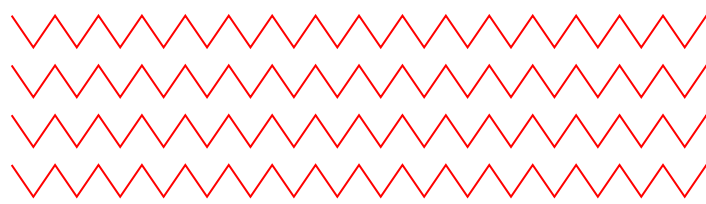


Ultimaker



Architectural model-making transformed by affordable 3D printing



Make Architects is an award-winning, employee-owned firm headquartered in London. Its Ultimaker 3D printers support the studio's democratic design culture, enabling model-makers and other employees to print thousands of models each year. Easy-to-use 3D printing is embedded into each project's workflow – from conceptual design to presentation.

Company

Make Architects

make

Industry

Architecture

Challenge

Minimize the use of traditional model-making techniques during the design ideation phase. Automate model production for context buildings to avoid outsourcing large models, which are expensive and take time.

Solution

A group of 14 Ultimaker 3D printers allows architects and designers to test ideas by printing their own concept models. Model-makers print presentation models in white PLA and then apply additional post-processing.

Results

- Cost optimization
- Time optimization
- Increased creative attention for key models
- Aligns with the studio's democratic design ethos

Make Architects – Introduction

Today, almost all of Make's architectural designs begin life on an Ultimaker build plate. The model-makers rely on their Ultimaker 3D printers' high uptime and print success rate to produce thousands of models a year – far more than the small team could produce by hand. With an additive manufacturing process, only the required material is used, cutting down on waste, while producing proportionally accurate and highly detailed models.

Concept and context models printed in white PLA need no post-processing. For presentation models which require a specific finish, the model-makers use a variety of post-processing techniques. These include spray painting or adding laser-cut pieces.

More recently, the model-makers have used their Ultimakers to create 1:1 or 1:10 scale building parts – like cladding. Such large pieces help clients visualize geometric details or solid forms. Previously outsourced to a metal supplier, these designs can now be created and iterated upon in-house. The team then make silicone molds from the 3D prints and fill them with metal powder resins or concrete mixes.



Challenge

Paul and his team previously relied on traditional model-making methods. These included hand-cutting concept models from foam and card, and massing models from timber. But this was a labor-intensive, noisy, and messy process. Some models were also outsourced to a 3D printing service for overnight fabrication, but these powder prints were fragile and expensive.

Solution

After purchasing their first Ultimaker 3D printer, the modelshop quickly scaled their production. Today, 14 Ultimakers integrate seamlessly with Ultimaker Cura's preconfigured print profiles. This means that – after just a 30-minute induction – every employee can prepare models and print with confidence. In this way, Ultimaker facilitates Make's 'workshop' way of working.

Results

On-demand, in-house model production has transformed Make Architects workflow. And these models, printed in a few hours, are far superior to viewing CAD designs on a computer screen. Paul explains: "3D printed concept models mean everyone – from architects to clients – can get their head down and really move around the model. They can pick up and feel the buildings."

Ultimaker enabled Make Architecture to:

- Reduce costs by fabricating more models in-house
- Achieve a faster turnaround in model-making
- Develop ideas more quickly and easily
- Explore a site's design constraints more thoroughly, to find the best scale and forms
- Focus more creative attention on the design of their site, rather than on producing less critical context models



Costs

Make's modelshop team enjoy substantial savings across a range of model types – from concept models to large-base massing studies. With turnaround times cut by an average of 90% and costs reduced by a similar margin, the model-makers quickly achieved ROI. Now with 14 machines, the team multiply their efforts through automated fabrication. Ultimaker printers are also installed in their Hong Kong and Sydney offices. This means the modelshop saves time and money by sending print data digitally, rather than shipping models around the world.

Typical 1:1000 scale concept model

	External suppliers	Ultimaker 3D printers
Cost	£80 (\$100) per part	£1 (\$1.25) per part
Time	24 hours	3-5 hours

Small models were previously outsourced to a powder 3D printing agency, but were too fragile and expensive

About Ultimaker

Since 2011, Ultimaker has built an open and easy-to-use solution of 3D printers, software, and materials that enables professional designers and engineers to innovate every day. Today, Ultimaker is the market leader in desktop 3D printing. From offices in the Netherlands, New York, Boston, and Singapore – plus production facilities in Europe and the US – its global team of over 400 employees work together to accelerate the world's transition to local, digital manufacturing.

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