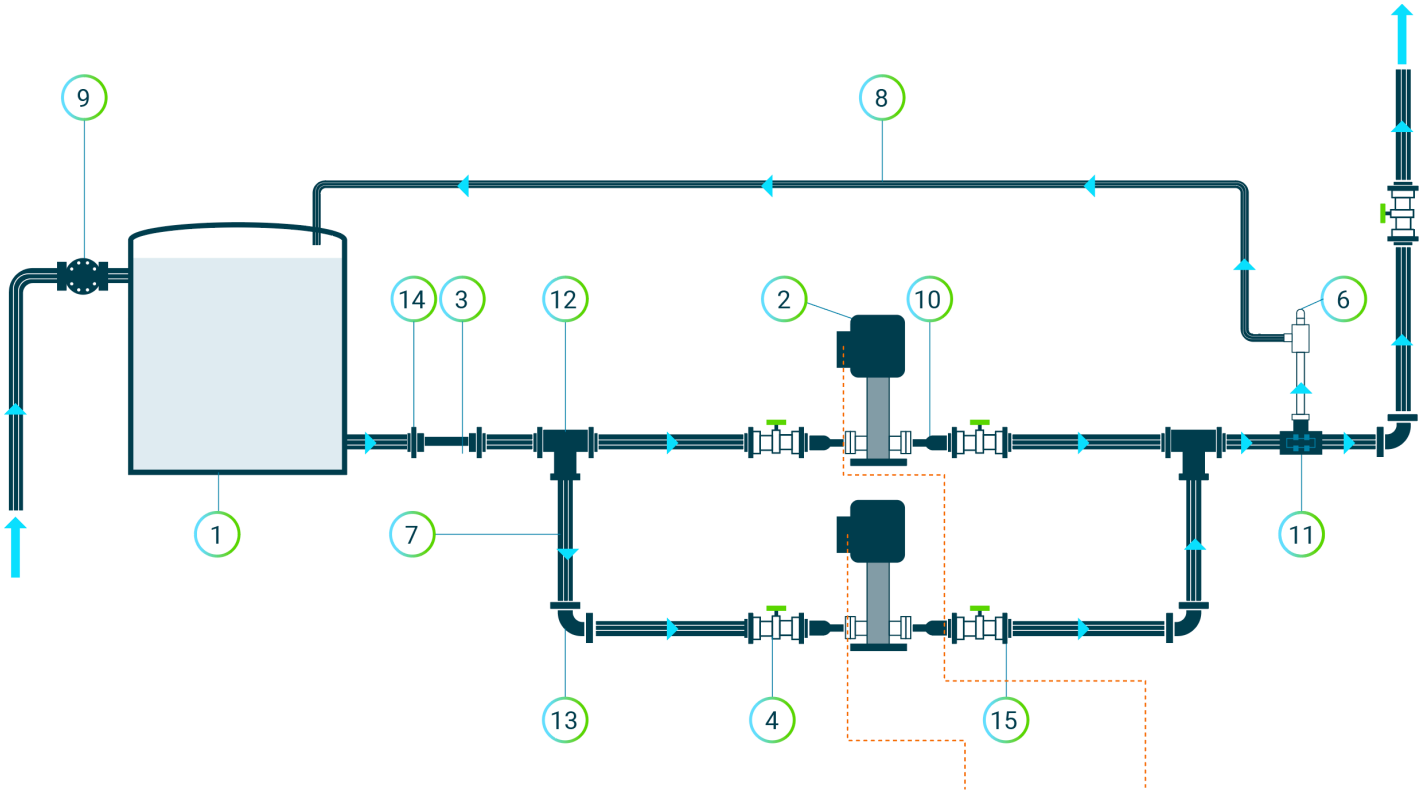
The system typically includes water storage tank, high pressure multistage booster sets, pressure regulator, bypass line for circulation, pressure vessel and a control system

Key points to consider:

- Water quality is a key factor when it comes to selecting the pump material
- Discharge pipe pressure rating should be suitable to deliver water at the nominated pressure
- Pressure control/ regulation system in place







