



ARROW McLAREN INDYCAR TEAM
OFFICIAL PARTNER



ENGINEERING THE MARGINS OF VICTORY.

How Greene Tweed and Arrow McLaren collaborated to transform material innovation into race-day performance using Xycomp® DLF™

THE PERFECT PROVING GROUND.

Projects with Arrow McLaren are the perfect proving ground for the Xycomp® DLF™. In this case, moving from a well-understood aluminum billet to a thermoplastic composite for a complex-shaped suspension component that must endure the extreme stresses of IndyCar racing required deep collaboration and trust.

Leveraging the unique properties of our DLF composite allowed us to achieve significant weight reduction while validating a new design and manufacturing methodology – a clear demonstration of how an engineering partnership can solve complex challenges and drive performance in the most demanding environments. We are very much looking forward to the next opportunity to work.

Sebastien Kohler
Senior Scientist, Greene Tweed



The team ultimately selected Xycomp® DLF™, a high-performance thermoplastic composite engineered as a lightweight alternative to replace metal components, while withstanding extreme conditions.

The typical 35-50% weight reduction achieved when Greene Tweed adapts parts to this material made it a very attractive proposition. Arrow McLaren evaluated its in-house manufacturing options but recognized that Greene Tweed's ability to scale production and apply proven composite expertise offered a unique and valuable path forward. Through deeper technical engagements, Greene Tweed helped validate the value of Xycomp® DLF™ for the anti-roll bar lever, building confidence in both performance and durability.

Greene Tweed does not function solely as a supplier but operates as an integrated technical partner throughout the development cycle. Achieving all objectives simultaneously required both material innovation and collaborative work between Arrow McLaren and Greene Tweed. Their confidence was reinforced through a thorough collaboration and review process comparing real-world applications, ensuring

the composite would meet the load, durability and environmental demands of the anti-roll bar lever. Greene Tweed's ability to combine material expertise with manufacturing capabilities ultimately differentiated the approach and proved to be the right fit for the team's needs.

While the absolute value may appear modest in isolation, weight optimization remains a significant performance factor within the NTT INDYCAR SERIES due to the tightly constrained competitive environmental and series-wide vehicle parity. The final design met all operational requirements while successfully integrating the benefits of the Xycomp® DLF™ material technology.

Together, Arrow McLaren and Greene Tweed take pride in their innovative partnership, with the shared goal of advancing their technical performance to give the drivers the tools to reach victory lane.

Arrow McLaren X Greene Tweed: Anti-Roll Bar Collaboration



Racing in the NTT INDYCAR SERIES, performance is driven by marginal gains. With all competitors using the same chassis and components on the car itself, technical victories are often achieved through incremental improvements in weight reduction, material optimization, manufacturing efficiency and engineering ingenuity.

The collaboration between Arrow McLaren and Greene Tweed represents a technical partnership focused on identifying those opportunities through integrated

engineering support. One recent example is the development and implementation of a new anti-roll bar lever utilizing Greene Tweed's Xycomp® DLF™ thermoplastic composite material.

The result was a 64-gram weight reduction per car, achieved without compromising durability or performance. This reduction contributed to improved power-to-weight ratio, resulting in stronger acceleration, shorter stopping distances and more responsive handling, all of which

can contribute to lap-time gains. While IndyCar regulations enforce a minimum vehicle weight, ongoing reductions remain critical as new components are frequently added to the car.

Beyond the material change itself, the project demonstrated the value of Greene Tweed's engineering involvement throughout the redesign and manufacturing process, significantly reducing internal development workload for Arrow McLaren engineering and

production groups. **Greene Tweed operated as an integrated engineering partner,** collaborating on the overall design, material selection, and manufacturing process to optimize performance requirements – rather than exclusively serving as a supplier.

The component was first introduced earlier this season on Nolan Siegel's No. 6 Arrow McLaren Chevrolet at Barber Motorsports Park, before being implemented across all Arrow McLaren entries beginning at the historic Grand Prix of Long Beach in April. The project centered on replacing an existing 7075 aluminum anti-roll bar lever with a molded Xycomp® DLF™ alternative while maintaining equivalent structural performance requirements.



Greene Tweed's Xycomp® DLF™ Anti-Roll Bar Lever

Anti-Roll Bar Function in an IndyCar Application

The anti-roll bar system is a critical mechanical device within an IndyCar suspension package. Its primary function is to resist chassis roll during cornering by transferring load between the left and right suspension assemblies.

In high-downforce, open-wheel race cars, roll stiffness distribution plays a critical role in chassis balance. Adjustments to front and rear roll stiffness influence tire load transfer, corner-entry stability, mid-corner balance, and corner-exit traction. The anti-roll bar lever allows the team to fine-tune these characteristics while contributing to overall weight reduction.

Anti-roll bar stiffness and durability are critical to delivering consistent handling performance over the course of a season with high lap counts. Their effectiveness is especially important at superspeedway events such as the Indianapolis 500.

Racing at the Indianapolis Motor Speedway, vehicles sustain prolonged lateral loading through each corner while operating at average speeds well exceeding 220 MPH. Under these conditions, small changes in mechanical balance can significantly impact tire degradation, aerodynamic stability

and overall balance over a 500-mile race distance.

Original Component Architecture

The original Arrow McLaren anti-roll bar lever was manufactured from 7075 aluminum billet – widely utilized in motorsport applications due to its favorable strength-to-weight ratio, machinability, and fatigue resistance – using conventional machining processes. The existing component architecture met all functional and structural requirements but presented an opportunity for optimization through alternative material selection and manufacturing methodology.

The engineering objectives for the project included:

- Reduction of overall component weight or mass.
- Maintenance of equivalent structural stability.
- Consistency under varying IndyCar loading conditions.
- Minimization of engineering and manufacturing burden on Arrow McLaren resources.

GREENE TWEED EXCEEDED EVERY EXPECTATION.

Their expertise in materials, manufacturing processes, and the performance requirements we face made the development and production of this component remarkably seamless. Their team demonstrated a deep technical understanding and a collaborative approach throughout the project, resulting in a true engineering partnership. We value this relationship greatly and look forward to working together for many years to come. ”

Kory Drake
Design Engineer, Arrow McLaren IndyCar Team

