Construcciones Mecánicas Mecoval Boosts Production Capabilities With FDM Additive Manufacturing to Accommodate Changing Customer Demands

Founded in 1976, Construcciones Mecánicas Mecoval (Mecoval) is a Spanish machining service provider specializing in the design and manufacture of tooling and production parts. Headquartered in Alboraya (Valencia), the company serves a range of industrial sectors, with a particular focus on aerospace, automotive, logistics and packaging. Leveraging over 40-years' expertise and a range of cutting-edge production technologies, Mecoval has built a strong reputation for innovation and reliability that has seen the company secure a strong global clientele of manufacturers.

Key to Mecoval's success, and central to its long-term strategic vision, is a continuous drive to innovate its technological capabilities and diversify its service offering. "Mecoval was one of the first companies in Valencia to invest in CNC machines back in the eighties – a move that enabled us to quickly establish a competitive advantage and leadership position in the market," explains Mecoval CEO, Antonio Enguix Lozano. "While CNC has been at the heart of our production for decades, over the past few years we've seen a shift in customer requirements towards more complex and customized parts, delivered within much tighter turnaround times. As a result, we knew we had to expand our technology portfolio to find a solution that could go beyond our CNC capability to address these needs."

"Stratasys' diverse range of production-grade materials was key in our decision to choose the Fortus 450mc over a lower-cost professional desktop 3D printer. I firmly believe that 'you get what you pay for,' and I can honestly say that the implementation of this technology alongside our CNC machinery has transformed our business."

Antonio Enguix Lozano
CEO, Mecoval

stratasys

Case Study

Tackling the Challenge Head-On

The team identified additive manufacturing as a solution to increase the production agility of the business and subsequently put a number of technologies to the test. The company decided to invest in an FDM®-based Stratasys Fortus 450mc™ 3D printer from Stratasys' local partner, Comher. According to Enguix, the system has proved a formidable production system standing side by side with the company's CNC equipment.

"Our Fortus 450mc enables us to overcome the limitations of our CNC machinery when it comes to design complexity, customization and production speed," he explains. "We're seeing this value every day across a broad range of tooling applications and final end-use parts. We're now able to produce complex tools and production parts in a matter of days compared to the weeks it would take with CNC – at no additional cost. Not only has this increased our ability to serve the needs of existing customers, but we've also been able to secure significant new business, thanks to our strengthened proposition."

Materials the Key to Expanding Tooling Capabilities

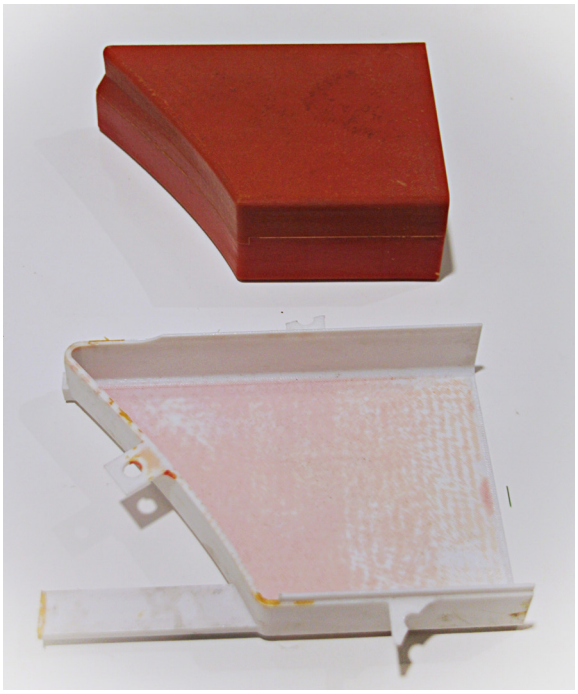
The advanced material properties of Stratasys FDM thermoplastics have been essential to replacing machined aluminum tools with 3D printed equivalents. This is illustrated by Mecoval's composite tooling business, which 3D prints a range of tools, such as layups forms, inserts and mandrels.

One example is Mecoval's 3D printed layup tools used to produce carbon-fiber parts for several Formula One racing teams. Made with ULTEM™ 1010 and ULTEM™ 9085 resins, the 3D printed molds offer extremely high heat resistance and thermal stability, enabling Mecoval to address its customers' requirements for high-performance carbon-fiber parts in timeframes not possible with CNC composite tools. The team also uses polycarbonate material to print molds for automotive polyurethane parts.

"From a previous two-to-three-week timeframe, we're now producing composite layup tools in just a few days. While that's a game-changer for us, without materials that can stand up to the high temperatures and pressures of the layup process as aluminum tools do, these lead times would be redundant," says Enguix. "The fact is, we're taking on much more new tooling work with this capability."

The Fortus 450mc is also employed to produce sacrificial tools using an advanced soluble material, ST-130, to make composite parts with complex geometries. The carbon fiber composite material is wrapped around the mold, and once cured, the internal sacrificial core is washed away leaving the final composite part. Enguix explains, "We were recently tasked by one of our automotive customers to produce a complex duct in carbon fiber. Using our traditional CNC process, this would have taken two weeks and been a very costly exercise. Using the Fortus 450mc, we were able to print the soluble tool and have a final carbon-fiber part in our hands within days, and at a fraction of the cost."

3D printed composite layup tool produced in ULTEM™ 9085 resin, alongside the final carbon-fiber part for use in Formula One racing.



3D printed mold produced using Stratasys polycarbonate material, used to produce the polyurethane part in red for the automotive industry.

Driving Even More Added Value

While the technology continues to deliver value throughout the company's tool production process, the Mecoval management team sees Stratasys' FDM materials as one of the main drivers to expand additive manufacturing into new areas of production. The company is already making great strides in aerospace, seeing a rise in customers seeking more lightweight and customized interior aircraft parts. The use of aerospace-grade ULTEM™ 9085 resin enables Mecoval to meet the industry's stringent test criteria and traceability requirements.

Enguix concludes, "Stratasys' diverse range of production-grade materials was key in our decision to choose the Fortus 450mc over a lower-cost professional desktop 3D printer. I firmly believe that 'you get what you pay for,' and I can honestly say that the implementation of this technology alongside our CNC machinery has transformed our business. Every week we're identifying more and more traditional production applications that can be replaced with additive manufacturing and it's refreshing to see how these thermoplastics stand up to the task."

Carbon fiber duct for an automotive customer, produced using a 3D printed sacrificial tool in ST-130 soluble material.

USA - Headquarters
7665 Commerce Way
Eden Prairie, MN 55344, USA
+1 952 937 3000

EMEA
Airport Boulevard B 120
77836 Rheinmünster, Germany
+49 7229 7772 0

ISRAEL - Headquarters
1 Holtzman St., Science Park
PO Box 2496
Rehovot 76124, Israel
+972 74 745 4000

ASIA PACIFIC
7th Floor, C-BONS International Center
108 Wai Yip Street Kwun Tong Kowloon
Hong Kong, China
+ 852 3944 8888

GET IN TOUCH.
www.stratasys.com/contact-us/locations

stratasys.com
ISO 9001:2015 Certified