ADAPTIVE3D™

CASE STUDY

IN PARTNERSHIP WITH WEATHERBY®

THE CHALLENGE

Luke Thorkildsen, VP Sales, Marketing & Product Development at Weatherby, Inc. looked out over the Wyoming mountains as he explained that, "Weatherby, as a company, had made a strategic decision to leverage the most advanced technology to deliver the lightest-weight and highest-performance products possible. One of the key components to light weighting the entire assembly was the recoil pad, which distributes the impact and pressure and is often made of Shore A 70-90 polyurethanes or EVA rubbers." "With our 75 years of experience, we knew that traditional manufacturing processes would lead to the same old outcomes. Our desire to truly differentiate led us to 3D printing, but we needed to find polyurethane and rubber-like 3D printed materials with stable performance across a broad temperature window. In the world of consumer products, the story of quality materials and reliable engineering is critical to maintain."

THE SOLUTION

Weatherby needed help finding the optimal path to affordably printing these components with the highest performance rubber/pu like material on the market. Greater design freedom, higher performance and simple processing were needed to deliver on the end application as well as facilitate the process requirements of true end part manufacturing. So they turned to Adaptive3D Technologies, the premium Additive Manufacturing polymer resin supplier. "Elastic ToughRubber has the perfect amount of elasticity and flexibility to create a superior part for impact resistance", says Thorkildsen. "It is also incredibly tough and delivers stable performance from the hottest deserts to the coldest mountains." The team at Weatherby also emphasize how critical it is to have a simple manufacturing process. As a one-part pot stable polymer resin, Elastic ToughRubber is easy to work with and the leftover resin can be used in the next print, so there is little to no waste.

MANUFACTURING END PARTS

Several thousand recoil pads made of Elastic ToughRubber have already been sold this year as a component on Weatherby rifles, and thousands more have already been ordered. The need for high speed, high quality manufacturing is clear. As a one-part pot stable polymer resin, Elastic ToughRubber is easy to work with and the left-over resin can be used in the next print, so there is almost no waste. These aspects of the material combined with superior properties have enabled Adaptive3D to deliver on its vision of true Additive Manufacturing through optimized materials.

ADAPTIVE3D™

CASE STUDY

WEATHERBY®

Weatherby's rich heritage began in 1945 located in Southern California. A true family business operated by third-generation leader Adam Weatherby headquartered in Sheridan, Wyoming minutes from public hunting access in the Bighorns Mountains, and endless grassland prairies.

ADAPTIVE3D™

Adaptive3D delivers premium polymer resins for additive manufacturing and specialty end applications. The company has a mission to enable high volume additive manufacturing through optimized materials. Adaptive3D offers leading additive manufacturing polymer resins and specialty polymers to a range of industries around the world in consumer, healthcare, industrial, transportation and oil and gas sectors. The company leads in printing and processing rubber-like materials, elastomeric materials, and low-cure stress photopolymers. The deeply technical company has developed a patent portfolio based on fundamental materials research, some of which has been translated from the University of Texas at Dallas and is based on past funding from the Defense Advanced Research Projects Agency, the National Science Foundation and the National Institutes of Health.

Elastic ToughRubber - A Tough Printable Elastomer For All Seasons

ABOUT ELASTIC TOUGHRUBBER™

FEATURES	BENEFITS
Polyurethane and rubber-like performance	High energy return, High tear strength, high resilience (elasticity), high strain, high tensile strength
Rapid print speed and <2 hour post-process time	Print time equivalent or faster than highest throughput DLP competitors, Post process <2 hours, utilizes off-the-shelf open ecosystem equipment to minimize capital expense,
Simplicity and ease of use	One part, one pot polymer system simplifies storage and processing for a cleaner safer production environment, and it increases batch-to-batch print quality.

USES AND APPLICATIONS

Elastic ToughRubber ™ can already be found in parts and products that are sold on store shelves. It is perfect for shoe midsoles and heel cups, seals, door boots, bellows, recoil pads, foam-like lattice structures and impact parts.

MANUFACTURING, PROCESSING AND QUALITY

Unlike similar resins used in DLP printing, Elastic ToughRubber ™ is a one part, one pot resin system. This means there is no mixing of different materials in the proper ratios, which can lead to poor quality if not done correctly and is difficult at scale. ETR is also pot stable so there is no wasted resin at the end of the print. You simply use the left over resin to print your next part.