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Open pit dewatering

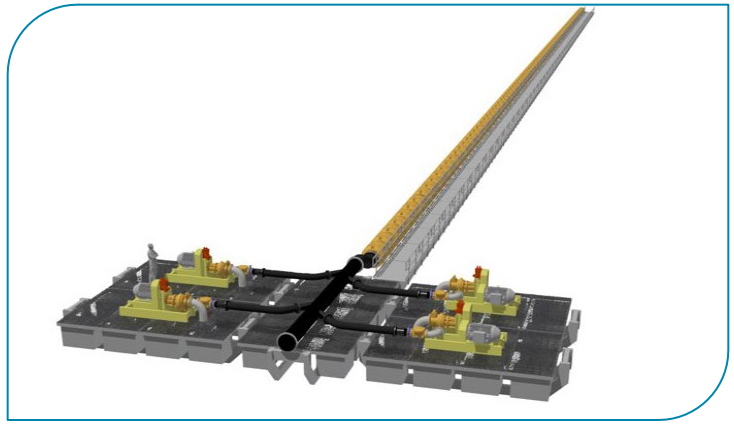
- Open pit dewatering is the removal of excess or unwanted water accumulated at the bottom of the pit to facilitate safe and effective mining operations.
- High lift pumps are often needed to remove water from the bottom to the surface of the pit.
- The solids in the water are in most cases settled at the bottom of the pit leaving the upper water layers relatively clean

Equipment offering

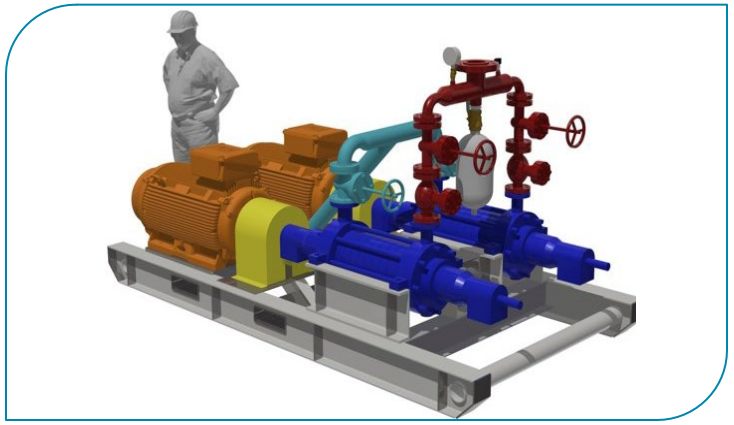
- End suction pumps
- Vertical Turbine Pumps
- Borehole Pumps
- Automatic Self-Priming Pumps
- Controllers & Control Panels
- Flow Switches
- Level Sensors
- Flow Meters
- Mobile Dewatering Hopper
- Pontoons & Walkways
- Variable Speed Controller
- Borehole Headworks
- Pump Floating Modules
- Environmental Monitoring & Analysis Solutions

Typical installations - Open Pit Dewatering

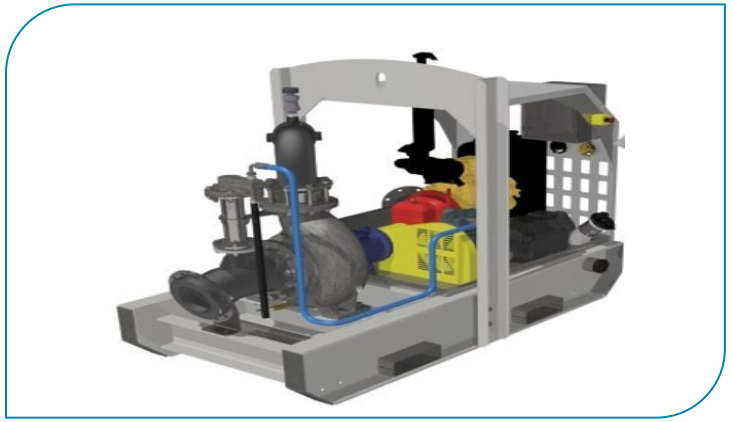
Goulds VIT Turbine Pump on a barge



End suction pumps on pontoons



e-MP pumps on skids



Lowara e-IXP with self-priming unit

Lowara borehole pump under floats

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Poll question #2

Do you use clean water pumps in pit dewatering?

