

# Replacing Bronze in Shaft Collars for Material Handling Equipment

## CLIENT CHALLENGE

A leading OEM in the material handling industry approached Lehigh Valley Plastics with a recurring issue in one of their shaft collar applications. Their equipment operated in a dusty, abrasive environment, and they were experiencing excessive wear and galling on bronze collars used to secure rotating shafts. The resulting maintenance downtime and lubrication requirements were increasing both operational costs and warranty claims.

## LEHIGH VALLEY PLASTICS' SOLUTION

Our engineering team worked directly with the customer's maintenance and design teams to review the performance requirements and environmental conditions. After evaluating load, speed, and shaft compatibility, we recommended replacing the machined bronze collars with a self-lubricating nylon solution. Nylatron® GSM, known for its strength, wear resistance, and ability to run dry in harsh environments.

We provided precision-machined samples for testing. The new collars required no lubrication, reduced friction, and eliminated the risk of metal-on-metal wear that had previously led to shaft scoring.

## RESULTS

The transition from bronze to Nylatron® GSM shaft collars delivered several measurable benefits:

### • Maintenance Reduction

One of the most impactful outcomes was the elimination of lubrication requirements. The Nylatron® GSM collars ran dry without the need for grease, removing a time-consuming maintenance step. This helped free up maintenance staff and ensured cleaner operation in environments where dust and debris could previously accumulate in lubricated parts and accelerate wear.

### • Lower Total Cost of Ownership

While the individual component cost of the polymer collars was slightly lower than bronze, the real savings came from reduced labor, extended part life, and minimized unplanned shutdowns. Over a 12-month period, the customer reported a reduction in maintenance-related costs for the affected units.

### • Improved Equipment Reliability

Because the polymer material is non-galling and absorbs vibration better than metal, shaft scoring and micro-fractures were eliminated. The overall reliability of the assemblies improved, leading to fewer warranty claims and more consistent uptime.

### • Quieter, Smoother Operation

Operators noted a noticeable reduction in noise levels due to the dampening properties of the engineered plastic. In material handling environments where equipment runs near personnel, this improvement enhanced the user experience and contributed to workplace safety.

## CONCLUSION

Lehigh Valley Plastics helped deliver a more efficient, longer-lasting component solution that met the rigors of the application while reducing overall maintenance costs. By transitioning away from metal and into high-performance plastics, the customer gained a competitive edge in both reliability and total cost of ownership.

