



forwardam

Custom Brake Parts for Motorsports

Brake air ducts printed from Forward AM materials resist high temperatures, withstand heavy loads, and promote performance.

OVERVIEW

In partnership with Forward AM, CARLAYERS used 3D printing to produce low volumes of these safety-critical parts. In addition to supplying [Ultrafuse® PA6 GF3](#), a glass-reinforced thermoplastic, Forward AM shared its additive manufacturing expertise. SPEED Engineering GmbH of Edisonstraße, Bielefeld, Germany had requested CARLAYERS to 3D print the brake air ducts.

You can read the full use case here: [Custom Brake Parts for Motorsports \(forward-am.com\)](#)

QUICK FACTS

Materials:

Ultrafuse® PA6 GF30

Industry:

Automotive

Technology:

FDM



CARLAYERS GbR of Hövelhof, Nordrhein-Westfalen, Germany uses 3D printing to produce small production runs of high-quality parts at unparalleled speeds. Benefit from the flexibility of their 3D printing capacities and reduce the downtime to a minimum. Thanks to above-average production and delivery speed, customers will receive their spare parts and components in the shortest possible time.

[CAR-LAYERS.COM](#)



Installed in over
1000 high-
performance
vehicles



30 to 40% time-
savings during
production



Brake air duct
reliability has
risen to 95%

Challenge: To produce low volumes of brake ducts that direct air and prevent overheating during motorsports events.

Brake air ducts are passageways that force air through internal vanes to lower the temperature of disc brakes. This forced air is coupled with the centrifugal force produced by the spinning of the discs to draw additional heat that can impede braking.

To promote performance during motorsports events, brake air ducts must work well with a race car's vehicle body. Ducts that guide air flows specifically to the brakes can reduce temperatures while keeping brakes functional for longer. High temperatures can reduce disc brake performance, but air ducts must also withstand high loads whenever race cars brake at high speeds. Traditional manufacturing methods can produce low volumes of custom parts, but they're time-consuming and expensive to make.



CARLAYERS considered Selective Laser Sintering (SLS), but the 3D printing technique would incur high costs and create excessive waste. Fused Deposition Model (FDM) requires material only where it's needed and speeds post-processing because there are fewer support structures to remove.

During material selection, CARLAYERS experimented with PET-CF, but determined that PA6 was a better base material, especially with thinner wall thicknesses. Forward AM's Ultrafuse® PA6 GF30 supports FDM and contains 30% glass fiber for strong, heat-resistant parts.

CARLAYERS chose a solution that supports threaded inserts. Before custom brake air ducts were shipped, these 3D printed parts were easy-to-assemble. CARLAYERS liked the consistent quality that Ultrafuse® PA6 GF30 provided and credited Forward AM for its technical resources.

Learn more about Ultrafuse® PA6 GF30:

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