

Faster, Better, More Affordable Machining of Offroading Parts

RPG Offroad Utilizes CAMWorks Multi-Axis Milling Solutions to Boost Production, Shorten Delivery Times, and Support Growth

RPG Offroad was created with one simple goal in mind, and that is to advance the offroading performance of the Ford Raptor and F-150 platform to new heights. RPG has teamed up with the top companies in the offroading industry to bring Ford F-150, Raptor, Ranger, and Bronco owners the absolute toughest and safest off-road suspension performance upgrades on the planet. The company designs and manufactures components that exceed normal factory operating limits on a routine basis, drawing on its engineering expertise to develop precision-crafted offroading components using modern-day CAD technology, robotic welding, and CNC machined parts. RPG lives, breathes, and sleeps engineering in order to produce the most durable and safest truck parts for offroading.



RPG Offroad designs and manufactures off-road suspension upgrades for the Ford F-150, Raptor, Ranger, and Bronco. RPG Offroad originally outsourced their machining, but soon established their own machine shop.

According to Owner and President Corey Kausch, RPG Offroad was founded in 2010 as a spin-off from Engineering Innovations, Kausch's engineering consultancy, which over the years has worked with many IndyCar and offroading race and rally team winners and participants. "Back when we founded RPG Offroad, I was consulting for Fox Shocks and learned about the upcoming introduction of the Ford Raptor that year. I realized that there would be demand for offroading components for this new model of the F-150," Kausch recounts.

"RPG initially was the Raptor Performance Group, which we shortened

to RPG because of the Raptor trademark. Initially, I designed some components and worked with an outside machinist to get them machined. My wife and I then assembled the components into kits and shipped them out of our garage."

Although that approach sufficed during the company's first few years, Kausch soon needed to rent space in Irvine and subsequently a larger facility in Laguna Hills to keep up with demand as the business grew at a rate of 30 percent annually. However, as RPG continued to grow, outsourced machining costs rose to the point that they were cutting into profits and turnaround times had slowed due to increasing demand, prompting Kausch to set up his own machine shop. "When we established our machine shop in 2019, outsourced machining was costing \$40,000 to \$45,000 each month and the sheer volume of orders was creating delivery delays," Kausch recalls. "For example, we'd often be missing one piece from our suspension kits but had to wait weeks for the external machine shop to machine those missing pieces. That's when we decided to bring machining in-house."



*Corey Kausch
Owner and President
RPG Offroad*

Kausch has used SOLIDWORKS® CAD design software for the past 26 years, so he consulted with Hawk Ridge Systems, his SOLIDWORKS reseller, as well as a friend who ran a separate machine shop in the area about what tools he should use. That's when he learned that SOLIDWORKS design software is completely integrated and part of the HCL CAMWorks® machining package. "I already had a strong SOLIDWORKS mentality, having worked with the software for many years. I was pleased to find that I could use SOLIDWORKS CAM for 2D machining and more capable CAMWorks Professional Multi-Axis Milling software to support 4-axis and 5-axis machining," Kausch explains.

"We needed to cut machining costs, save time, and improve the availability of machined parts," Kausch continues. "Making HCL CAMWorks the foundation of our machine shop was an easy decision due to its complete integration in SOLIDWORKS, ability to automatically generate G-Code for controlling toolpaths, and short learning curve. It was a natural extension of our use of SOLIDWORKS."

Slashing Machining Time by 80 Percent

Since beginning operations in its new 17,000-square-foot California facility, RPG has utilized CAMWorks Multi-Axis Machining Solutions to drive 2-, 3-, 4-, and 5-axis machining on a variety of Haas lathes and milling machines, which Kausch chose because Gene Haas is a racing and offroading enthusiast. By bringing machining operations in-house and using CAMWorks solutions to program toolpaths, RPG has cut its machining cycles from a month to four days, a reduction of more than 80 percent.

"Instead of ordering machined parts from an outside provider and waiting weeks to receive the part, we keep the machines running and the spindles turning," Kausch stresses. "For example, we can set up a run on Friday afternoon and have the machine run all weekend until Tuesday morning. While learning how to machine parts was a little intimidating

at first, I decided to put my toes in the water and take that jump because of my familiarity with SOLIDWORKS and its integration with CAMWorks. The CAMWorks Simulator allows me to visualize how a job will run and if I don't like what I see, I can tweak the model by changing a dimension in SOLIDWORKS and the G-Code will update automatically to reflect the change."

Increasing Throughput, Extending Tool Life

Once established, RPG's CAMWorks-driven machine shop enabled the company to bring all component machining operations in-house, driving down costs and eliminating delivery delays while simultaneously boosting throughput to meet growing demand. "In addition to generating time and cost savings—as well as improving part availability—the move to CAMWorks has provided the productivity gains that we need to maintain and sustain growth," Kausch notes.



With CAMWorks integration inside SOLIDWORKS and automation tools, RPG Offroad has significantly reduced machining cycle times.

"We've not only reduced production time, resulting in cost savings," Kausch adds. "We've also utilized CAMWorks VoluMill high-speed machining software to realize additional costs savings by extending tool life. For instance, we set up a job using VoluMill on a lathe using a 5/8-inch round end mill to make a 1/2-inch cut. Without VoluMill, the

THE CLIENT

Company: RPG Offroad

Headquarters: Rancho Santa Margarita, CA, USA

Industry: Stronger, more durable, and better performing automotive offroading components—including front and rear suspension components—for the Ford F-150 Raptor, Bronco, Ranger, and other F-150 vehicles

THE CHALLENGE

Establish and equip machine shop production facility to bring machining of automotive offroading components in-house to reduce production costs, shorten delivery times, and support business growth

THE SOLUTION

Implement HCL CAMWorks Professional Multi-Axis Milling software to support 4-axis and 5-axis machining, take advantage of the solution's seamless integration with SOLIDWORKS 3D modeling software, accelerate/increase production, shorten delivery times, and boost productivity overall

THE BENEFITS

- Cut manufacturing costs while increasing production dramatically
- Reduced machining time by 80 percent, shortening delivery times substantially
- Realized 85 percent extension in tool life
- Expanded manufacturing by adding a second production facility to support growth

tool would have lasted two hours on this job. With VoluMill, we were able to extend tool life to 170 hours, running the job 10 hours a day for 17 days.”

Establishing a Second Production Facility to Support Growth

While moving machining operations in-house in 2019 helped RPG increase throughput and initially manage growth associated with an increasing number of customer orders, the company is in the process of establishing a second production facility near New Orleans, LA, to both sustain its growth trajectory as well as cut its shipping costs. “With business growth of 30 percent each year, we need to bring on additional production and logistical resources to manage growth effectively,” Kausch points out.

“While our immediate goal in setting up a second machine shop in Louisiana is to cut shipping costs in half, we realize that having more than one facility to service our customer base will help us better support and manage growth. CAMWorks has helped us save time and money while boosting machining throughput, and we believe CAMWorks will continue to help us streamline feeds and speeds at both facilities so we can continue delivering quality products at a fair price for our offroading customers.”



RPG Offroad recently expanded operations to a second production facility to better serve their customers.

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