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Mineral processing

Mineral processing is the art and technology of treating ores from the mining areas in order to separate the valuable minerals from the waste rock.
Clean water pumps are used in various applications:

Mineral processing

- Recycled/reclaimed water pumping
- Leaching process
- Solvent /Acid Drainage Extraction
- Chemical/ reagent pumping
- Process water transport
- Cooling water pumping for process equipment
- Lithium extraction from Brine (DLE)


RO Water Supply
High pressure e-MP pumps


Filter Washing
MPV/MPD pumps


Water Boiler Inlet
SV pumps RO low pressure pumps ICF80

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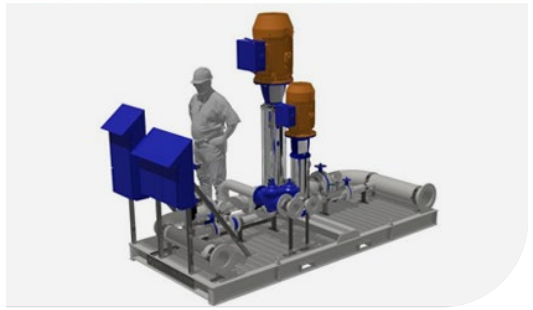
Site maintenance and facilities

- Washdown Water/Truck Wash
- Evaporation
- Dust suppression
- Fire suppression
- Water Cart Fill

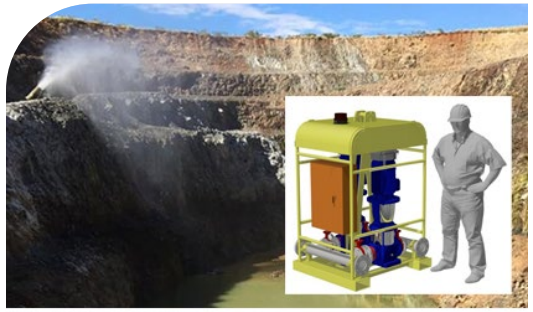
Typical installations/ applications – Site maintenance and facilities

Dust Suppression
Water Cart Fill

Dust Suppression
Conveyor/Stockpile Areas



Washdown Water
/Truck Wash



Evaporation

Product	Installation	Water Source
Lowara End suction E-NSC,e-XC, e-IXP	Skid or pontoon mounted	• Ponds, Dams or reservoirs • Bore water, treated water, recycled water, surface water
Lowara borehole pumps, multistage pumps e-MP, e-SV	Under floats or on Skid	Ponds, Dams or reservoirs

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Roadmap from an enquiry to a solution

Key points to consider on the way from an Enquiry to a Solution

Application discovery → **Calculated estimations** → **Creativity** → **Fit for purpose product/solution** → **Engineered Solutions**

1. Application discovery is the starting point to understand the application, customer needs, installation options and limitations
2. In some cases, information such as water quality, system curves, installation options etc' is not always available. In these cases, it will be necessary to apply assumptions and estimations based on the info in hand in order to provide our customers with a preliminary product selections.
3. Creativity and thinking out of the box approach is often needed to overcome technical challenges and limitations.
4. The selected product should be fit for the purpose it is needed for. The duration of the project and the required product life cycle should be considered based on the application conditions and limitations.

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Case Study #1 Blue Water Industries-USA

Vertical turbine/barge system rental for source water supply

Challenge:

