

ESGS Workshop

Date: 13 July 2022 | Time: 14:00-15:30

Register via Zoom

Topic 1

Development of Technologies for Purification of Mine Impacted Water

South Africa has a severe and persistent problem of mine impacted water (MIW) and acid mine drainage (AMD) decant from mines post-closure, particularly in the Witwatersrand and eMalahleni areas. MIW are often acidic, containing heavy metals and high concentrations of sulphate. Left untreated, these waters can have a toxic impact on the land- and water-based flora and fauna, and human health and settlements in the affected areas, through the contamination of soils, streams, dams and groundwater sources. In view of the anticipated number of mines due to close in the near future, the impact of uncontrolled and untreated decant of acid water on the environment and communities will be severe.

Large volumes of treated mining-impacted water are produced, often with no end use in mind other than discharge or disposal, when these treated effluents may have further uses in applications which are currently and unnecessarily using high-quality water. Treating the wastewaters to levels that meet 'fitness-for-use' guidelines for alternative applications such as agriculture, sanitation, or industrial processes will reduce the treatment cost burden compared to potable water production.

The choice of water treatment technology depends on the source of the water, nature of the pollutants in the water and the required quality of the re-use water as well as the appropriateness of the technology in a particular setting. Over the years, Mintek has developed several water treatment technologies for the mining industry, namely the SAVMIN[®] process (ettringite precipitation), the cloSURETM process (biological sulphate reduction), and the NICmembrane[®] (ultrafiltration for reduction of turbidity), and each of these technologies has gained considerable exposure. The NICmembrane[®] technology is developed with the aim of producing filtration membrane modules and adsorbent resins for water and industrial wastewater (including mining) treatment. Additionally, integrated filters incorporating these two technologies, for drinking water treatment at point-of-use. The technologies have been successfully validated internally for the treatment of mine effluent, surface water and greywater.

Topic 1: Presenters

Dr. Gebhu Ndlovu SAVMIN®



Dr. Gebhu Ndlovu is the Head of the Environmental Centre in the Hydrometallurgy Division at Mintek. He is responsible for research, development, and innovation activities related to long-term environmental sustainability targets towards a greener future.

Kerri du Preez cloSURE™ Mintek



Kerri du Preez is a principal scientist at Mintek, she has gained expertise in Environmental Engineering and Management, as well as treatment of wastewaters using anaerobic processes over the past 15 years. She is responsible for driving the R&D relating to biological treatments of mine water. She is also involved in Mintek's Water Research Programme and is developing a Post Mine Closure Strategic Programme for Mintek.

Dr. Keneiloe Sikhwivhilu NICmembrane®



Keneiloe Sikhwivhilu is a Chief Scientist at the Advanced Materials Division within Mintek. She has a PhD in Chemistry with specialization in Catalysis and Nanoscience; part of the studies she carried out at the Centre for Applied Energy Research, University of Kentucky (USA). She obtained postdoctoral training in nanocomposite filtration membrane development from the University of California Los Angeles (UCLA, USA). As Chief Scientist at Mintek, she leads Research Development and Innovation activities of nano-enabled filtration membranes and adsorbent technologies for application in water and wastewater treatment.



ENVIRONMENTAL



SOCIAL



GOVERNANCE



SUSTAINABILITY

Creating Awareness

through statements of professional principles, codes of ethics, and guidance notes

Creating Understanding

of how professionals can contribute to minimising harm and maximising value to communities and broader society

Creating Competency

in environmental, social, governance and sustainability performance areas to mitigate the impact of business activity on communities and society.

Topic 2

Green Hydrogen

“The current global energy system is still largely focused on the fossil fuels but there is consensus that this needs to change, and that renewable energy (PV, wind etc) will be the successor generation technology. However the means by which this will be stored for later use is the subject of much debate and proving a real technological challenge. That is, to find a replacement molecule for fossil fuel as energy-dense store of energy. There are currently two schools of thought; a) lithium ion batteries or b) green hydrogen or ammonia. It will be fascinating to see how this plays out. Elon Musk believes firmly in Li-Ion batteries, but Hydrogen hold may be the solution for many applications where batteries may not work, eg steel production and aviation. It is our view that both of these will coexist as complimentary technologies in a post-fossil fuel world.

We see large utility scale (>1000MW) integrated wind and solar farms, feeding electricity into electrolyser “gigafactories” turning seawater into hydrogen and oxygen, either feeding a pipeline and export system or some of this hydrogen being converted into ammonia, which is an easier molecule to transport. The current spike in oil prices has only strengthened the case for an accelerated transition to hydrogen”.

Presenter



Quintin Hobbs

Strategy & Transaction service line leader for Africa

Quintin is the Strategy & Transaction service line leader for Africa, based out of the Johannesburg Office and is also the Africa region leader for the EY Valuations, Modelling and Economics sub-service line.

He is also the Africa Mining and Metals Transactions leader and his key focus is on originating, executing and support mining clients in African transactions.

Quintin is a Chartered Accountant (CA (SA)) and Chartered Financial Analyst (CFA). He joined the EY in 2003. He has almost two decades of valuations, corporate finance and transaction advisory experience.

He has deep sector expertise in mining, working for clients in the coal, gold, PGMs, base/non-ferrous metals, iron ore and commodity trading sub-sectors. His key transaction focus areas in these sectors include: valuations, merger and acquisition lead advisory services, feasibility studies, financial modelling and stock exchange advisory services.

FOR FURTHER INFORMATION, CONTACT:

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