

# How is 3D Printing Transforming the Automotive Industry



Applications of 3D printing in the automotive industry have evolved from printing relatively simple prototypes and a low production of parts, to 3D printing of entire cars. In the case of car auto designs, 3D printing auto parts and car models with products of the [Raise3D printers](#) suite provides the ability to build small 3D scale models and increase in range prior to the part assembly process. This 3D manufacturing process has helped with many useful functions such as testing and tooling, also speeding the process for an enhanced final design and production.



## How is Raise3D Printing Technology Transforming the Automotive Industry?

### 1. Providing rapid tooling with high-performance 3D printers:

Using a 3D printer helps to create multiple iterations of pre-series molds. 3D printers such as the [Pro2](#) and [Pro2 Plus](#) by Raise3D optimizes the design before creating the final metal version of the mold. This significantly reduces production time and saves money when compared to traditional tooling methods.

### 2. Creating multiple forms to test in early-stage design:

Designers can start with creating nearly every part of the final production design on a 3D printing small scale for testing and functionality evaluation before moving on to the final design.

### 3. Producing low-volume customized special pieces:

3D printing custom features like trims and options in car interiors offers OEMs a cost-effective solution when manufacturing a lower number of units. Especially if less than 10,000 pieces or in the case of limited editions and exotic and luxury models. Furthermore, wide range of filament capability unlocks various material properties. For example, [ABS](#) filament is widely applied in interior parts for certain strength and toughness. If weather resistance is required, then [ASA](#) is adapted which provide additional UV resistance alongwith mechanical property as similar as [ABS](#).

#### **4. Generating quick in-house prototyping for manufacturing:**

3D printing is ideal for rapid printing of prototypes for testing, so you can test different designs/versions, at a low cost and short wait time.

#### **5. Enabling formula student training and testing:**

The student version of the Formula1 circuit demands the very best that modern engineering can offer. Students from all over the world studying mechanical, automotive and motor engineering can compete in Formula Student Competitions that assess the engineering performance of the students, vehicle track implementation, costs, and marketing strategy for racing cars. The Formula Student Policy stipulates that the connectors that are not connected incorrectly can be used. Because of the flexibility of these pieces, they were fixed with created rails. Additive technology and the use of 3D printers in the automotive industry have substantially lowered costs and expenditure of resources that are inevitable in any training and experimentation of building the world's latest super cars.

#### **6. Facilitating complex geometries to become possible:**

Since many individually manufactured components are installed in the vehicle, the benefits of adaptability and of free shaping help to 3D print complex geometries.

#### **7. Optimizing for lighter and faster material construction with 3D printing:**

Additive Technology makes lightweight chassis construction possible by utilizing composite materials with high tensile strength like titanium alloy. Employing metal powder-based filaments, additive manufacturing has optimized not just production of complex geometries, but 3D printing has further reduced the weight of the car.

#### **8. Practical evaluating for material testing- learning processes:**

Using FDM technology, OEMs can evaluate materials and designs and evaluate material testing processes. Many OEMs are increasingly relying on 3d printing prototypes for design verification and functional testing to enhance performance, fit and finish.

