

Automation OEM Launches Cleanroom Robotics On Schedule

THE PROBLEM

A product development team at a major automation OEM was designing a robotic system intended for cleanroom environments where ISO cleanliness standards were required. The system needed urethane wheels that could deliver robust mechanical performance while meeting strict particulate and contamination limits. Standard wheel materials either failed cleanroom requirements or could not provide the durability and wear life needed for continuous operation.

Compounding the challenge, the OEM was working toward a product launch scheduled within 12 months, leaving limited time for trial-and-error development. The engineering team needed a solution that could be validated quickly without compromising cleanliness, performance, or dimensional control.

THE SOLUTION

MPC partnered closely with the OEM's product development team to engineer a cleanroom-qualified cast urethane wheel solution. The project involved multiple rounds of rapid prototyping combined with iterative engineering collaboration to refine both material behavior and manufacturing processes.

A custom conductive urethane formulation was developed to manage static charge while maintaining low particulate generation and consistent mechanical properties. In parallel, MPC optimized molding and post-molding processes to control surface finish, dimensional tolerances, and wear behavior—critical factors for cleanroom performance. Prototypes were evaluated and refined to ensure the wheels met ISO cleanliness expectations while delivering the durability required for the application.

THE RESULT

The final urethane wheel solution met cleanroom requirements while delivering 2X longer wear life and tight dimensional control. The OEM validated the design within its 12-month project timeline, keeping the planned product launch on schedule. By combining custom formulation development with controlled manufacturing processes, MPC delivered a solution that balanced cleanliness, performance, and scalability, enabling the robotic system to move confidently from development into production.

MARKET

Industrial

AMR and Automation

SOLUTION

Motion Transfer & Rolling

Static Dissipation

PRODUCT

Polyurethane Wheels

TECHNICAL SPECIFICATIONS

MATERIAL

Custom conductive polyurethane

ENVIRONMENT

Cleanroom

PROCESS

Cast molding, post-molding finishing

DEVELOPMENT

Rapid prototyping, iterative refinement

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