

Robotics OEM Doubles Roller Life, Boosts Uptime

THE PROBLEM

A robotics OEM operating continuous-duty automation systems was experiencing premature roller deformation and inconsistent motion under sustained load. The rollers were subjected to high compressive forces, frequent start-stop cycles, and extended run times. Existing thermoplastic and rubber rollers developed flat spots, lost dimensional stability, and required frequent replacement — driving maintenance costs and downtime. The customer needed a roller solution that could maintain geometry under load, resist compression set, and deliver predictable performance over long duty cycles.

THE SOLUTION

MPC engineered a custom cast polyurethane roller optimized for high-load operation. The formulation was tuned for elevated compressive strength and low compression set while maintaining sufficient compliance to manage vibration and contact forces. Each roller was bonded to a steel core, post-mold machined to ensure concentricity and finished to a controlled surface profile to balance traction and wear. MPC's engineering team worked closely with the customer to validate load conditions, operating speeds, and environmental factors prior to finalizing the design.

THE RESULT

In production testing, the polyurethane rollers maintained dimensional stability under sustained load and eliminated flat-spotting issues observed with prior designs. The customer reported a 2× increase in roller service life, reduced vibration during operation, and fewer unplanned maintenance events. The improved durability and consistency allowed the OEM to standardize the roller across multiple automation platforms, improving uptime, and lowering total cost of ownership.

MARKET

Industrial

AMR and Warehouse Automation

SOLUTION

Motion Transfer & Rolling

Protection & Dampening

PRODUCT

Polyurethane Rollers

TECHNICAL SPECIFICATIONS

MATERIAL

Solid Polyurethane

KEY PROPERTY

Low compression set

PROCESS

Cast molding, post-mold machining

COMPONENT

Roller bonded to steel core

2×

INCREASE IN ROLLER SERVICE LIFE

Zero

FLAT-SPOTTING UNDER SUSTAINED LOAD

Fewer

UNPLANNED MAINTENANCE EVENTS

Tell us what you're working on.

One partner — from concept to production — for performance that can't stop.

[Get Started ›](#)