



# 3D PRINTING SOLUTIONS

## Reduce Cost, Accelerate Development Time

AMS Performance, a West Chicago automotive engineering performance company is a force with their Nissan R35 GT-R racing program. For the past fifteen years, it has built a name for itself in the consumer market as well, specializing in engine and driveline modifications on Japanese and German turbocharged vehicles.

For years, the AMS engineering team outsourced 3D printed parts used in “fit-testing” on vehicles, but realized bringing 3D printing in-house would increase their turn-around times and reduce costs. They took notice of the MakerGear M2 for its positive reviews, sizable print area and dual extrusion capabilities.

### Industry Challenge

It is difficult to get an accurate perception of how a part is going to fit in the tight spaces of a car by simply examining a model in a software program. Using their M2, the AMS team creates exact replicas of parts, such as engine bushings or molds for intake filters, and tests them for fit and clearance. These full-scale 3D models ensure parts are properly designed before making significant tooling investments or performing vehicle modifications.

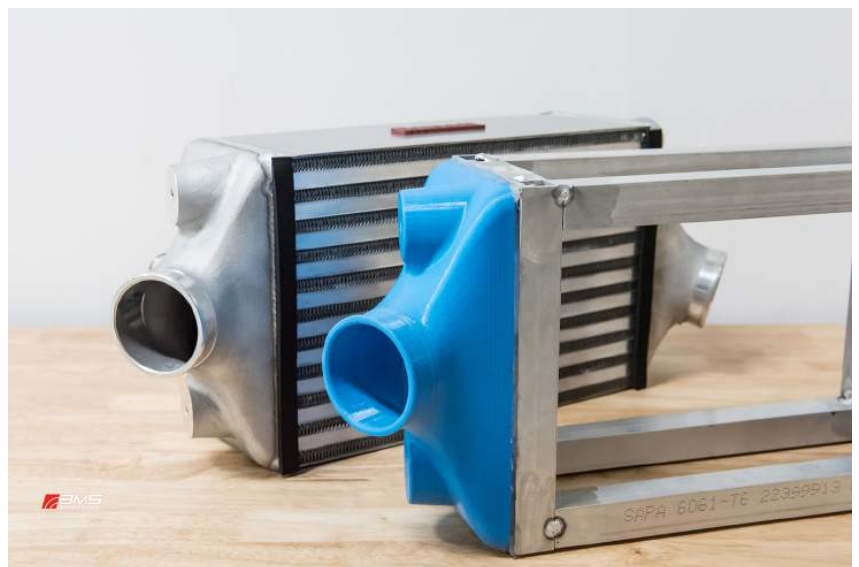
**“With the M2, we can design a part and I can have it on my desk the next day.”**

- John Glass, Engineering Manager at AMS

Engineering Manager John Glass says, “The cost for producing a traditional CNC part is astronomical and we couldn’t afford to get it wrong, which meant we were spending 2-3 times more at the computer during the design process making sure we had it right before contracting the CNC component.”

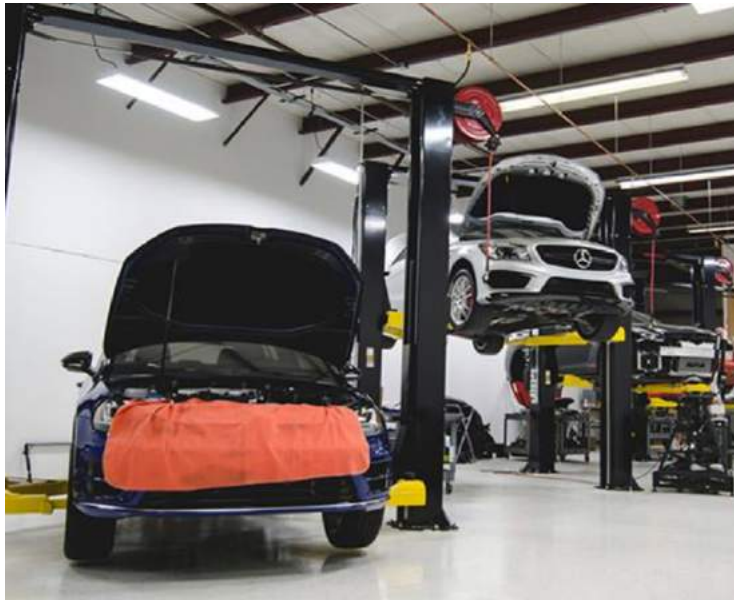
### MakerGear in the Mix

Having the M2 in their shop has allowed the engineering team to expedite their design process, drastically reducing time and costs. Glass reports, “Traditionally, we’d be waiting on manufacturers for 3-4 weeks. One manufacturer near us can turn around a CNC part in about a week, but that’s rare. With the M2, we can design a part and I can have it on my desk the next day.”



