



A super quick ROI was achieved at Dunlop Systems and Components

Dunlop Systems and Components designs and manufactures advanced electronic control systems and air suspension components. As a component manufacturer and supplier, they specialise in supplying top quality equipment to the automotive and ancillary industries with an emphasis on reliability and performance.

The team are experts in air suspension products, from simple components to bespoke electronic control systems. Dunlop pride themselves in being a component manufacturer and supplier ready to deliver the right solutions to meet your needs.

Challenge

To reduce the current spend on tooling, jigs & fixtures and prototype builds: Having spent a substantial amount over the last few years on tooling, jigs & fixtures and prototype builds the team needed to make savings to help the company remain competitive in the market place.

Production Engineer Manager Mark Statham and his team are responsible for keeping the purpose-built facility in Coventry, England, running at all times.

Mark says, "We needed to introduce some new technology to help us change the current tooling manufacturing methods and ultimately save us money. Our business competes in a very competitive market place designing and manufacturing advanced electronic suspension systems for cars, buses, lorries and trains around the world, so we keep an eye on costs".

"One of the major costs to our business is sub-contract part manufacture. Not only is it costly to get parts made, it takes a long time too, and time is something we simply don't have these days. Another area we targeted for improvement was the introduction of new products, we need fixtures and assembly jigs just to get a few initial prototypes out of the door and in to the hands of the sales team. Sometimes we're forced to spend a lot of money on something that's only used a handful of times."

"My teams brief was to find a way to help us remain competitive and reduce lead times. The obvious technique to look at was 3D printing. We had looked at it before but concluded that it simply wasn't robust enough. 3D printing gave us 'form' and 'fit' to a reasonable standard, but it was still quite a way off in 'function' which was our primary requirement."

Solution

Markforged 3D Printers from Mark3D: In October 2018 Dunlop Systems were invited to a 'print stronger' briefing that was being held locally by Mark3D. Hoping to find a high-strength 3D printer that would reliably print the parts Mark needed, he attended the morning event.

Things certainly had changed in the few years since Dunlop last looked at the market and the Markforged technique of printing composite parts with continuous fibre embedded in them looked like it might meet the "function" requirement.

After the event Mark met with Mark3D and began to calculate cost comparisons against parts that had recently been purchased. A report of the findings was submitted to the team at Dunlop and agreement was reached to purchase a Markforged Mark Two printer, with a 3-year success plan. This enabled the team to fix the total cost of ownership for 3 years.

“ Looking back at the project I've realised that there are a number of things I've learnt. Firstly, we should have done it sooner and got the benefits earlier. Secondly, I should have justified two, I have enough work for them and thirdly, I'm really pleased to see the motivational effect it has had on my team of engineers

Mark Statham, Production Engineering Manager





A very fast ROI

As part of the justification for a 3D printer, users are called upon to calculate a 'return on investment', and it was no different for Mark. Each purchasing decision in the business must have an ROI or it won't get approved.

Mark set about calculating the potential ROI by gathering a list of tooling and jigs/fixtures that was required over the coming months. He also added to the list the items that he knew were replaced annually.

To work out an accurate comparison it was important to be able to calculate the cost and time of the printed part easily. To do this the team used the Markforged Eiger software, which was available to them as a demonstration account.

A series of spreadsheets proved beyond doubt there was a clear ROI.

What is being 3D printed now?

Manufacturing suspension systems involves a large number of different machines, jigs/ fixtures and custom tooling.

The production engineering team have successfully printed end use parts for prototype suspension units, which are happily performing out on test. They have made large assembly fixtures involving metal components which join printed sections together, support collars for crimping machines and replacement tooling.

In one instance a machined part that was on a 4-6 week lead time was delivered in 5.5 hrs off the printer. It fitted straight on the machine and production was underway immediately.

"I've had one machine operator ask me why he's getting new parts for his machine all of a sudden" says Mark. "The answer I gave him was that it's now much easier for us to service him with the things he needs. It's quick and easy with our Markforged 3D printer. He was pleased to be getting some parts that made his job easier".

Mark has even helped out in non-standard applications by printing supporting fixtures at specific angles for heavy hand tools and he's started tapping threads straight in to the part – one of them was 1" UNC!

Did the ROI meet target?

Dunlop's printer takes pride of place in the production engineering section of the office. As you walk through the door it's the first thing you see. Mark claims it has a positive effect on both staff and visitors who walk through to the production area.

On top of the machine is a hand-written note which boldly declares how much cost the business has managed to avoid. It's updated every week and shows a running total too.

If you ask Mark if his ROI is on target, he'll happily tell you it isn't. In real-life the payback on the printer has been reached far ahead of schedule in an impressive 5 months. Mark will also tell you "there is an increased workload going through my department now – up an impressive 30%".

There are also some things I can't calculate, "How do you put a financial value on job satisfaction, gained from a huge sense of achievement and much greater design freedom" he asks?

AT A GLANCE

- ✓ Replacing outsourced machined parts with composite prints
- ✓ Super strong end use parts
- ✓ Lead times have dropped significantly
- ✓ The business remains competitive in today's marketplace
- ✓ Really fast ROI

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Mark3D have been great to work with. The dedicated team have a good in-depth knowledge of the Markforged machines and the materials they print. Always fast to respond and very hands-on, they have gone above and beyond to support us when we're trying new techniques or materials. They've even offered to print a number of parts to help us when timescales were tight!"

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**Mark Statham,
Dunlop Systems &
Components**