



# All Systems Go

DASH CAE SLASHES LEAD TIMES BY 83% AND BUILDS FULLY FUNCTIONAL PARTS AND PRODUCTION TOOLS FOR FORMULA ONE

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*– Tim Robathan, design director at Dash CAE*

## CASE STUDY



Dash CAE 3D printed a diffuser floor, seen on a Tesla underneath the license plate, on its Fortus 400mc Production System.

Dash CAE has quickly established itself as a leading supplier of parts for high-end vehicles to leading automotive original equipment manufacturers (OEMs) in the United Kingdom. Established in 2006, the Oxford-based manufacturer originally built its trade by outsourcing its requirements to a service bureau. However, with clients demanding shorter lead times and the costs of outsourcing growing, Dash CAE decided to invest in its own 3D printing technology.

### Endurance Prototypes Designed to Go the Distance

Dash CAE's choice of 3D printing technology depended heavily on the technology's capability to produce vehicle components for functional testing in harsh environments.

After initially experimenting with SLS technology, the company turned to FDM® 3D printing technology for a range of prototyping applications, including composite panels, turbo induction systems and wind tunnel models for Formula One. With a wide spectrum of tough FDM 3D printing materials at its disposal, the design team produces real engineering plastic parts to endure a number of safety and functional tests. Subsequently, Dash CAE invested in a Fortus® 400mc™ 3D Production System.

“We have used FDM technology for almost as long as the company has been established,” explains Tim Robathan, design director at Dash CAE. “With the superior strength characteristics from the PC materials and ULTEM® 9085 resin, we’re able to produce large motorsport parts for our customers, including the chassis, suspension and bodywork panels, which are used for complete functional aerodynamic testing.”

## Race-Ready End-Use Parts

“Our primary interest for the Fortus was to develop processes for molding carbon fiber parts,” says Robathan. “I believe, as a result, we have pioneered tooling for composite parts – both for direct and lost tooling.”

With its tooling business growing rapidly and an increasing requirement for high-performance end-use parts, Dash CAE decided to invest in an additional FDM 3D printer, the Fortus 250mc™ 3D Printer.

“The manufacturing capabilities enabled by both of our Fortus 3D Production Systems allow us to produce tools for low-volume parts significantly quicker than any other manufacturing process, at a fraction of the cost,” says Robathan. “This enables us to produce parts for our customers in the final material and test them rigorously on the track.”

“We’re also 3D printing parts that can be used directly on vehicles. We recently 3D printed a diffuser floor in black ABSplus™ for Tesla – the same diffuser floor is practically brand-new even after a year’s use.”

## Lead Times Cut by 83%

Robathan says that in-house 3D printing has reduced the company’s lead times by 83% for the production of parts and tools. “In industries such as Formula One, being able to deliver parts at the drop of a hat is what makes or breaks us.”

Robathan estimates the 3D printers are in near-constant use. “This clearly demonstrates how instrumental the technology is to our workflow and complements our design office by offering one-stop solutions for our customers.”

Today, the company’s 3D printers work around the clock to deliver fully functional parts for its Formula One customers, as well as support the direct manufacturing of tools for its ever-growing OEM client base – including household names such as Jaguar and Renault. Applications include the 3D printing of molds for carbon prepregs (fabric reinforcement), as well as the production of drill and bonding jigs.



Le Mans car and Formula One chassis, 3D printed on a Fortus 400mc Production System



Formula One headrest, 3D printed on a Fortus 400mc Production System, to the left of the original



A full-size diffuser floor 3D printed in black ABSplus on the Fortus 400mc Production System

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