Too large of a suction lift for Godwin diesel-driven pumps

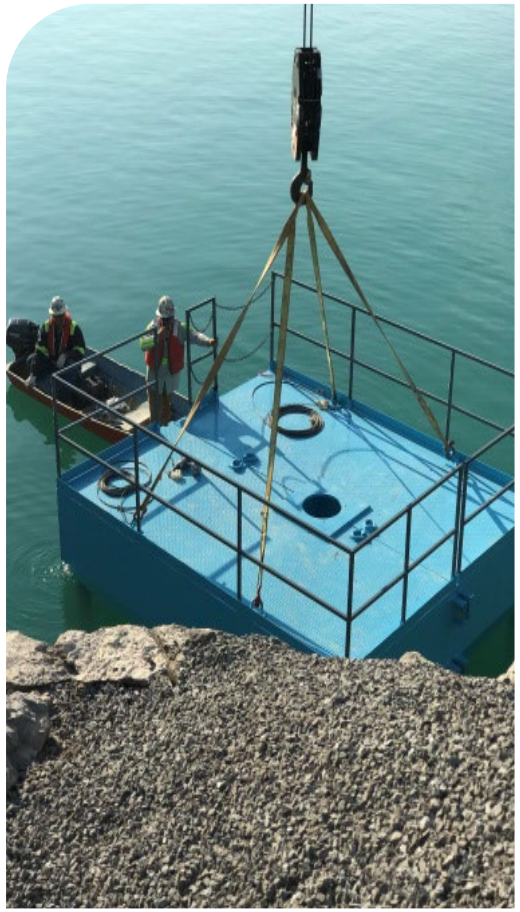
Solution:

GWT vertical turbines are more efficient & consume less fuel than the end suction style pumps

Outcome:

Goulds vertical turbine pumping 158l/s plus discharge assy, controls, 150KW diesel generator, float, barge, pipes and complete entire installation within 2 weeks.

As a result customer had savings of $11,880 per month on fuel alone.



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Case Study #2 Tropicana Project-Australia

Cooling water supply for U/G drill rigs

Challenge:

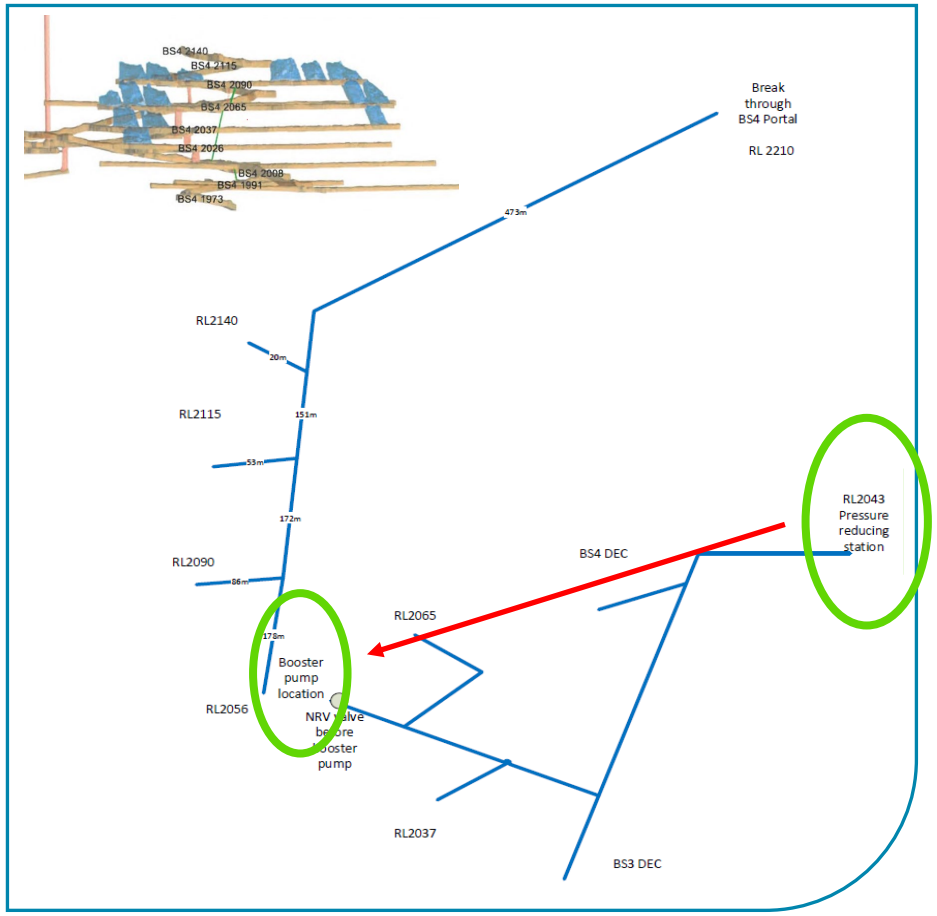
To transfer hypersaline water from an above ground dam to supply cooling water at a constant flow & pressure for the underground drill rig

Solution:

Main water dam on surface gravity-fed to pressure reducing station at RL2043.

