



Ogle delivers pioneering airline trolley for Flightweight

Case Study

The highly-regulated and multi-disciplinary nature of the airline industry demands precise engineering and quality production. With over 60 years' experience in the aerospace industry, Ogle was the natural choice when Flightweight Ltd needed to create an accurate prototype of SmartCart, a state-of-the-art airline trolley.

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Founded in 2013, Flightweight Ltd specialises in creating lightweight trolleys and cutting edge security solutions for the aviation industry.

The company provides intuitive alternatives to the traditional heavier, less reliable and potentially insecure current airline trolley solutions. The security function, produced by Elelock Ltd, an associate company of Flightweight, is an electronic, multi-point lock and security seal that will replace cable ties. This will enable the airline to track and record the opening and closing of the trolley, which will prevent theft while also making it easier to monitor the sale of duty-free products.

The flat-pack, modular design allows for fast, easy repairs with minimum downtime. The 30 per cent weight reduction could deliver a fuel saving of up to £400 per year, per trolley, providing airlines with a vital carbon offset.

Developing each product and device to the standards required by the Civil Aviation Authority, Flightweight required the same level of accuracy when developing the airline trolley prototype. Working closely with Flightweight, Ogle determined the best production methods for each individual part to ensure they would deliver the prototype within the short two-week timescale and exceed customer expectations.

The requirement was for a functioning, full-size working prototype to be created using full production materials and parts. The model needed to function in an identical way to a production item, incorporating the operational braking mechanisms to the trolley wheels and a functioning electronic lock system on the main trolley door. Ogle determined that CNC machining and SLS rapid prototyping would be the best methods to produce all parts within the agreed time scale.



“Having worked with Ogle over many years they were a natural choice. We are extremely impressed with the model and are very excited about what it could mean for airlines in the future.”

Chrys Chrysostomou
Director of Design and Manufacturing at Flightweight

The trolley base, shelf and lid were created by Ogle using SLS to the clients CAD; and the supplied wheels, braking mechanism, and fixings were used to secure the base of the trolley. The part was modified before painting to increase rigidity to enable the foot brake to be applied successfully.

The front, back and sides of the trolley were CNC machined from lightweight composite FibriRock supplied by Flightweight. This method was selected due to its capability of producing highly detailed parts using complex materials. Once machined, steel inserts were stamped in place to allow the fixing bolts to thread up during assembly. It was at this point that the electronic door lock, hinges and retaining magnets were also implemented for the front and side panels.

Full colour and texture finishes can be achieved by selecting the CNC process at Ogle, which results in stunning and visually accurate models. To ensure this high-quality finish, the trolley was masked by hand, ready for painting. Panels were painted to a smooth finish with a stencilled and lacquered logo added to the side of the doors.

As the trolley featured a modular design, it was imperative that each of the individual panels were precisely crafted to the specification. Once produced, the panels were fixed together using supplied bolts and aluminium corner extrusions. Ogle used a milling machine to drill the extrusions for the fixing points and slotted the corresponding panels together to the base. Internally, the trolley required supports for the shelves, which were CNC machined in model board and ABS plastic before being spray finished in matt black and bonded in place. Working with production specification materials and parts ensured that the final prototype was as close to the manufactured item as possible; delivering the same weight, feel and durability as identified in the original product specification.

Flightweight's revolutionary trolley is already multi-award winning; earning the best onboard catering equipment prize at the Onboard Hospitality Awards earlier this year, and the Made in Wales Green Award for their innovative flax-based FibriRock, a pioneering new material that is aerospace approved and 98 per cent recyclable.

Ogle are extremely proud to have been involved with such an efficient and environmentally-led product. The company value the strong relationship it has developed with Flightweight and were keen to obtain feedback.

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