

Developing prototypes and short runs of products with 3D printing and FormBoxed molds

Dean Pankhurst Case Study



- Product development time **reduced by three days**
- **£190 saving** on setup cost

Introduction

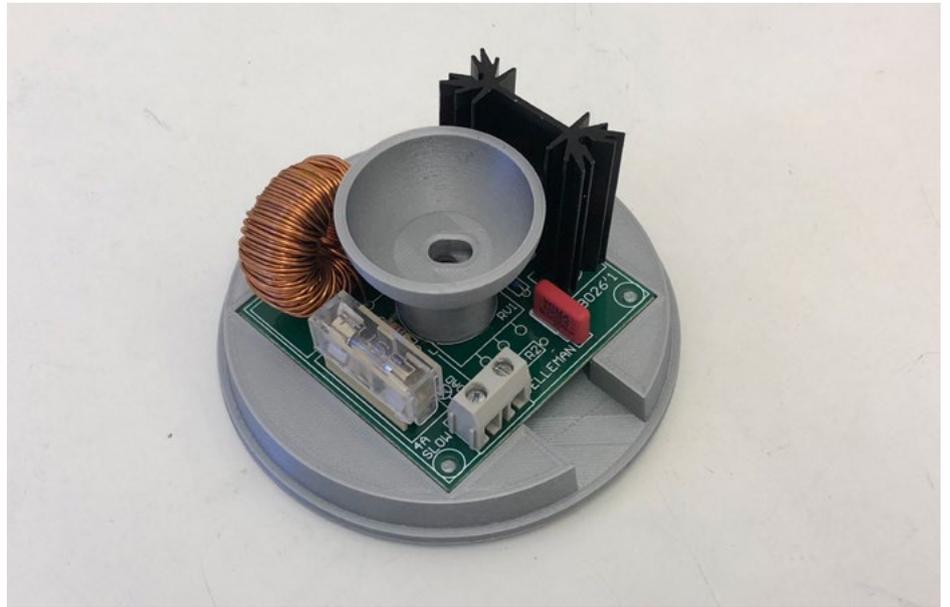
Dean Pankhurst is a cross-disciplinary designer working in a variety of mediums but mainly product design and digital media. He works in the product team at Mayku while also designing and making for artists and designers in the one-off, prototyping and small batch manufacture stage. He has access to a range of tools and machinery, and the FormBox is important in that it expands the range of possibilities he can offer his clients.

After having the idea a few years ago, Dean recently created the Dusk Lamp using a combination of FormBox and 3D printing. The general idea is that the bulb also acts as a dimmer switch adjusting the brightness of the lamp. The inside of the product is comprised of a high voltage circuit board that has a potentiometer and some large capacitors.



“The FormBox compliments all of the other tools at my disposal, allowing me to confidently produce the entire product myself, in a cost-efficient and flexible way.”

