OPTIMAS

SUCCESS STORIES

A SIMPLER LOCKNUT SOLUTION

10% | WEIGHT REDUCTION ELIMINATED 7,500LBS

Hand-in-hand engineering collaboration combined with dogged testing to replace a heavy truck manufacturer's multiple nylon inserts and platings with a single, lightweight locknut.

PROBLEM

A global truck manufacturer came to Optimas with a **locknut weight reduction challenge** and tasked us with finding a lighter weight, simpler component. While **reducing weight was the main goal**, the manufacturer also hoped to improve torque tension, pain adhesion, and salt spray; eliminate non-RoHS plating; and **move to a more environmentally friendly coating**. Since the locknuts were in use on the frames of heavy duty trucks, durability was a must. **Our engineers were up to the challenge**.

SOLUTION

We conducted a battery of tests to ensure the new component could handle the mechanical and environmental challenges of heavy duty trucking. With a specialized piece of equipment—an RS Torque Tension Unit—we calculated friction and determined the load capacity of the nut and bolt assembly to narrow down our options and identify the right locknut. From there, we tested a variety of platings for paint adhesion and torque tension. Line testing at the manufacturer's facility confirmed that their current tooling was sufficient.

RESULT

The final locknut is a single metal fastener that replaces a variety of heavier, more complex nylon parts. This piece reduces parts and platings, lowers costs, and creates a 10% reduction in weight—as well as increase confidence in the durability of the new solution.