

Design and Technology – 3D Prosthetics



Paolo Peirera Valerio is a teacher in the area of prosthetics and orthotics at Anne Veaute High School in France. Paolo first obtained a basic 3D printer as a Christmas gift from his wife. With this printer and his friend Jérôme Lamorère, a practiced orthotist, the pair started an adventure with a bet to bring a heightened aesthetic to prosthetics.

“Thanks to the 3D printing technology, it is now possible to create customized and one of a kind prosthetics. The patients are then able to get a new perspective on their prosthetics and on the handicap affecting them. The missing limb becomes a work of art and enables the patient to stand out from the crowd.”



After the first few prototypes were made and glued together, they started reaching the limits on their printer. Due to the mix of volume, price, and quality, Paolo sold a motorbike and invested in an N2 Plus to create their full-scale limb prints.

“The Raise3D N2+ seemed a great mix between volume, price and quality. I tried to convince my wife to buy it for me but it didn't work this time.”

Since then, the pair have invested in a second [Raise3D N2](#) Plus to realize a number of new projects. On top of this, Paolo incorporates 3D printing within the Anne Veaute high school and continues to raise awareness about the benefits of 3D printing among students.



For those with lower limb amputation, prosthetics are necessary tools for overcoming a handicap. With the added form and aesthetic that Paolo and Jérôme offer, this pair enables their patients to stand out from the crowd.

In traditional manufacturing:

1. The structural foam inserted in prosthetics is fragile and not very hygienic
2. This foam is hard to remove for maintenance.

By applying Raise3D printers, Paolo Peirera Valerio was able to:

1. Create prosthetics with tailored sizing
2. Produce end products each with unique and customized designs
3. Printing full-sized pieces, eliminating the processing and assembly of multiple parts.



To create the prosthetic limb, first, a digital scan of the healthy limb is made. This is mirrored and used as the base to apply to the prosthetic that will be created. The scan data is then sent into a modeling software where the design will be customized. Once the design is finalized, the file is exported in an STL format which is suitable for 3D printing.

“I’m really focused on optimizing the design of these prosthetics to save printing time. I’m aiming at removing as much support as I can by modifying the design in terms of curves and angles when possible.”

To 3D print the model, the file is uploaded to [ideaMaker](#) and sliced using standard profiles. After being sent to the Raise3D N2 Plus, the model is brought to life. The final step is to process the model and apply paint or hydrographic.

“At the moment, we are at the prototyping stage in order to test our product but the feedback we have is really positive so we will continue in that direction. The Raise3d N2+ truly reaches our expectations in creating these one of kind prosthetics.”



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