— Dean Pankhurst



Challenges

Natural finishes

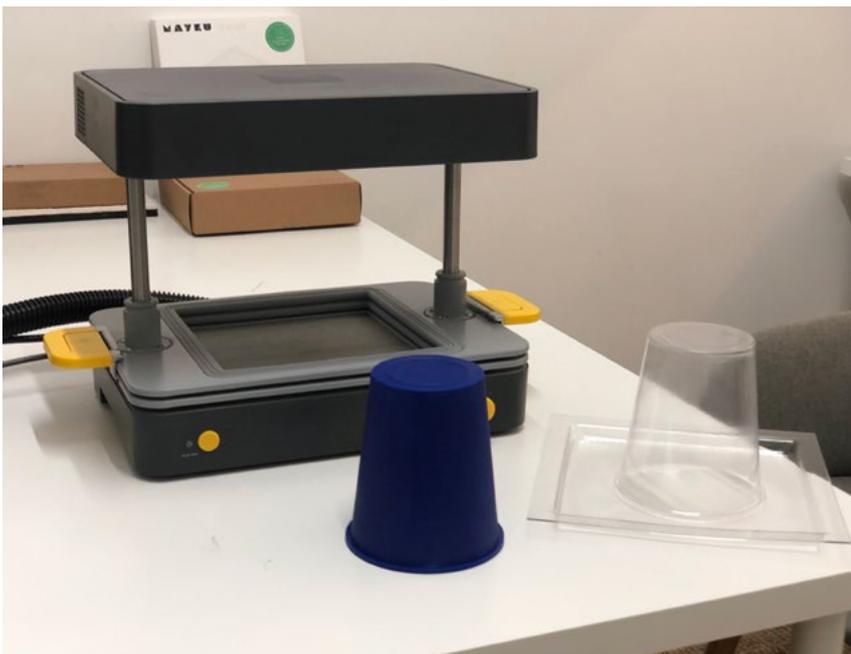
Dean wanted the exterior of the lamp to be made from a heavy, cast material that looked like textured stone. These kinds of natural finishes cannot be created convincingly by 3D printers. However, the tight tolerances required meant that hand carving or turning was also not quite right.

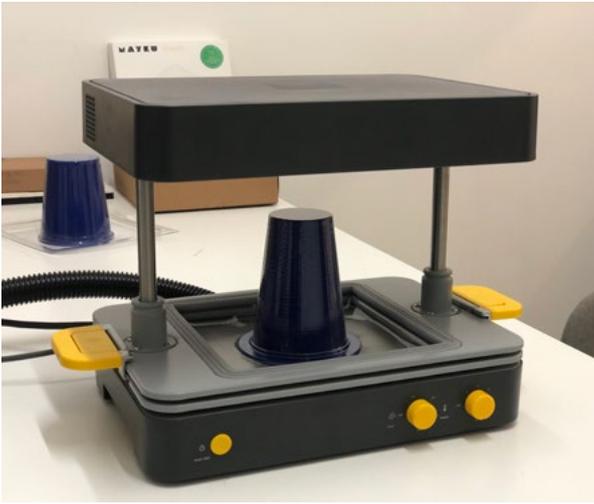
Expense

Dean needed to ensure that all the parts fit together properly before committing to a final design. Testing out the tolerances and overall shape of the design using a casting process like Silicon was prohibitively expensive.

Time

Both Silicon and Polyurethane molds take a long time to cure. When developing new products, it's important to iterate rapidly and progress the prototype as quickly as possible, to get to market quicker. Having to wait 24 hours to see test parts delays the process.





Solutions

Natural finishes

Using cast materials allows you to test subtle differences to texture and colour while combining the accuracy and repeatability of digital manufacture with more tactile and high-quality finishes. The FormBox and 3D printing process enabled Dean to quickly make molds for both testing and final production of the Dusk Lamp.

Expense

The FormBox is incredibly useful for making molds for prototyping cast products. Dean tries to use a vacuum-formed mold whenever possible in order to reduce the cost of working with other mold-making processes such as Silicone or Polyurethane. He needed to ensure that all of the parts fit together correctly and didn't have the budget to test out the tolerances and overall shape of the design using an expensive casting process.

Time

The templates for the mold were 3D printed and formed using a Mayku Cast Sheet in less than a day. The two-part mold allowed for a hollow shape with openings for the bulb and lip on the base for the electronics assembly.

Dean made a couple of prototypes in plaster and standard Jesmonite AC100 to test the assembly, eventually choosing Jesmonite AC730 in charcoal grey for the final product.

The FormBox complements all of the other tools at his disposal, allowing him to confidently produce the entire product himself, in a cost-efficient and flexible way.

Results

1. Ability to achieve natural surfaces with digital fabrication tools
2. Significant reduction in prototyping costs
3. Development time of project made shorter

Cost Comparison

	External Vendor	Mayku FormBox
Setup cost	£200	£10
Part cost	£20	£3
Prototyping time	32 hours	8 hours

