

PROJECT OVERVIEW

Mining Rectifier Controls Upgrade

Increased efficiency and simplified maintenance

CUSTOMER CHALLENGE

Customer had 20 SCR rectifiers from multiple different original manufacturers, including ABB & Westinghouse. The machinery had performed well, but as the equipment aged, it was becoming increasingly difficult to secure replacement parts for repairs. In fact, Westinghouse had stopped producing or supporting their rectifiers years earlier.

In addition, the customer suspected that some or all of the rectifiers were not performing at full efficiency. This underperformance resulted in wasted energy and limited their production capacity – both major cost considerations for the mine.

DYNAPOWER SOLUTION

Dynapower upgraded the controls for 16 rectifiers and completely replaced 4 rectifiers with new Dynapower units. In addition, each unit was paired with a transformer and Dynapower replaced some non-functioning transformers with new oil-filled models.



CUSTOMER INFORMATION

Large open pit copper mine in western U.S. operated continuously since 1880. 12.3 million tonnes in reserves, and 125mpta+ production capacity.

RESULTS

- All rectifiers utilize the same controls – this consistency makes it **easier for staff use and training**
- All rectifiers now perform at full efficiency, **saving on energy expenses** and ensuring consistent power supply to **maximize the facility's production capacity**
- Capability to utilize **remote access for monitoring and diagnostics**
- **No interruption to production:** upgrade process took just a few days vs up to 6 weeks or more to replace the whole rectifier
- **Significant cost savings** compared to rectifier replacement
- Eliminated need for obsolete parts – now **all spares available from Dynapower**
- Dynapower engineers did full performance study and recommended upgrades to **uprate system performance**

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For less than the cost of replacing just one rectifier, the customer now has 16 fully-functional and upgraded pieces of equipment that should function for at least another 10-15 years. The controls upgrade package included all new PLCs, the latest model HMIs, and connections to the plant control system's DCS.

In addition, Dynapower technicians looked at the availability of signals, evaluated the power components (e.g., transformers), and checked the cooling system to ensure everything would function as expected. The customer had suspected that the equipment was not performing at full efficiency, causing additional power use and impacting production capabilities – now, the units are providing full output, maximizing efficiency and production capacity.

Even though the rectifiers were manufactured by multiple companies, Dynapower was able to service all of them – so they now are operated in the same way, simplifying training and operation. In addition, only one set of spare parts are needed vs. having to stock multiple manufacturers' parts or struggle to deal with sourcing obsolete parts.

As a value-add, Dynapower installed hardware to allow the customer the option to activate remote access to monitor and perform system diagnostics from anywhere in the world. This capability eliminates worries for facility operators and minimizes system downtime.

Another major advantage of controls upgrade vs rectifier replacement is that the time frame to complete the upgrade is less than 10 days – compared with the minimum 6 weeks of production downtime required to replace a rectifier. Add to this impact the possible effect on the facility infrastructure – it's not an easy task to remove an old rectifier and fit in a new one. Major structural changes and plant layout may be required, all adding to the costs in terms of dollars and time.

CONCLUSION

Even the best, most robust equipment wears out over time. At Dynapower, we have rectifiers in the field that have operated faultlessly for decades...but electronics can't last forever and the challenging environment in industrial facilities takes its toll. Regular maintenance helps, but eventually, a controls upgrade might be the best option.



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