

Specialists in the design and manufacture of jigs, fixtures & tooling Hockley Pattern and Tool Company serves a wide range of industries

Hockley Pattern & Tool Co Ltd specialise in the design and manufacture of composite tooling, production tooling, assembly tooling, jigs/fixtures and a wide range of associated products.

Founded in 1979, the company has an in-depth knowledge of manufacturing with composites and has a specialist integrated tooling solutions division. With an impressive portfolio of clients and a history for providing innovative engineering solutions they are well known for delivering end to end solutions which really fit customers' needs.

Challenge

Keeping pace with modern technology is a full-time job: In today's demanding engineering market the ability to offer new, innovative solutions is key.

As the Group Head of Technology, Ian Eaves is responsible for locating new manufacturing technology. Backed by a forward-thinking board who believe in investment, the group has made several strategic purchases in the last 18 months.

"We have a commitment to our customers to deliver the right solution to meet their needs in a prompt and cost-effective manner. We decided to see if 3D printing 'for engineers' had come of age yet" says Ian.

Ian explains further " After a while spent researching the sector we took the decision to increase our design and production capability with the introduction of some state of the art additive manufacturing technology. Our aim is to open new markets and of course serve existing ones better".

"Hockley have a lot of really knowledgeable engineers, so it is important to make sure they have the tools to hand which help turn their ideas in to reality. 3D printing is a quick and cost-effective way of doing this."

"We can now deliver solutions to the technical challenges we're presented with in a short space of time – we used to wait for machining capacity to be made available to us"

"The other thing we wanted to achieve with the addition of a 3D printer was to allow us enough flexibility to produce low-volume production items too. If we could find a machine capable of providing good quality parts, which were tough and capable of being used every day without failing, it would be a major bonus!"

"When we discovered the properties of Onyx, coupled with the fact that it could be printed as a composite with continuous carbon fibre inside we immediately realised the impact it would have on our business".

Solution

Markforged 3D Printers via Mark3D: Ian Eaves took some time out to visit Mark3D in their Innovation Hub and soon discovered that there had been some great advances in 3D printing since he last looked at it.

"I had seen 3D printing many times before and know that it can be used as part of a viable engineering solution" states Ian. "What I didn't know was just how the composite technology which has been developed by Markforged could be used in our application, so I set out to learn a bit more about it".

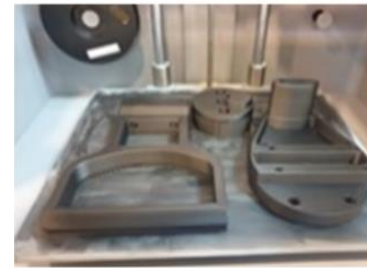
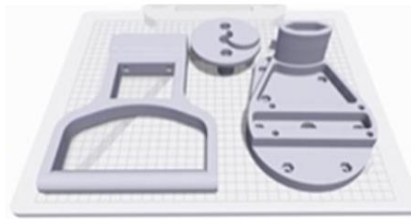
Whilst with Mark3D Ian took time to learn all about the different materials available, including an in-depth look at composites, and where they could benefit the business. He also sent time looking at the new metal technology recently released by Markforged, for future reference.

A follow up demonstration of the technology to other members of the team resulted in the decision to buy an industrial range 'X7' composite printer.

Our recent investment into industrial grade large-format printers to deliver exceptional accuracy, reliability and repeatability has already seen some great results. It's all backed up by the training and certification of our engineers to get the right part for the job

Ian Eaves – Group Head of Technology





Markforged University?

The team at Hockley haven't just invested in a 3D printer, they have also invested in education too. Hockley's project lead Lee Evans visited the Markforged head office in Boston to attend the Markforged University, which is a certified training programme specifically written to help customers make the most of their new technology. Lee, who is now Markforged 'additive manufacturing certified' advises customers on the best way to use the technology, including the use of continuous fibres for applications where strength is a major requirement.

"The Markforged University' programme has opened my eyes massively to the opportunities offered by additive" says Lee. "I learnt all about design for additive, how to choose the best materials for the job and how to look after our machine. I also saw the impressive Metal X printer in action, which was really eye opening".

These courses will be running in the UK soon and will be delivered by Mark3D.

Initial Work

"One of our long-standing customers has asked us to look at a counterbalance tool to help with a potential repetitive strain injury issue. The challenge was to make something light enough, but strong enough to help the operatives in production with a heavy lift. We accepted the challenge and incorporated the fact we'd be 3D printing it into the design phase of the project. So far, we've managed to reduce the weight of the initial tool by 40% and there's still more to go. The printed parts have turned out particularly well with an excellent surface finish and we've been able to selectively strengthen important areas with carbon fibre too. The sales team are delighted with our working prototype".

What's next for Hockley?

To date Hockley have been printing all sorts of parts for jigs/ fixtures and tooling solutions – they have an ambition to be the 'go to' company for solutions that involve the manufacture of tooling and other such items.

The purchase of the X7 also allows Hockley to attack other markets. The machine can print with the new Onyx FR (flame retardant) material, which will undoubtedly open up new opportunities in defence, aerospace, automotive and nuclear applications. Of course, there is also the ability to print with the newly released nylon white and in the future with Onyx ESD (anti-static) for parts containing electronic assemblies.

One of the other things Hockley intend to research is the subject of 'coatings'. As Lee Evans points out "Onyx prints really well and with a great surface finish, it's so stable and strong we have decided to see how far we can go with it. It's reliable and repeatable so we're going to look at coating it in different materials, making some of the items we couldn't do in the past a distinct reality. I'm going to visit one of our suppliers who can do this type of process and see where we get to, there have been times in the past that would have really benefitted from something like this".

As Hockley wins more work and the business grows the management team have already signalled their intent to re-invest. To quote Ian Eaves "these days it's not possible to stand still in business and expect to remain competitive for the medium term. At Hockley we're constantly looking to improve what we do and our decision to keep up with new technology will be a major factor in helping us achieve just that".

AT A GLANCE

- ✓ Greater design freedom for the team
- ✓ Free up CNC machining capacity
- ✓ Customer samples can be produced quickly
- ✓ Open up new customers in new markets
- ✓ Win new projects from existing customers

“

Mark3D have been great to work with. They talk out language and have helped us to get up to speed quickly.

It's nice to work with a company who understands what we're all about and can have credible engineering discussions!

**Lee Evans,
Project Lead**

”