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

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<tr>
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<th>Traditional tooling approach</th>
<th>Ultimaker 3D printing</th>
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<tbody>
<tr>
<td>Project development cost</td>
<td>£17,100*</td>
<td>£660**</td>
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<tr>
<td>Project development time</td>
<td>4 weeks</td>
<td>5 days</td>
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* 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.

About 3D GB IRE
The UK and Ireland’s premier professional 3D printing experts. We sell, service and support market-leading products and share our knowledge through professional training programs. Our mission is to help companies to integrate 3D printing into their business with ease and efficiency. Our 360-degree service takes you from implementation to training and on to providing only the best local aftercare, we want to ensure our customers believe in our products like we do.

For all your technical support or Ultimaker warranty questions please reach out and we will be happy to help. enquiries@3dgbire.com