### **Raise3D Printing Applications in the Automotive Industry – Client Success Stories**

#### **Raise3D client Tyrconnel**

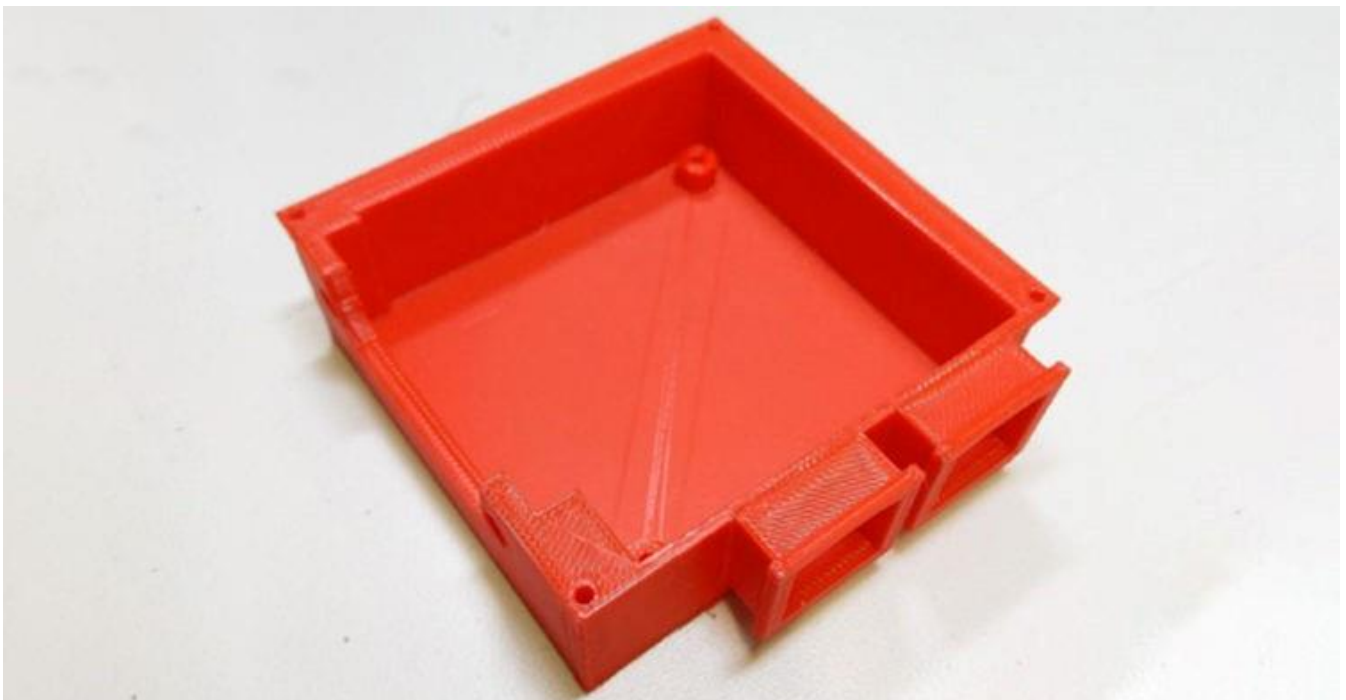
**“We utilize Raise3D printers on a regular basis for car parts as it is able to print using an appropriate filament and its large build size enables us to print a large number of the items in one piece.”**

Tyrconnel provides a large scope of prototyping and production applications for clients in a variety of fields. With Raise3D, 3D printed automotive replacement parts become one of their accessible options due to the large size and material compatibility. By reverse-engineering parts and 3D printing, Tyrconnel maximizes the potential of additive manufacturing to supply customers with parts that they would have been unable to obtain by other means or only at prohibitively high prices.

Clients place orders for specific automotive parts often for older cars where parts are no longer readily

available. First, the customer sends in a series of photos and rough sizes to quote the part. Then, the original (quite often broken) part is sent in for digital design. This part is digitally scanned and repaired if necessary. The final design is then sent to Raise3D's slicing software ideaMaker where it can be directly 3D printed.

**“We have operated a Raise 3D printer for a year now and find it an extremely capable machine because of its adaptability, is a good fit with our operations. We find it easy to use and understand and its large build size enables us to print items in one piece which would otherwise be broken up or unfeasible to print. We find it a solidly built machine and its rigidity and enclosed build platform assists greatly in the production of parts from materials such as [ABS](#) which require an element of environmental control. In addition, the power interruption resume feature is an extremely useful and practical feature when dealing with prints which may last over 100 hours. Any time we have had issues with the machine we have found support staff extremely helpful.”**



Micro controller housing with Raise3D printers.

