



Ministry of Economy



The Israel Export &
International Cooperation Institute



Israel
NewTech
National energy & water program



Samuel Neaman Institute
For Advanced Studies In Science And Technology



Israeli Technology in the Mining Sector

The mining industry is exploring optimal methods for contending with a range of water-related challenges in today's dynamic public climate.

Treating corrosive materials, preventing dust and multi-frequency screening, improving advanced treatment and reuse processes, utilizing smart metering, creating effective monitoring and scaling practices, and reducing biofouling and energy usage present just a few of the areas in which the sector can benefit from water technology innovation so as to compete in a rapidly changing global environment.

Israel has been a pioneering force in global efforts to develop the technologies that can address some of these challenges, offering innovative technologies that promise to dramatically alter the playing field. The cutting-edge technologies now available include:

- A patented technology that enables the removal of toxic cyanide from wastewater, without any chemical additions. Heavy metal removal is achieved in a similar manner through inducing sedimentation.
- Advanced, multi-stage plants for the treatment of mining effluents.
- An extensive line of advanced acid-resistant, alkaline-resistant, and solvent-stable nanofiltration and ultrafiltration membranes with elements for use in acid, alkaline and organic solvent media.
- Wind Aided Intensified eVaporation. A state-of-the-art enhanced evaporation technology for treating brine, which provides a highly cost-effective and environmentally friendly approach to brine treatment.

The mining sector needs solutions. Israel has them. To find out more about the Israeli water technologists which are helping to advance industry while shaping a better global future, contact Israel NewTech: israelnewtech@economy.gov.il

www.export.gov.il

www.israelnewtech.gov.il



Ministry of Economy



The Israel Export &
International Cooperation Institute



Israel
NewTech
National energy & water program



Samuel Neaman Institute
For Advanced Studies In Science And Technology

The Mining Sector



Introduction

Overcoming the challenges of an arid climate has been vital to Israel's growth since its establishment. Driven by circumstance to maximize its creative capacity, Israel's innovations in the realm of water technologies, management, and long-term planning have made sustainable water consumption a reality in 2013, and well into the future.

Among the impressive range of innovations, nationwide reclamation of treated domestic wastewater for irrigation in the agricultural sector, solutions for industrial wastewater, and the large-scale production of desalinated water have been especially groundbreaking. In fact, Israel has the highest level of water reclamation in the world today.

Israel NewTech, the Israeli national program for the promotion of the Cleantech sector, led by the Ministry of Economy in collaboration with the Samuel Neaman Institute at the Technion and the Israeli Export & International Cooperation Institute, conducted strategic research to identify global current and future challenges of water usage, in six dominant industry sectors: Oil & Gas, Mining, Pharmaceuticals, Food & Beverages, Semiconductors & Metals. This research helped to identify the challenges unique to each sector and to estimate the potential contribution of Israeli water technologies in offering innovative solutions.

The Mining Sector

The global mining industry is currently contending with a range of challenges that bring questions of economic efficiency and environmental sustainability to the fore.

Used at critical points in the mining process – during the extraction, processing, and separation phases– the efficient use of water is, naturally, a primary concern. **By turning to safer, economically efficient and environmentally sustainable water technologies, the mining industry can position itself to continue to operate with both profitability and sustainability.**

The Challenge

Many of the points of friction that arise between mining companies and local communities concern the effects of mining on local water resources, particularly in areas that suffer from water shortages or other surface and groundwater deficiencies.

The formation of Acid Rock Drainage (ARD) and toxic drainage, or sludge, which can contain toxic substances, such as Cyanide, poses one of the greatest concerns for water quality in mining areas.

Furthermore, mining below groundwater depth creates a flow of groundwater into mines, which must be removed, usually by pump. The effects of water removal on local vegetation and ecosystems are immediate and detrimental.

Lastly, for environmental considerations, the mining sector is involved in the rehabilitation of abandoned mines, a process which is long and complex and entails the repeated removal and treatment of water.

The Solution

The rise in commodity prices positions the mining sector to continue investing in the types of cutting-edge technologies and innovations that increase its production capacity on the one hand, while enabling compliance with environmental regulations on the other.

Creating sustainable water utilization will allow mining companies to continue to expand production, increasing the effectiveness of natural resource production without increasing water usage.