Find the Best. Mine the Best. Leave the Rest.

It is a simple but very meaningful smart mining strategy.

Technology like HSI or hyper spectral imaging make it easy to focus a particular beam of controlled light on an area of interest and see what what is seen, using artifical intelligence to go through a series of rapid defining reflected light patterns to see if the material or materials of interest are there and in what quantities.

Normally such analysis is stricted to ore materials that have been already crushed which maximises the surface areas. But in smart mining practices, untouched ore bodies can also be considered, particularly when the gathered results are studied in real time using Ai, and particular points are mapped in geo-spacial terms.

So having quantified aand qualified the ore body of interest, then highly selective further analysis and appropriate water cutting using ultrahigh water pressure with garnet can be selectively applied to the ore body, only extracting the ores of prime value.

By this system the unaterial materials are not even mined, so there is no waste of mining applied energy and extraction processes, that effectively average down the extraction returns rate. There are no tailings issues as there are never any tailings in normal, traditional sense.

In certain terms, this smart mining system could be defined as mining by assaying.

To make the system autonomous, the identification and extraction processes are a refinement of our 2017 Zenith Process and Control Engineering Award Win where the 'double bed mining process' with HSI and appropriate underground position determination is optimised in real time by Ai, chasing the best returns and leaving the rest of the order body, either as is, or in an easier to reclaim form when the minerals not claimed in the first pass have additional value-added purpose.

The system also is very energy efficient and self rebuilding for near zero maintenance operations, which just adds to the value of the total process and approach, achieving a new level of cost benefit returns.