



Customer
Copper mine producer

Industry
Mining

Application
Horizontal SAG mill

Rexnord Solution:
Autogard 820 Series
Torque Limiter

Total Annual Savings
\$2,167,830

For a detailed cost analysis for your application, contact your local Rexnord Representative.

Autogard 820 Series Torque Limiters Save Over \$2.1M for Copper Mine

Challenge

A major copper mine producer was operating a horizontal SAG mill with dual pinions, outfitted with shear pin couplings as protection for overloads or jams during the grinding process.

- Upon overload, the downtime to replace failed shear pins ranged from 2 to 10 hours, depending on the amount of damage caused and how the shear pins failed.
- The shear pins had a published accuracy of ± 15 percent of the torque setting.
- The mine producer was looking for a better way to prevent equipment damage and reduce downtime for maintenance.

Rexnord Solution

Rexnord understands the need for accurate and consistent disengagement when choosing overload protection. Rexnord's solution was using Autogard® 820 Series Torque Limiters to replace the mill's dependence on shear pins. Autogard Ball Detent Torque Limiters:

- **Protect the driven equipment** by disengaging immediately upon overload and disconnecting the drive system components.
- **Reset in seconds** once the overload is cleared, **with no need for replacement parts.**
- **Have proven accuracy within ± 5 percent** of the torque setting.
- **Offer bi-directional protection**, which is important in applications that are reversed for uniform wear.

Rexnord Solutions and Savings in Action

Since installing this Rexnord solution, the copper mine:

- Recouped the cost of the Autogard Torque Limiters at the first overload event. Although the Autogard torque limiters had a higher acquisition cost than shear pin couplings, the expense was easily justified by the reduced downtime when an overload occurred.
- Avoided the potential cost of a new gear drive or gear drive parts. The equipment is protected from damage caused by system shock loads and catastrophic failures.



Autogard 820 Series Torque Limiter disengages immediately to protect equipment.

Calculating the Annual Total Cost of Ownership (TCO)

Rexnord partnered with the customer to determine the current costs compared to the TCO using the Rexnord solution. Factors considered were:

- Acquisition costs.
- Maintenance personnel costs.
- Costs of lost production.

Annual Cost Analysis Breakdown (in \$USD)

Acquisition Costs

	Purchase Price	Expected Life	Units Installed	Total
Current shear pin coupling	\$80,000	5 years	2	\$32,000
Autogard 820 Series Torque Limiter	\$147,425	5 years	2	\$58,970
Annualized Savings				-\$26,970

Reduced Maintenance Personnel Costs

	Events/Year	Maintenance Resources	Maintenance Cost/Event	Total
Current shear pin coupling	12	2 people	\$9,650	\$115,800
Autogard 820 Series Torque Limiter	9	1 person	\$0	\$0
Annualized Savings				\$115,800

Lost Production Costs

Reduced downtime needed for maintenance upon overload.

	Events/Year	Downtime/Event	Downtime Cost/Hour	Total
Current shear pin coupling	12	3 hours	\$70,000	\$2,520,000
Autogard 820 Series Torque Limiter	9	0.7 hour	\$70,000	\$441,000
Annualized Savings				\$2,079,000

Rexnord Solution Annual Savings Summary

Total current cost per year	\$2,667,800
Total proposed cost per year	\$499,970
Total savings per year	\$2,167,830
TCO reduction percent	81%

Total Cost of Ownership Annual Savings: \$2,167,830