Hindustan Zinc Limited
Multiflo® Self Prime Diesel Driven Pump Unit

Success Story

Above: Skid mounted Multiflo® 210MV dewatering pump coupled with Cat® C15 diesel engine
Right: Rampura Agucha open pit mine, Rajasthan, India

INDUSTRY
Zinc
CUSTOMER
Hindustan Zinc Limited
APPLICATION
Mine Dewatering
EQUIPMENT
Multiflo® 210MV Dewatering Pump Units

Seven years of uninterrupted mine dewatering solutions for world’s largest zinc mine

Background
Known as the world’s second largest zinc producer, Hindustan Zinc Limited (HZL) is a subsidiary of Vedanta Resources PLC. HZL’s opencast mine, at Rampura Agucha is located in the state of Rajasthan and is the world’s largest zinc mine. It has an ore production capacity of 6.15 million MT per annum. In operation since 1991, and a customer of Weir Minerals for more than ten years, the mine stands apart as a world class ore body with zinc-lead reserves grade averaging over 15.5%.

The challenge
The open pit mine at Rampura Agucha is 300 meters deep and becomes flooded in the monsoon season. This hinders mining activities and poses a serious threat to employees’ safety.

Previously, HZL was using conventional bore well pumps to dewater the open pit. However, this system was found to be ineffective. The bore well pumps were motor operated and the power required to operate was supplied from the surface via electric cables. These open electric cables were often damaged by the heavy trucks moving to and from the mine. The power supplied to the bore well pumps also had frequent voltage drop issues. This amounted to a very unreliable system for dewatering the open pit mine, resulting in frequent shutdowns during the monsoon season.

The solution
When HZL approached the Weir Minerals engineering team with their concerns, the team reviewed HZL’s existing operation and proposed using mine dewatering units. The skid mounted Multiflo® 210MV dewatering pump coupled with a diesel engine and a self priming vacuum system was suggested.

The self priming vacuum system ensures the continuous operation of the dewatering pump even at lower water levels. The dewatering pump installed was driven by a Caterpillar® C15 diesel engine, which eliminates the need to supply electrical power.

This custom built Multiflo® dewatering unit provides reliable performance under the toughest conditions and is easily transportable across the mine.

The solution was designed in three stages to dewater the deep open pit at different levels of flooding. A primary unit was installed at the bottom of the mine and was supported by two booster units placed at different elevations to pump out the water quickly and efficiently.
The results

After benefiting from uninterrupted mining activity for one whole monsoon season, HZL was impressed by Weir Minerals’ mine dewatering solution and authorised the installation of a further 14 Mutiflo® dewatering units over the period of six years. The combined installed capacity dewatered up to 1 million m$^3$ of water per month during the peak monsoon season.

Through seven years of uninterrupted mine dewatering, the mine was never closed down due to flooding. This was highly appreciated by the HZL team, who subsequently awarded the operations and maintenance contract to Weir Minerals.

The following benefits were experienced by HZL after commissioning Weir Minerals’ dewatering units:

- A reliable and hassle free dewatering system replaced the ineffective bore well pumps
- The diesel operated pump ensured an uninterrupted pumping system
- The skid mounted Mutiflo® dewatering unit can be easily transported across the mine depending on need
- The self priming vacuum pump gives an edge to Weir Minerals’ dewatering pump over the conventional bore well pump as it can pump out the flood water even if it is a negative suction
- The Mutiflo® dewatering units improved the safety of employees during the monsoon season
- Around the clock support from aftermarket team which maximises uptime

Following the completion of the project in 2016, HZL praised the Weir Minerals team and were appreciative of all the efforts and service provided. They have also continued their affiliation with Weir Minerals by awarding their operations and maintenance contract to Weir Minerals for the past two years. Furthermore, the Weir Minerals team is collaborating with HZL to develop new and improved solutions to make their everyday mining operations effortless.