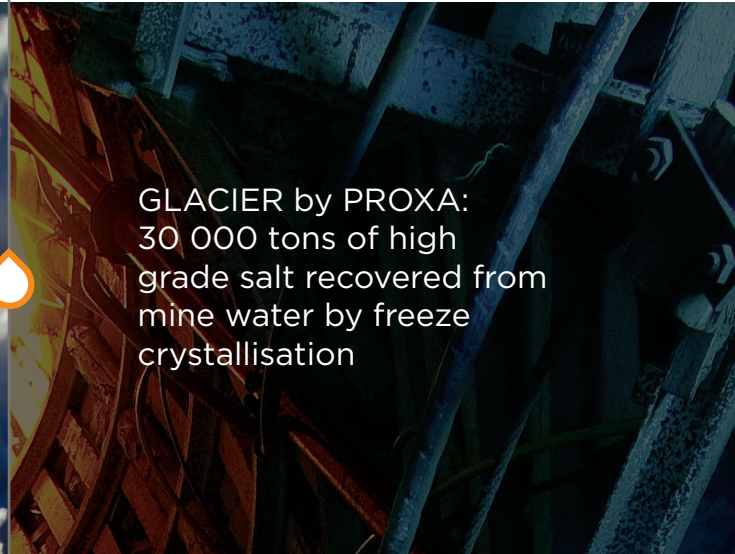


ANGLO AMERICAN COLLIERY, AFRICA

FREEZE CRYSTALLISATION OF MINE WATER (ZLD)



GLACIER by PROXA:
30 000 tons of high
grade salt recovered from
mine water by freeze
crystallisation

THE CHALLENGE

Manage both the effluent mine water volumes and excess salt on a major coal mining site, by producing power station grade cooling water, whilst exporting detergent grade salt in a robust ZLD process.

OUR SOLUTION

PROXA's commitment to extracting value from brines was put in place with the design, construction and commissioning of this first commercial scale freeze crystallisation plant. The process better known as Glacier recovers high purity by-product salts from complex brines, with the added benefit of a high grade product water for reuse. Our responsibility includes the financing, full operations, maintenance and technical support of the plant (BOOM).

HOW PROXA ADDED VALUE

PROXA's extensive experience in mine water remediation and ZLD applications enabled us to deliver a highly effective solution. We were able to maximise the use of lower cost non thermal technologies, to maximise the recovery dry multivalent by-product salts, minimising the highly concentrated brine stream entering the Eutectic Freeze system. The eutectic Freeze plant was designed to optimise both capital and operating costs, whilst producing a detergent grade sodium sulphate and mixed salt for disposal. The combination of technologies used significantly reduced the energy consumption of the plant.

What's more, the modular nature of the plant meant rapid delivery, minimal interruption to site works, improved on-site safety and a smaller footprint.

FEED WATER

Mine Water Brine

proxawater.com

PRODUCTS

High Quality Product water for reuse 10 - 20 $\mu\text{S}/\text{cm}$

High Quality calcium and magnesium salts suitable for agricultural application

Detergent grade sodium sulphate

Mixed salt for disposal

PERFORMANCE TARGET

2500 m³/day Product water

50 tons per day dry solid by-products

PROCESS

- ◇ Clarification
- ◇ Filtration
- ◇ Ultrafiltration
- ◇ Reverse Osmosis
- ◇ Eutectic Freeze Crystallisation
- ◇ Thermal crystallisation
- ◇ Centrifuge

PROCESS RELIABILITY

The plant has been in continuous operation since 2014 meeting all client key performance objectives.

Client: Anglo American

