

## Customer Story

# BEATING THE COMPETITION HAWAYA RACING ON THE FAST TRACK WITH PHILLIPS ADDITIVE & MARKFORGED 3D PRINTING



Industry: CNC Machining | Tooling | Fabrication | Manufacturing  
Application: Tooling and Fixtures | Prototyping

## THE CUSTOMER

Since 1985, Johnny Vickers and his team at Hawaya Racing have been dedicated to improving the performance, speed, and safety of Harley Davidson Drag Racing and street motorcycles. As the first-ever NHRA Pro Fuel Champion, Johnny realized that he would have to manufacture new performance parts as no other industries were devoted solely to Harley Drag Racing.

Johnny began fabricating and machining small parts to upgrade engines and transmissions for himself, and these parts soon caught the eye of his fellow racers, who inquired about parts for their competition bikes. Since then, Hawaya Racing has continuously evolved based on a love for Harley Davidson motorcycles, the need for speed, and increasing customer demand for parts manufactured by Johnny's team at Hawaya Racing.

## THE CHALLENGE

The challenge has always been faster, lighter, and less expensive in racing. Parts are traditionally manufactured from machined aluminum or steel, which creates strength but also adds extra weight. Machining small, complex parts became time-consuming, making Hawaya Racing explore different manufacturing options. President Johnny Vickers wanted a solution that would give Hawaya Racing the flexibility to quickly iterate new ideas, inexpensively validate parts, improve manufacturing processes, alleviate supply chain delays, and overcome manpower issues.

## THE SOLUTION

Hawaya Racing, Inc. decided to leverage its strong relationship with Phillips Corporation. The Markforged X7 Industrial 3D printer was chosen for its ability to replace CNC-machined parts using Markforged's patented continuous carbon fiber reinforcement, thus freeing up the company's mills and machinists to focus on other high-value projects and allowing them to increase their overall throughput.



Markforged X7-  
Industrial 3D Printer



The Markforged Digital Forge Platform allows components to be manufactured that meet various requirements, including flame resistance, chemical resistance, and energy absorbance. The Markforged X7 produces parts with a high repeatability level and a near-perfect surface finish, leading to shorter product development time.

This Industrial printer allows users to print with a wide range of base materials and fiber reinforcement, giving them more flexibility to meet customer needs. In the racing industry, flexibility and time savings are enormous advantages, and Hawaya Racing has been steadily utilizing the X7 to move forward with new concepts to maintain their advantage. Johnny and the Hawaya team use their X7 day and night – it's working even when they aren't in the shop. This technology fuels their quest to beat the competition in Nitro Harley Drag Racing.

## PART SPOTLIGHT - THROTTLE GRIPS

Upon comparing the same parts (throttle grip sets) manufactured in different ways, one on the Markforged X7 Printer and the other machined out of aluminium, the result is a perfect example of a win-win scenario! While the Aluminum set has 4 set-ups total (two on the CNC Lathe and two on the CNC Mill) and also uses two different stocks of raw material, the Composite set has no set-ups, uses only one raw material, and requires no CNC machines, fixtures, or tooling.



Machined Aluminum: Four total set-ups (two on a CNC Lathe and two on a CNC Mill). Uses two different stocks of raw material.



CMarkforged X7 Composite: No set-ups, one material, no CNC finishing.

## ADDITIONAL ADVANTAGES OF THE 3D PRINTED SET OVER THE MACHINED ALUMINUM SET



No CNC machine time, fixtures or tooling



No CNC machine operator



No waste



62% reduction in weight



30% reduction in manufacturing cost



## JOHNNY VICKERS, OWNER, HAWAYA RACING



Hawaya Racing has made a mark for itself on and off the Drag Racing track. The Markforged X7 Industrial 3D Printer has made it possible for us to take our competitive advantage a notch higher due to our focus on lowering manufacturing costs, reducing part weight, and providing quick turnaround times to market. Incorporating Markforged X7 Additive Manufacturing technology into our shop for functional and inexpensive prototypes, as well as high-quality, end-use parts, has helped us discover faster parts made with less effort, less costly, and, perhaps most importantly, lighter in weight! We have been associated with Phillips for many years, and collaborating with them for our 3-D printing needs has been a natural progression. Phillips has always been a great support avenue for our technology advancements. Their sales specialists, application engineers, office support, and service technicians are invested in our success. This step is huge in the sport of Nitro Harley Drag Racing and a win-win for our customers and us. Everyone at Markforged Additive and Phillips Corporation has just been solid in supporting our efforts and helping us push the envelope in new and exciting areas. This is a game changer in our sport!

## CARLTON MCFADEN, VP – MARKFORGED ADDITIVE, PHILLIPS CORP



Phillips Corporation unites a robust combination of industry-leading equipment, forward-thinking expertise, and customer-focused services to meet an ever-increasing range of manufacturing applications. In a competitive business climate, where people demand quick turnaround times, reduced development costs, and superior part performance, we are incredibly pleased to partner with Hawaya Racing as their technology partner for the Markforged X7 printer. The collaboration between Hawaya Racing, Phillips, and Markforged is yet another definitive step forward in Advanced Manufacturing. Each partnership with our customers is sealed with a promise of reliability. We are excited to support Hawaya Racing as they leverage Additive Manufacturing for racing equipment and part production.

## ABOUT PHILLIPS CORPORATION

For more than 60 years, the federal government, private sector, and education leaders have trusted the experts at Phillips Corporation to solve their most significant manufacturing challenges. Phillips enjoys a 30-year global relationship with Haas Automation, which has produced over 30,000 installed machines. Phillips' mission is to create legendary value for the manufacturing community by unlocking solutions to propel capabilities, profitability, and productivity. Learn more about Phillips at [www.phillipscorp.com](http://www.phillipscorp.com).

## ABOUT MARKFORGED

Markforged is reimagining how humans build everything by leading a technology-driven transformation of manufacturing with solutions for enterprises and societies worldwide. The Markforged Digital Forge brings the power and speed of agile software development to industrial manufacturing; combining hardware, software, and materials to solve supply chain problems right at the point of need. To learn more, visit [www.markforged.com](http://www.markforged.com).