## **Raise3D Client Drake Automotive**

A small business with big ideas – [DRAKES](#) is a veteran-owned and operated parts manufacturing and development shop that started creating products and designs nearly a decade ago in the VW and Audi market, with great success. **Their success ignited from a passion to create innovative designs, parts, and products in the automotive community.** When manufacturing any type of replacement part or add-on to an existing vehicle, fit, tolerances and precision are all major elements that need to play along with the visual elements desired in an automotive interior. **By integrating [Raise3D](#) additive manufacturing, DRAKES has elevated its manufacturing process to directly print final pieces in a faster and more accurate process than traditional fabrication.**

**“I researched all the available printers to find which one would best suit my needs over a year ago. I needed a large build capacity, with a heated chamber, and high accuracy ... had amazing results from day one. Since then...the machine has been the cornerstone of my business, DRAKES.”**



Why Raise3D's [Pro2 Series Printers](#) are a Top Option in the Automotive Industry.



1. Top-quality industrial-grade printers with 100% reliability performance.

Raise3D [Pro2](#) and [Pro2 Plus](#) are 100% reliable 3d printers built with the highest quality using entirely industrial-grade components that can function 24/7. Some of the best features of Raise3D printers are:

- **Best in class motion performance and the best 3d printers in the market.** Raise 3D printers offer precise voltage control, effortlessly smooth movement and superior thermal performance.

- **Outage power save features.** Never lose a print when a power loss occurs, with our power

running even after a power outage or interruption.

- **Best quality build-in plate system.** Raise3D printers are made with aerospace-grade material and an advanced silicone heating bed that withstands high temperatures and offers superior warp prevention heat distribution.

2. Simultaneous electronic dual extruders:

Two extruders in 3D printing makes it possible for two colors or materials to be used

simultaneously in 3D printing auto parts with supports that are later dissolved or broken away. Apart from offering an unmatched high-resolution print, Raise3D printers use a method for the usage of fewer material and filament wastage reduction to allow an even better adaptation to the applicable designs.

### 3. Best 3D printing slicing software, [ideaMaker](#):

Raise3D's patented 3D slicing software is intuitive and easy to use and is one of the strongest control centers in the 3D printing and additive manufacturing industry. With [ideaMaker](#) slicing software, your 3D printing models for auto parts and fixtures will have the best quality. An intuitive slicer software that helps to achieve complex geometries and provides a clean fit and finish on interior parts, from idea conception to the actual finished product.

### 4. 3D printing diverse [filament compatibility](#):

Raise 3D printers [Pro2](#) and [Pro2 Plus](#) beds heat up to 110° Celsius, and the nozzles up to 300° Celsius. These capabilities offer a complete material compatibility with a wide range of products such as [PLA](#), [ABS](#), HIPS, [PC](#), [TPU](#), TPE, Nylon, [PETG](#), [ASA](#), and [PP](#). Our [Open Filament Program \(OFP\)](#) is a collaboration between Raise 3D and Filament Manufacturers to identify, test, and select top-performing filaments for Raise 3D printers. This helps automakers create a variety of functional and high performing prints in a variety of interesting and exotic materials.

### 5. Large format 3D printers – large build volume:

[Raise3D Pro2 series](#) are large format enclosed cartesian frame printers with HEPA filters and a high resolution built-in camera. Their large amount of space allows for big prints like air outlets of the battery containers to be printed. This significantly reduces costs and production time.

### 6. Quiet printing with the highest quality on 3D modeling and creation:

Our Raise 3D printers provide high performance while nullifying the noise during operation. This is an advantage, as 3D printers are often housed in the same work-space as design, electronic and engineering work without noise disturbance.

## 3D Printing Automotive Parts



Holder for the connectors to connect the individual segments of the battery. The Formula Student Policy stipulates that the connectors that are not connected incorrectly can be used. Because they are flexible, they were fixed with these rails.



The cooling of the battery takes place via the air intake. Behind the battery, the inverter for the engines are installed, the air must be dissipated sideways.

## 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.