When it comes to the quality of the product they're printing, Glass and his team have been pleased with the M2, "It definitely generates a better surface finish than products we've produced in the past. It's a machine I would recommend to colleagues." The dimensional accuracy when printing external features as well as holes and other internal features is one of the reasons the M2 has been ranked top in its class year after year.

And as an added bonus, the AMS team discovered the open source design of the M2 allows each engineer the ability to use the design and slicing software that suits their preferences. The M2 fits into their current processes and programs, without requiring additional training on new software.



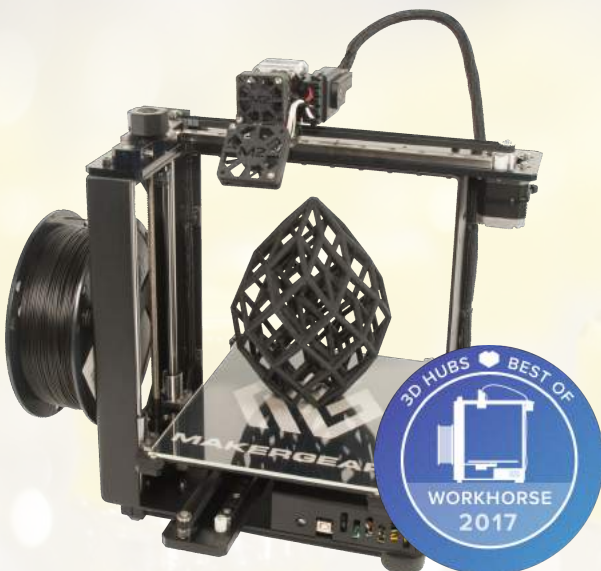
### Added Benefits

If a picture is worth a thousand words, there's no telling what a 3D print is worth. AMS discovered that their sales team also benefits from having replicas of vehicle components. More and more, they're using the prints to educate the sales team about upcoming products, improving the effectiveness of their sales training.

Looking to the future, their team is excited about new materials hitting the market. As more flexibles and materials with increased strength and melting points become available, new possibilities emerge for the ways they can incorporate 3D prints into testing and production on their vehicles.

### Ready to Run. Built to Last.

- MakerGear printers are crafted out of Powder Coated 11 gauge Stainless Steel, providing superior rigidity compared to the acrylic or lighter gauge frames on the market.
- Linear rails and bearings on independent X and Y axes mean smooth, true linear motion for precise prints. All moving parts move with respect to precision CNC cast aluminum components.
- MakerGear printers are capable of printing in a broad range of materials including polycarbonate, nylon, flexibles, PET, HIPS, metal-filled composites, wood-filled composites, carbon-filled composites and many more.



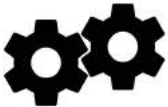


# Meet MakerGear

Founded in 2009 in Beachwood, Ohio, MakerGear empowers thousands of users in all 50 states and more than 75 countries, ranging from Fortune 500 companies to small businesses, medical researchers, government agencies, and educators. The company recently opened a new R&D facility in Northeast Ohio and is committed to expanding the use of technology and manufacturing in the region.



**MADE IN THE USA** Our factory is located in Beachwood, Ohio where all of our machines are built and individually tested before shipping. Many of our components are manufactured within 25 miles of the factory including the fabricated steel frame and steel parts, machined cast aluminum alignment components, extruder parts and the wiring harness. Off the shelf components (motors, power supply, etc.) are sourced from domestic and foreign suppliers.



**INDUSTRIAL PRECISION** MakerGear products are tools, not toys. MakerGear printers are designed, engineered, manufactured, and inspected according to standards that ensure optimal performance for professionals and innovators— from designers, engineers, and architects to teachers and business owners, as well as hobbyists, DIY enthusiasts, and costume designers — in dozens of industrial applications.



**REAL CUSTOMER SERVICE** If you ever need to contact MakerGear for support, our team is staffed with the most knowledgeable and responsive MakerGear experts. We have an established record of providing prompt, friendly, and expedient technical support, by phone and email.



**THRIVING COMMUNITY** When you purchase a printer from MakerGear, you become part of the thriving MakerGear community - an enthusiastic, engaged, and helpful group of 3D printing experts — particularly designers, engineers, educators, and hobbyists. Whether you are 3D printing industrial parts, architectural models, DIY quad-copter drones, or your favorite cosplay props, the MakerGear Forum offers a wealth of guidance and information about 3D printing. Join our vibrant network of makers and professionals, and contribute to our ever-growing community in which designs, inspiration, and advice are freely shared.



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