

Ogle brings environmentally friendly concept car to life



Case Study

Client: Heatherwick Studio
Sector: Automotive/
Environmental
Purpose: Aesthetic and
Concept Model
Process: SLA, hand finish
and paint

Ogle Models played a key role in the creation of a concept all-electric vehicle for Heatherwick Studio, which had been commissioned by IM Motors.

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The Chinese group had approached the award-winning British design and architecture giants to create the Airo, a new vehicle with driver and autonomous controls.

Not only will the car not produce any of its own emissions, but a HEPA filtering system will actively remove pollutants from around the vehicle as it travels.

Background

Heatherwick, founded by the world-renowned designer Thomas Heatherwick, has a long-established relationship with Ogle and asked the specialist team to make a fully hand-finished and painted model of the Airo for their clients.

The project involved modifying the supplied CAD to suit Ogle's processes, 3D printing SLAs and hand-finishing.

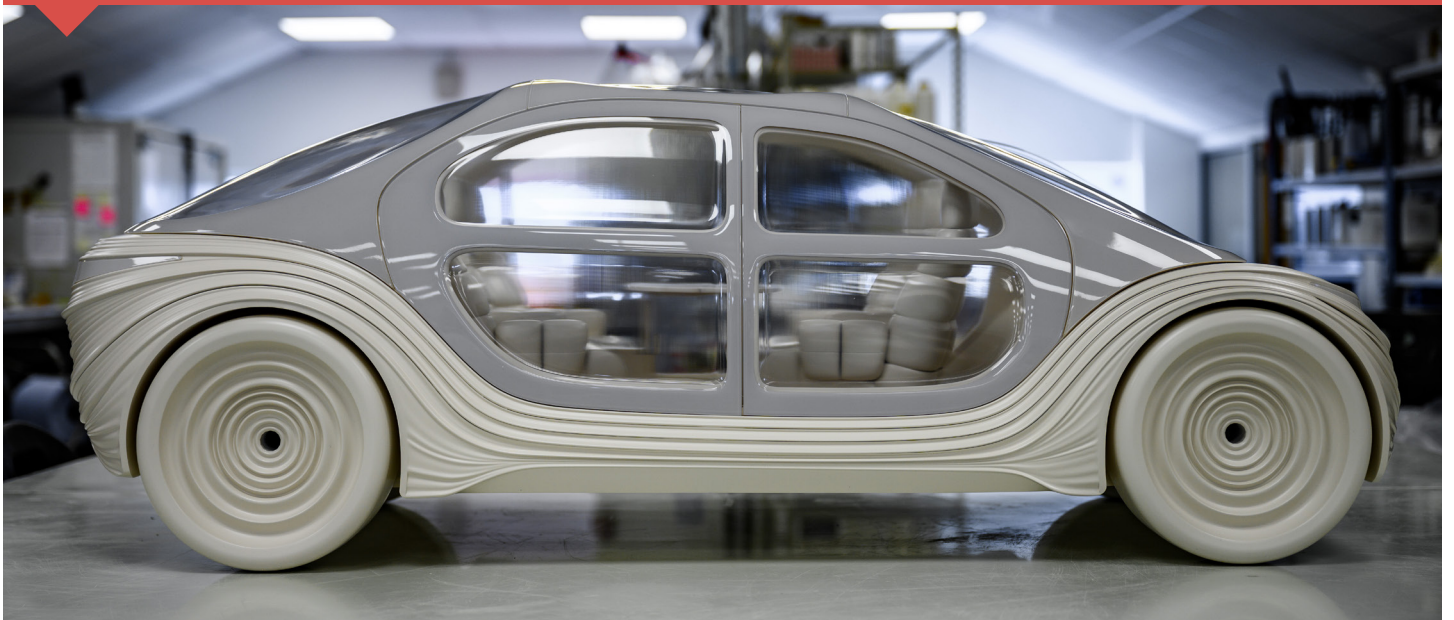
Process

The 1:4 scale (1200mm long) model needed an incredibly high level of detail, making the stereolithography (SLA) process the most suitable. Designers and engineers prefer SLA because of the accuracy, surface finish and wide variety of materials available.

Around 180 hours were spent creating the Airo model, involving a number of team members from the rapid prototyping department, who carried out the 3D printing, the hand-finishing of the SLAs and, finally, assembling the model. The paint department also had several people working on it delivering the final finish.

The CAD model was supplied by the client, which Ogle then split into separate parts according to the different finishes that would be needed. Because of its size, the main body had to be split in half to fit on the build platform.





Ogle used two of their Neo800 3D printers for the creation of the Airo model – the main body parts were printed in white on one machine while the second produced the clear parts for the windows.

All the parts were hand-finished by Ogle's specialists and assembled to make sure everything would fit perfectly, including bonding together the two halves of the car, seamlessly.

The next step was to send the parts to the paint shop. Once all the sections had been painted and polished to a high standard, they were reassembled and bonded together bringing the model to life.

Challenges

The project was not without its challenges. As mentioned, the main body of the model had to be split, even to fit on our large 800mm square platforms. A lap joint and pin holes were created to enable the two sections to be assembled, as well as extra supports being added to make sure the wheels could support the weight of the completed model. The wheels were also partially filled with resin to give them extra strength, without the added cost of using the SLA resin itself.

In the original plan, the bodywork was going to cover the windows, which would have provided an ideal place to bond the windows to the body. But the design was changed at the last minute with the windows covering the entire top of the car. That presented the problem of how to bond the windows to the bodywork; any glue or tape on the inside of the clear windows would show through and reduce the quality of the model.

Ogle's specialists overcame this by masking and painting obscuration bands on the inside of the windows where the body frames sat against the windows. This provided a good surface to bond against without being visible.

The clients visited Ogle before the assembly was finalised and mentioned that they had planned to have the front and rear lights, as well as the dashboard, in a different finish but had decided against it. When they saw the model, they realised that had they gone ahead with their original plan, it would have further improved the model.

Together, Ogle and the clients came up with the idea of 3D printing some thin lenses and profiling a sheet of plastic that were then painted and fitted on to the model to add the extra level of detail.

Conclusion

Mikael Nordstrom, from the rapid prototyping team, said: "The final model was impressive. It was a lot of work to get to the end, but when we saw the final pieces go on and everything assembled it made all the hard work and effort worth it.

"We have a long-running relationship with Heatherwick. Over that time, we have worked on numerous projects with them. We offer the high level of quality they look for with quick turnaround times. They appreciate being able to talk to us, knowing that any problem can be overcome with an efficient solution."

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