Water from RL2043 transferred to break tank at RL2056 to feed Lowara Booster pump

Booster pump delivers 4 Liter/second @ 12 bar to the drill rigs



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Case study #3 FMG Operations- Australia

Lowara Bore pumps for active dewatering

Challenge :

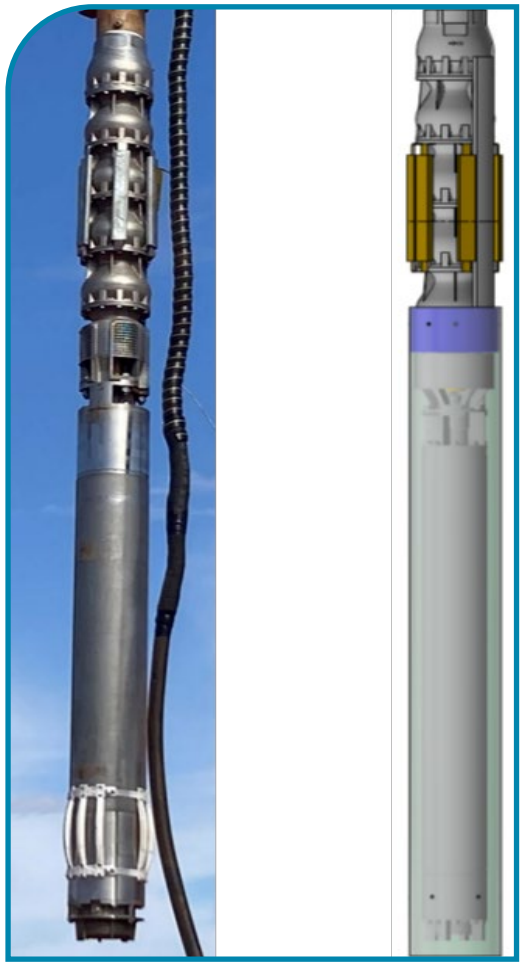
- Corrosive water with Iron Reducing Bacteria (IRB) caused premature failure of submersible motors
- Huge cost of OPEX due to high pump turnaround
- No engagement from suppliers to improve reliability

Solution provided:

- Lowara adapted the wet end & motors to provide maximum resilience
- Site training with staff to improve installation & commissioning methods
- Close monitoring of pump performance & motor temperature

Outcome:

- Pump survived 20 months in harshest condition
- Increased product reliability Reduced OPEX
- Increased cooperation & trust with Xylem leading to more business



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Poll question #3

Would you like a Xylem mining specialist to contact you with more information?

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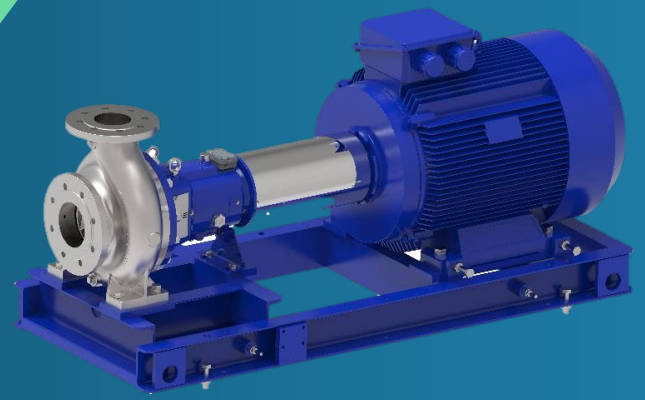
Questions & Answers

Please click the Q&A icon and type your question directly into this window

If we don't get to your question, we will follow up directly via phone or email offline

Hillel, Liran – Xylem
Mining CoE Applications Engineer
Sales Support
MiningCoE@xylem.com



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