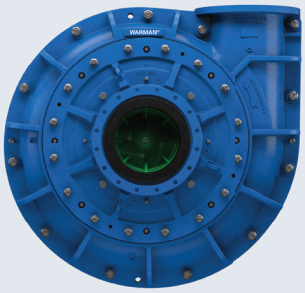
Warman® MCR® 150 Pump

Minerals

Case Study



Above: Warman® MCR® slurry pump

Right: Onsite with the Warman® MCR® slurry pump

INDUSTRY

Nickel and copper

APPLICATION

Cyclone feed pump

EQUIPMENT

Warman® MCR® 150 slurry pump

Doubled impeller life with Warman® MCR® pump saves more than US$20,848 per annum on parts and maintenance costs

Background

An underground mine located in the United State's Midwest region, processes about 2,000 metric tons of ore per day.

Over its nine-year mine life, this 150-acre mine is expected to produce 365 million pounds of nickel, 295 million pounds of copper and trace amounts of other minerals.

The challenge

Weir Minerals has worked closely with this mine site in their tailings and filter feed pump applications. When the site was unhappy with the impeller wear life of an incumbent pump in a cyclone feed application, they approached Weir Minerals for help. The competitor's pump was only achieving three months of impeller wear life before it needed to be replaced. The solution suggested by the Weir Minerals team aimed to triple that time.

Weir Minerals engineers had to take into account the footprint of the previous installation.

Special adapters and spool pieces were required to be designed in order to make sure the new solution fit where the incumbent pump had been with limited disruption to the space and process.

The solution

After visiting the site, the Weir Minerals team recommended a Warman® MCR® 150 pump with Ultrachrome® A05 impeller. Engineered for the most severe duty, the pump's slower operating speed from the impeller's large diameter, coupled with a superior material made it the obvious choice at extending impeller wear life for the cyclone feed application at the plant.

Additionally, the use of rubber lining in the Warman® MCR® pump made it better at handling coarse particles and the lightweight design made it safer when it comes to maintenance, compared to heavy metal liners.

The results

The trial was successfully completed and Weir Minerals was able to cut down the yearly parts cost of the impeller in half, while also reducing liner cost by almost 70%.

Duty information	
Flowrate	283 m³/h (1250 gpm)
Head	12 m (40 ft)

Above: Installing the Warman® MCR® pump

The results cont.

This is due to having to change out the MCR® impeller and liner once a year versus four times a year using the competitor's pump. Although the Warman® MCR® 150 pump costs more than the competitor's pump, the replacement and labor costs required for the competitor's pump long-term far outweigh the initial price of the Warman® pump.

After eight months a high vibration reading, which was later attributed to piping installation, forced the team to service the pump. While down for maintenance the team decided to change the MCR® pump impeller, however the impeller showed a good amount of wear life remained.

It was concluded that the Warman® MCR® 150 pump impeller would have easily surpassed the goal of tripling the wear life compared to the competitor's pump. After the trial, two additional pumps were purchased by the mine.

Maintenance and wear life comparisons

	Competitor Pump	Warman® MCR® 150 Pump
Wear life	2,081 hours	8,322 hours
Impeller material	Chrome Iron	Chrome Iron
Total parts cost per annum	US$27,567	US$10,318
Number of change outs per annum	4	1
Total maintenance hours per annum	64	16
Maintenance cost per hour	US$75	US$75
Total maintenance cost per annum	US$4,800	US$1,200
Estimated annual savings of US$20,848 per pump per annum on parts and maintenance with the Warman® MCR® 150 pump.		

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