

# Adding Value with 3D Printing: Sportscar Performance Parts Costs Slashed in Half





Crazy Grandpa's Garage provides custom car modification services for car enthusiasts. They are a full-service company providing both design and production.

Many of Crazy Grandpa's clients are passionate car customizers with a focus on appearance and performance tuning. Most of their clientele are from within their targeted high-end sports-car market.

To keep up with the demand, Crazy Grandpa's Garage employs [Raise3D printers](#) to produce customized patterns of spoilers, side skirts, bumpers, and more.

***"Raise3D's printers are really reliable and easy to use. I plan to expand to another 8 printers in a short period to catch up to my order demands."***

—— "Big Bear" Owner, Chief Designer

For a high-end market of customers looking for uniquely customized parts, Crazy Grandpa's Garage designs and fabricates specialized pieces. **Prior to 3D printing, this was an involved process requiring a highly skilled team to laboriously hand-make parts based on rough measurements.** This method requires a prototyping process for each part which drastically increases costs and time.

## Production Advantages Using 3D Printing

**Company:** Crazy Grandpa Garage

**Industry:** Car Modifications

**Interviewee:** "Big Bear"

**Title:** Owner, Chief Designer

By applying 3D printing, Crazy Grandpa's Garage was able to:

1. Eliminate the prototyping step and go directly to casting with printed molds
2. Automate the mold-making processes with printers; greatly reducing employee labor
3. Ensure quality and reliability with accurate computer generated parts.

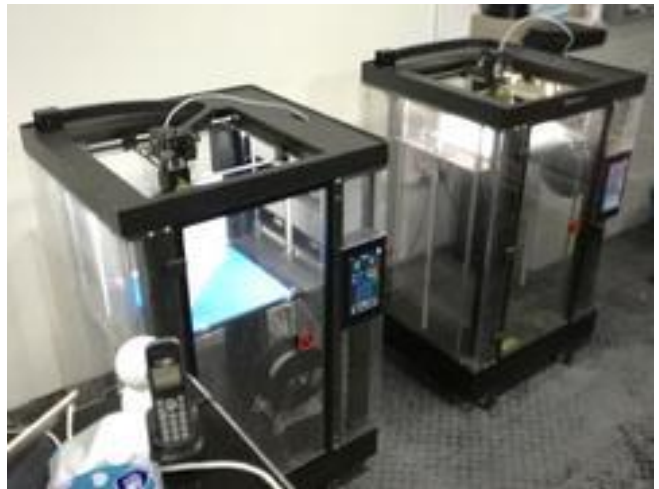


Overall, the addition of 3D printers resulted in:

- 1. 50% reduction in production costs**
- 2. Significant increase in part reliability**
- 3. 83% Reduction in turnaround time**

## Design Process

Owner and Chief Designer, known within his company as Big Bear, begins any customized car part by scanning and/or measuring the car and collecting the necessary specifications for the vehicle. Utilizing CAD software, he electronically creates the design and mold with regards to the specific car's geometry to ensure a perfect fit.



Many parts that are requested are for external use on the vehicle. Items like a 6ft spoiler, are too large to complete on a single printer. Using ideaMaker, Big Bear is able to split his model into 7-8 interlocking pieces and delegate the print jobs to his fleet of N2 and N2 Plus printers. By delegating the work to multiple printers and printing simultaneously, the turnaround time for each product is greatly reduced.

Once all the individual parts have been printed, they are prepped for casting by assembling the mold pieces and processing with putty to create a smooth and finished surface. The molds are printed with male and female slots which will lock the mold halves into place and eliminate any slipping during the casting process. Parts are then cast with layers of resin and carbon fiber. These resin and carbon fiber parts provide superior strength in conjunction with lightweight properties.



## Manufacturing Challenges

Before 3D printing, Big Bear required staff with specialized skills in fabricating parts. Each part was uniquely handmade and required involved communication processes and a much longer production time.

Because the models were not created digitally, the geometry of the vehicle could only be estimated and required a prototype model. With the specifications and measurements from Big Bear, the team will manually work and shape the necessary parts. These prototypes are made with more inexpensive materials and are either carved in wood or molded in fiberglass. The prototype is tested and modified until it matches the intended design. Once finalized, this prototype is processed and prepared for casting. They will create a mold around the part, then cast the carbon fiber model within the resulting mold.

Creating parts in this way requires a high volume of highly skilled workers. Because the design, fit and performance of a part are restricted to human labor skills, many complicated designs could not be achieved. Additionally, the value of each employee greatly affects production. Losing a highly skilled worker in the office significantly drops the capacity of the garage.



## 3D Printing Solution:

The [Raise3D Printers](#) coupled with the [ideaMaker](#) software bring automation and a complete solution to the Crazy Grandpa Garage team. The 3D design has allowed the team to design parts without these restrictions. These 3D parts are exact and are no longer affected by the variation of hand-making. Additionally, the labor time is reduced by automating the work with printers.

With the volume of the Raise3D printers, Crazy Grandpa's Garage is able to produce much larger parts than they would with other commonly available desktop printers. The printing reliability, large build size, ideaMaker features, and touchscreen operation boosts efficiency while minimizing operation labor.



Overall, the cost of production has been reduced by 50% and the reliability of the design and the resulting fit has been improved significantly.

By expanding their printing matrix to 12 printers, the team will shorten their production time from the original hand-produced 30 days to just 5 days.

### Connect with Raise3D

Do you have a great 3D printing success story and think it would be cool to be featured on [www.raise3d.com](http://www.raise3d.com), we would love to learn more! Write to us at [inquiry@raise3d.com](mailto:inquiry@raise3d.com)

For more information about Raise3D printers and services, browse [our website](#), or [schedule a demo](#) with one of our 3D printing experts.