



Previous prosthesis molds produced in chalk resulted in expensive shipping costs and were prone to damage during transit.

Shorter Turnaround Time

RTM Ortopedia
Personalizzata Prosthetic
Molds Achieve New Fit
With 3D Printing



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Elio Antenucci

RTM Ortopedia Personalizzata

Shorter Turnaround Time

A Worldwide Leader in Prosthetics Breaks Mold

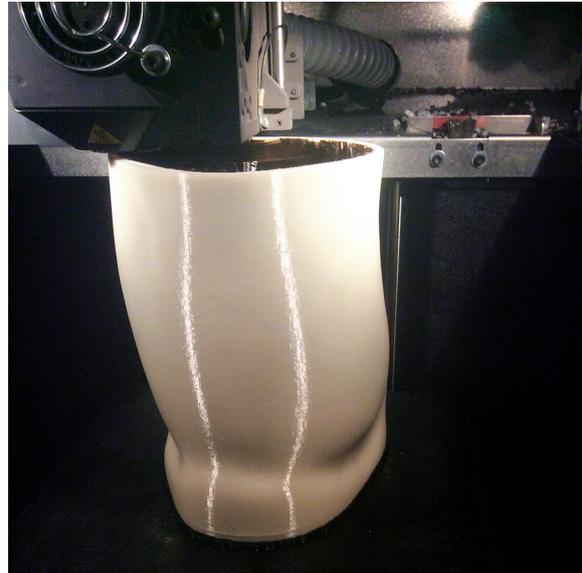
Customized prostheses by their very nature demand high precision, functionality and durability to withstand everyday use. RTM Ortopedia Personalizzata (RTM), a worldwide leader in customized prostheses, based on Budrio, Italy, used chalk molds to cast lower limb and hand prostheses. With the ethos that every patient has different medical and physical requirements, the company ensures that each individual prosthesis meets the user's need for comfort, durability and aesthetics.

However, the fragility of these chalk molds led to frequent breakages during transit. "The process was unreliable as we could never guarantee that we would receive the mold undamaged," said Elio Antenucci, CAD Systems Manager at RTM. Additionally, importing heavy molds from as far away as China resulted in expensive shipping costs and lengthy delivery times of around 30 days before reaching the Italian manufacturing house.

Subtractive Manufacturing a Negative for Prosthetics

RTM moved to using 7-axis robots to make leg prostheses from delicate foam, but that required several hours of bathing in resin to harden. This is a laborious process, and in the case of hand prosthetics, the robot needs to carve sections in between the fingers that the drill cannot reach without cutting them off," said Antenucci. This made the process fall short of the company's rigorous standards.

After years of enduring expensive mold costs, the company turned to 3D printing for a more advanced, cost-effective and efficient rapid prototyping solution that would also improve the accuracy of the prosthesis molds.



With FDM 3D printing technology, the company produces prosthesis molds in a matter of hours and has cut its tooling time by 93%.



Using its Stratasys FDM 3D printer, the company produces a number of prosthesis that surpass those produced on its industrial robots.

Shorter Turnaround Time

Cut Tooling Turnaround Time

RTM turned to Stratasys' 3D printing technology to produce prototypes with greater and more affordable personalization. This improves patient outcomes, usability and affordability. Additionally, 3D printing is a clean process, enabling manufacturers to go from scan to design to print in a digital-only environment.

"3D printing skips this time-consuming resin-soaking process and eliminates the restrictions of the foam. For us, Stratasys' technology gives us greater manufacturing freedom than chalk molding and far surpasses those of other artisan prosthetics," said Antenucci.

3D printing allows RTM to produce individual prosthesis molds by mirroring scans of the unaffected limb. These are then covered in silicon to produce the final prosthesis, with the 3D

printed core model later removed. 3D printed in FDM thermoplastics, these prosthesis molds are mechanically strong and perform much like the final product.

The growing demand for personalized prosthetics requires the ability to customize quickly and with reliable results. By using additive manufacturing, RTM can produce durable prosthetics with unparalleled precision in a wide range of advanced 3D printing materials to save both time and costs.

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