

Steel Mill Saves Over \$500,000

PER
TORQUE
EVENT

WITH MODERN TORQUE LIMITERS



**CUT DOWNTIME
BY UP TO 8 HRS**



**SAVINGS PER
TORQUE EVENT**



**MINIMIZED
UNPLANNED REPAIRS**

THE CHALLENGE

Steel fabrication consistently operates on par with some of the most demanding environments, where frequent temperature extremes and the need for continuous uptime pose significant challenges. Among the critical assets of one facility is the crop shear line, a section of the process where consistent uptime is essential for throughput and successful operation. For years, this mill struggled with a legacy shear-pin style coupling that regularly failed during torque overloads. Each of these failures forced the maintenance team into a lengthy and resource-intensive recovery process: disassemble the couplings, remove the broken shear pin(s), install new ones, reassemble the unit, and realign the system before the operation could continue.

This cycle consumed a significant amount of production time. Depending on the staffing and availability of the replacement hardware, each incident required six to nine hours to resolve. With an estimated \$100,000 in lost production per hour of downtime, this recurrent problem quickly became a significant source of financial strain.

This combination of high downtime costs, inconsistent replacement parts, and an intensive maintenance procedure made the system increasingly unsustainable for the steel

mill. A smarter, more reliable solution was needed – one which could manage torque spike without sacrificing uptime and could cut down on maintenance needs.

THE SOLUTION

Leveraging their combined expertise of Ameridrives™, the Regal Rexnord™ engineering team and other industry experts identified an opportunity to replace these shear-pin couplings with a more resilient, maintenance-friendly solution. Working closely with on-site teams and AIT Portage, the engineers designed an integrated package consisting of a Regal Rexnord mechanical torque limiter paired with a downsized AmeriGear™ coupling.

While torque limiters can be larger than traditional shear-pin assemblies, the team's experience allowed them to fit the new combination within the current envelope. By downsizing their coupling with modern advancements, they achieved a tighter fit without sacrificing performance and were ultimately able to deliver a package that offered more reliable performance and easier maintainability.

Furthermore, the torque limiter is designed to trip during an overload event, decoupling the system and protecting upstream components such as the gearbox and coupling leads to potential maintenance costs savings.

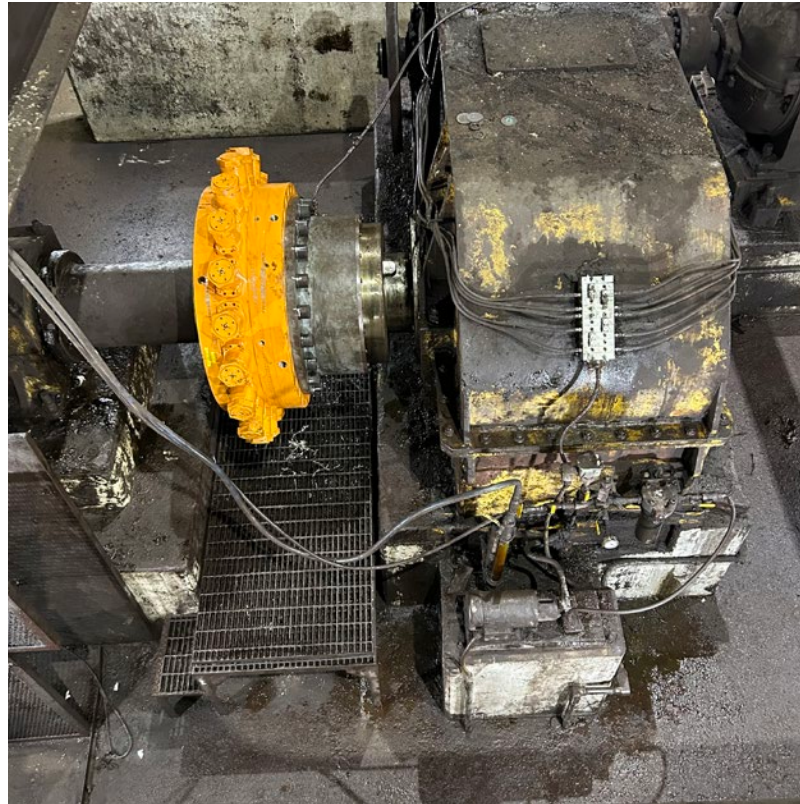
IMPACT ON PERFORMANCE AND COST

The shift from a legacy shear-pin design to a torque limiting coupling system delivered an immediate and measurable impact. What was once a full-shift interruption now only requires roughly one hour to correct. Instead of an estimated \$800,000 maintenance interval, this new system is closer to \$100,000 per event. This difference allows the system to quickly pay for itself through a reduction of downtime and the cost associated with it significantly.

Beyond direct savings, the mill benefits from reduced maintenance risk, improved equipment protection, and a more predictable operating environment. The elimination of costly shear pins provides both financial and operational assurance moving forward.

KEY BENEFITS

- **CUT DOWNTIME** from 6-9 hours to roughly 1 hour, dramatically improving system availability
- **SAVED** over \$500,000 per torque event, enabling the system to pay for itself immediately
- **ELIMINATED** shear-pin failure mode, removing consumable costs and reducing mechanical risk
- **PROTECTED** upstream drivetrain components, extending equipment life and minimizing unplanned repairs
- **DELIVERED** an engineered, envelope-conscious solution, made possible through the combined expertise of industry leaders.



CONCLUSION

This project highlights the tangible value of Regal Rexnord's integrated power transmission portfolio. By combining product expertise with hands-on engineering support, the team was able to deliver a solution that resolved a persistent operational challenge for this steel mill and simultaneously enhanced the maintenance workflow needed on-site.

The crop shear torque limiter integration stands as a strong example of how Regal Rexnord helps customers move beyond reactive fixes – providing engineered solutions that optimize uptime, safeguard expensive assets, and deliver measurable savings where they matter most.

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