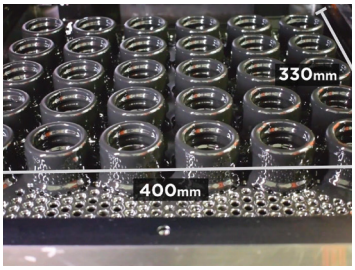
ADAPTIVE3D™

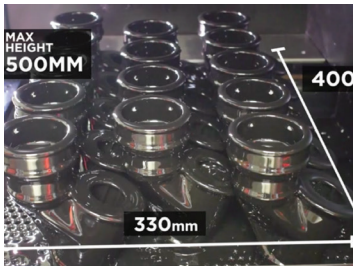
CASE STUDY

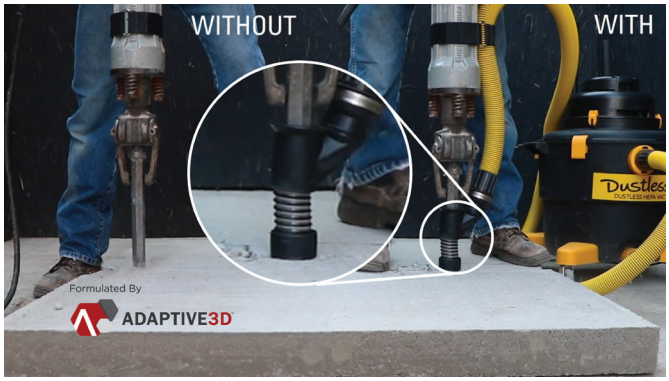
IN PARTNERSHIP WITH Dustless

"Dustless Technologies had to escape their overseas buying. They had a strong desire to have much faster development time, avoid "boat loads" of overseas inventory, avoid injection molding and have a full-scale in-house production facility.

Market trends can change fast. In order to respond to markets in a timely manner, Dustless Technologies needed a large amount of customization without an excessively-long period in between product iterations. Most R&D groups will go through many different prototypes before finding the one that best suits the requirements of the final product. With traditional processes, you have to create the first prototype (usually from a combination of drawings and cad files), then test it, then decide what changes need to be made, and then you have to make an updated prototype. If the parts are injection molded, this means long waits while the new molds are made, parts are molded, and then they are shipped back to you. With additive manufacturing, it's as simple as changing the CAD file, and restarting another print. No waiting on the supply chain, no molds to update, and lower costs due to not having to outsource to companies that specialize in processes such as injection molding.







In addition, additive manufacturing permits Dustless Technologies to create products that fulfill niche market segments. Mold production necessitates extremely large production quantity minimums to ensure ROI from upfront costs. This limits manufactures to producing products into large, competitive, and crowded market segments. Because additive manufacturing's upfront cost is so much lower, this allows manufacturers like Dustless Technologies to take advantage of untapped segments. The DustBuddie for Demo Hammers is a perfect example of a product that would have been too cost prohibitive to have been produced with traditional mold production. Additive manufacturing allows them to produce batches of product in quantities that make sense for the market demand.
Another advantage of additive manufacturing that Dustless Technologies wanted to leverage was bringing production in-house at a full scale, meaning that the entire set of parts associated with a product could be made in-house, and every single unit sold was able to use these Dustless-manufactured parts. This requires choosing a material that can be used for the end parts, as well as selecting an entire specific process that can keep up with the quantity and time requirements of the project all the way from development to end-of-life for that product. Top-Down DLP printing utilizing Adaptive3D's ToughRubber family of materials was the choice, and it has proven itself to be fast enough, tough enough, and accurate enough to create large numbers of printed parts suited for end use.

Overall, the time from the idea of the product, to final parts ready to be sold was drastically lower by using additive manufacturing instead of injection molding, and Adaptive3D's tough materials that have always been intended for use of making products; not just prototypes."

ADAPTIVE3D™

CASE STUDY

Dustless

Dustless Technologies manufactures, sells, and distributes construction vacuums, industrial vacuums and a full line of professional dust control shrouds across the US and international lines. From humble beginnings of selling our first ash vacuum to a now wide array of products, we maintain innovation as our highest priority. We design products in-house, assemble products locally, and are heavily involved in advancing manufacturing via additive.

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.