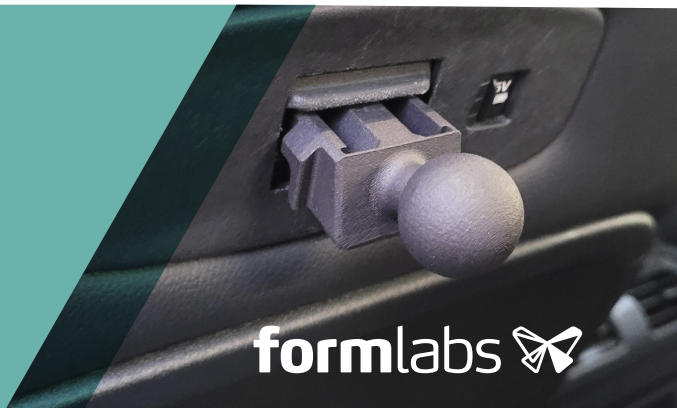
CREAT3D
ADDITIVE MANUFACTURING SOLUTIONS PROVIDER

DEFENDER3D

CREAT3D CASE STUDY WITH DEFENDER3D

FUSING END-USE PARTS

AUTOMOTIVE AFTERMARKET SUPPLIER ADDITIVELY MANUFACTURES BESPOKE END-USE PRODUCTS



Defender3D is an aftermarket automotive supplier, specialising in the design and manufacture of bespoke spare parts and accessories for the Landrover Defender L663 vehicle.

Based in the UK, Defender3D provides British engineered products with the flexibility of 3D printing at its core. Products range from wireless charging trays, storage solutions, interior lighting brackets, fixtures and casings to mounting components and brackets, that are all specific to the vehicle. With a global client base including UK, Germany, Japan, Australia and USA, Defender3D supplies off-road specialist companies, automotive aftermarket suppliers and enthusiast groups.

Defender3D use a platform of 4 Formlabs SLS 3D Printers

Defender3D is a brand operated by TL Electrical Engineering Limited. TL Electrical provide electrical engineering support, primarily focused in operational and maintenance services, with 3D printing experience in the production of manufacturing tooling.

> WHY USE ADDITIVE MANUFACTURING?

Tim Cieslik, Founder and Director of Defender3D has previous experience of Additive Manufacturing, in particular using a range of extrusion (FFF) based 3D printers to prototype designs and produce light-use parts. The problem encountered with using PLA and ABS materials for end-use products was warping and discoloration, which limited longevity and functionality.

With an increase in demand and a need to produce strong, resilient parts that were less susceptible to snapping, Defender3D expanded its 3D printing capabilities by investing in four Formlabs Fuse SLS (Selective Laser Sintering) 3D printers, alongside post-processing systems Fuse Sift and Fuse Blast.

Tim explains ***"It's tricky to highlight just one reason why we have invested in the Fuse. Key is the superior product quality. Also, not needing to print supports is a game-changer for us because we are no longer held back with design"***

SHIFTING FROM PROTOTYPING TO PRODUCTION

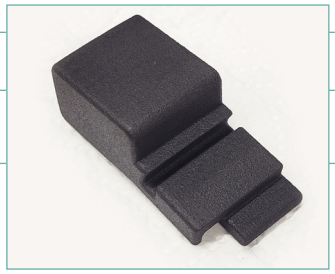
Using PA12 (Nylon), the affordable SLS system has enabled the production of low cost, high-quality parts that are manufactured in small batch runs
"With 3D printing, we can hold less stock. The Formlabs Fuse is really helping centralise management of what's needed and when, so we can now print on demand".

NO DESIGN RESTRICTIONS

The products are bespoke in fit, functionality and design to the Defender L663. With limited availability of aftermarket products, as well as restrictions on choice and functionality, incorporating SLS Additive Manufacturing technologies has removed all design boundaries, which has resulted in the production of better quality products.

> PRODUCING BETTER DESIGNS

END CLIP	
Component use	Clip used to mount an LED light in the rear loadspace
Product issues	Clip prone to snapping easily
Design changes made possible with SLS technology	Re-designed clip now includes section to retain cable
Outcome of using 3D printing on the Fuse 1	• Clip is stronger and no longer prone to snapping • Production of clips is more than 2x faster on the Fuse 1: 68 pairs are manufactured in 40 hours Previous production took over 4 days using FFF 3D printers



REAR CLICK AND GO ADAPTER	
Component use	Mount that fits to rear of seats to hold electronic devices, such as tablets and phones
Product issues	• Mount only fits a single device • Part is made in two components, which results in an inherent weakness where the ball connects
Design changes made possible with SLS technology	• Part re-designed into a single component • Single mount can be adjusted to adapt to any device
Outcome of using 3D printing on the Fuse 1	• Printing in a single component removes need for off-the-shelf components (washers, screw and nut), reducing costs and eliminating assembly time • Enhanced functionality as mount can now be manually adjusted by the user to fit different devices • Stronger part • Production cost saving of 88.2% per part

PHONE MOUNT	
Component use	Mount for holding mobile phone
Product issues	• High levels of assembly required for finished product • Product uses multiple pieces of hardware • Part can be prone to snapping
Design changes made possible with SLS technology	• Part re-designed into just two components • Hardware replaced with 3D printed elements e.g. functional thumbscrew to manually adjust mount
Outcome of using 3D printing on the Fuse 1	• No metal or hardware required • Single assembly, with single point of adjustment • Instructions can be 3D printed within the product (no need to send paper instructions with product)

Original part

SLS redesigned part

DESIGN AND PRODUCT FLEXIBILITY WITH THE FUSE CONTINUES TO EXPAND

Defender3D will continue to embrace and maximise the output of Additive Manufacturing.

"Using the Formlabs Fuse technologies means that we can manufacture high quality products that encompass design, inish and strength" exclaims Tim.

Whilst maintaining development and production of new products for Defender3D, the company will be adding further Formlabs 3D printers into their suite of machines. This further enables expansion into other aftermarkets, including the cycling industry through 3D printing bespoke accessories, fittings and tools for service.

> FIND OUT MORE

CREAT3D Ltd
Additive Manufacturing Solutions Provider

www.creat3d.shop

Defender3D
Automotive Aftermarket Supplier

www.defender3d.co.uk