Making Manufacturing a Smoother Ride.

Polaris Continues to Set the Pace Thanks to 3D Printing.

Polaris is renowned for its high-quality snowmobiles, off road vehicles and motorcycles. Since developing its first snowmobile more than 65 years ago, the company has continued to innovate and develop new products – and relies on equally innovative and tried-and-trusted technology to keep it ahead of the chasing pack. “It’s a really interesting work environment,” said Cory Bombard, Program Manager for Additive Technology. “It’s fast paced, we innovate products for a variety of vehicles, and it’s very exciting being at the forefront of technology.”

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> Program Manager for Additive Technology, Polaris

stratasys

For Every Challenge
There is a Solution.

Producing a diverse product line in an ever-changing environment brings its own unique set of challenges. Dan Wiatrowski, Manufacturing Engineer at Indian Motorcycles, a division of Polaris Industries, says tooling is an important consideration for the company.

“A lot of what we do works around different styles of tooling. So anything from regular hard plastic 3D printing materials up to some of the new, more innovative materials.

“We install a lot of complex parts, badging, head dresses, things of that nature to our vehicles. We also work with a lot of chrome and painted parts, and we have strict cosmetic standards that we need to uphold for our customers.”

Prototype tooling costs are also an ever-present issue – however Dan insists 3D printing has helped them reduce costs. “With all the hands-on assembly work that we do in the plant, we’ve begun using 3D printing to change the way we think about tooling.”

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Stratasys’ innovative 3D printing materials allow Indian Motorcycles to uphold strict cosmetic standards on their chrome and painted parts.

Better Performance. Better Results.

Although they work across a wide variety of vehicles, the Polaris team members have one thing in common – they say partnering with Stratasys has opened up new possibilities.

“The biggest benefit is the ability to iterate on new tooling designs. To come up with a design, test it, improve on it and repeat until we get to a good final product has been very helpful,” said Dan Wiatrowski.

The other major benefit is the new materials offered by Stratasys – particularly elastomer. “They’re soft enough to not damage our cosmetic parts, but durable enough to withstand assembly manufacturing.”

Swift Solutions Improve the Bottom Line

Elastomer materials aren’t the only reason to choose Stratasys – speed matters too. Jenika Bishop, Senior Project Engineer, revealed: “Instead of waiting between eight to 12 weeks, we’re able to get designs within 24 hours. This lets you have more d esign process up front, so you have greater confidence when you kick off your final tools for production.”

Costs are key too, as Will Fickenscher, Systems Engineer, explained “As well as reducing tooling times, Stratasys technology allows us to cut costs significantly. It means we can stretch it into other areas where we wouldn’t have previously considered 3D printing.”

Underpinning all this is service. “Stratasys has very high-quality equipment, excellent customer service and they’re always there for us,” Cory Bombard said. “The quality of the equipment gives us the confidence that we’re going to get a good part the first time, every time.”

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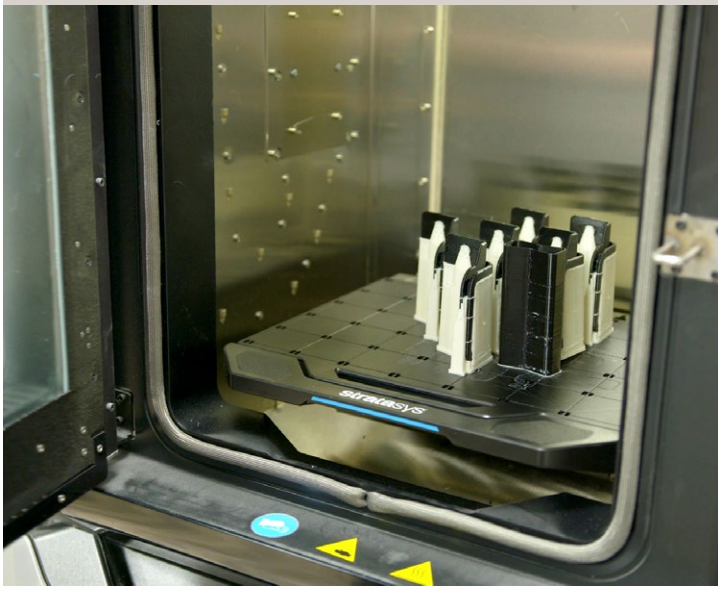

Reduce tooling times and cut costs with Stratasys 3D printing technology

Innovation in Action.

The introduction of 3D printed FDM™ TPU 92A elastomer material has been a real advantage for Polaris. The material's flexibility provides the right answer to a number of different applications, speeding production and validation of flexible part designs.

One example is the Indian Motorcycle rear fender tip installation. Engineers 3D printed an elastomer locating fixture that won't mark the paint when the tip is installed. "We need to be able to touch this part right away to assemble it," said Dan Wiatrowski. "Using elastomer allows us to contact the painted surface right out of the paint shop without damaging it, giving us a really quick lead time."

Elastomer materials have also saved production time on other vital components, such as the VIN label guard. This helps protect the VIN label on the motorcycle head cast, so it's not damaged downstream. Dan said, "These production-quality guards have taken the place of a lot of leather and vacuum formed parts, which were very time consuming to produce. So it's freed up a lot of engineering time."

3D printed elastomer also accelerates the design of flexible parts. It let designers quickly refine the design of a flexible vehicle cupholder. "Actually having physical parts to test things out goes a long way," Jenika Bishop said. "Being able to see the part real life, test different scenarios and make sure that it fit into the new interior was a huge benefit."

The use of elastomer material has enabled the team at Polaris to rapidly iterate and test multiple, geometrically accurate designs for the intake duct on one of their vehicles. "It allows us to 3D print parts and upfit on our vehicles quickly, to help catch mistakes or identify areas for improvement, giving us better understanding of which designs we want to pursue," explained Will Fickenscher.

Rear fender tip locator

VIN labels guard

Intake duct

Vehicle cupholder

Facing an Exciting Future. Together.

Polaris says the road ahead is an exciting one – and insists Stratasys will be along for the ride.

Anthony Stecker, Plant Director, Indian Motorcycles, said, “Working with Stratasys has helped open our minds to what’s possible with complex problems and geometries.”

He said 3D printing will now help Polaris come up with better manufacturing aids and techniques, protect vehicles during the manufacturing process, and revolutionize the continuous improvement journey. He added, “Being able to get a product from ideation, through manufacturing and into the customer’s hands – in a very short cycle – is how we will win.”

His excitement at what’s possible was echoed by Will Fickenscher. “Stratasys has really helped broaden our horizons. Using its technology will now allow us to design products differently and more effectively.”

Cory Bombard summed it up: “We’re really excited about the future of additive manufacturing and are looking forward to continuing the partnership with Stratasys.”

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> Manufacturing Engineer, Indian Motorcycles

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