

Prototyping investment casting sample parts to reduce costs



"With the Ultimaker, we can use a 3D printed model for the creation of sample parts directly in our foundry process, without having to invest in tooling to create wax patterns. Through 3D printing we can significantly speed up our sampling process - clients can now get a prototype metal part in just seven days!"

— Gordon Gunn, Director of Marketing at Sylatech

Sylatech uses the Ultimaker to prototype sample parts for its customers, allowing them to test their designs without having to invest in tooling ahead of investment casting. This yields significant time- and cost savings as fewer tooling modifications are necessary.



Company
Sylatech

Industry
Investment Casting, CNC Machining, RF/Microwave

Challenge
Traditionally, design engineers would have been unable to fully test the functionality of their designs without investing in tooling ahead of investment casting. This is because if tooling modifications were required with a part, this would be both time-consuming and costly.

Solution
The Ultimaker has enabled Sylatech's customers to become more confident in their designs within a shorter time period, thus resulting in the accelerated placement of tooling orders for production.

Results

- Accelerated placement of tooling orders
- Reduced level of tooling modifications
- Flexibility in the product design lifecycle
- Time- and cost savings

Sylatech - Introduction

Sylatech is a design and manufacturing business with a heritage of 53 years in delivering precision custom engineering solutions for its customers, delivering high quality systems and components to exacting standards. Sylatech's service offering spans three core functions:

- Investment Casting Foundry – manufacturing precision metal parts through lost wax investment casting
- CNC Machining – comprehensive machining delivering precision-engineered metal components
- RF and Microwave – custom design and manufacture of microwave systems, subsystems, assemblies, and components

Operating from the UK, Sylatech has a global customer base across multiple business sectors including Aerospace, Space, Defence, Medical, Automotive, and Construction.

Challenge

Traditionally, design engineers would not be able to thoroughly test the functionality of their designs without going down the route of investing in tooling for investment casting. This tooling process typically will take some 3-4 weeks to complete and Sylatech customers typically incur a cost of between £2,000 to £4,000 per tool. About 30% of the tools would require alteration due to customer design modifications. This could cost the customer anywhere between £500 - £900.

Solution

With the Ultimaker, Sylatech can offer its customers a cost-effective prototyping solution. Whereas the tooling process would take about 3-4 weeks to complete, a 3D print can be undertaken within a matter of hours. The 3D printing process is popular with Sylatech's customers due to the flexibility that it affords in the product design lifecycle. Thanks to Ultimaker, engineers can now have their designs transformed into a metal part within a number of days.

Results

By 3D printing prototypes, customers have seen the requirement for tool modifications fall to less than 5%. Customers have an accelerated placement of tooling orders for production and a reduced level of tooling modifications. For Sylatech, the payback period for an Ultimaker machine turned out to be less than 3 months.

Cost comparison

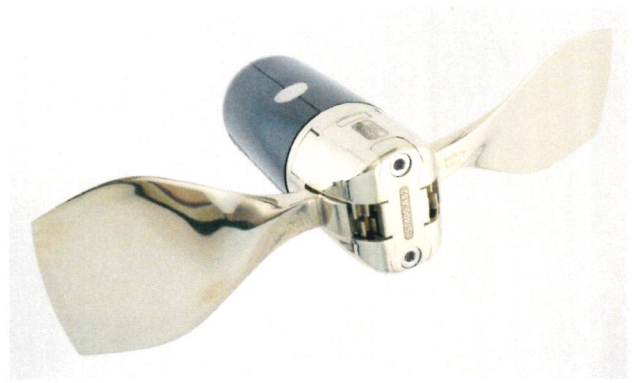
Yacht propeller, 6 components

	Traditional tooling approach	Ultimaker 3D printing
Project development cost	£17,100*	£660**
Project development time	4 weeks	5 days

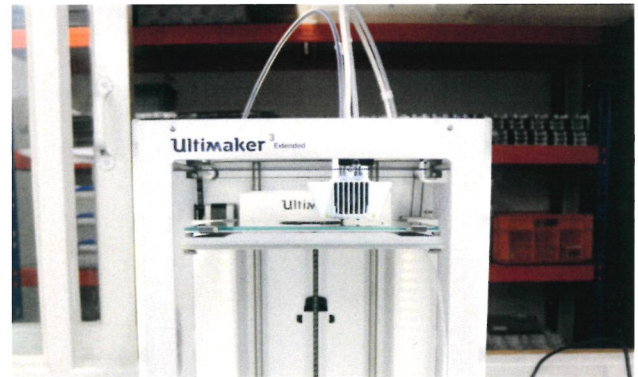
* Creation of 6 tools (£15,000) + two sets of the 6 castings (£600) + tool modification of 3 tools (£1,500)

** 6 Ultimaker prints (£60) + two sets of the 6 castings (£600)

Note: 3D printing can typically avoid the need for undertaking tool modifications i.e. in this case £1,500 could have been saved. Once the customer is ready to produce a production volume, investing in tooling is still necessary.



Traditionally, it would take 4 weeks of development time to complete a project such as this yacht propeller. If changes in the design required tool modifications, this would come at a cost of around £1,500.



With the Ultimaker, designs can be tested before investing in tooling, which shrinks the percentage of required tool modifications from 30% to below 5%.



Using the Ultimaker, Sylatech saw an acceleration in the placement of tooling orders from its clients. They managed to earn back the investment in their Ultimaker machine within 3 months.

About Ultimaker

Since 2011, Ultimaker has grown to become a leading brand, creating accessible, professional desktop 3D printers. The company has offices in the Netherlands, New York, and Boston, with production facilities in both the U.S. and Europe. With a growing team of over 200 employees, plus over 24,000 active community members, Ultimaker strives to deliver the highest-quality 3D printers, software and materials, without compromise.

General inquiries: info@ultimaker.com

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