FORWARD AM
Innovating Additive Manufacturing

BASF
We create chemistry

Highly Functional, Low-Cost 3D Printed Prosthetic Arms

How Additive Manufacturing is Lending a Helping Hand

OVERVIEW

For reasons ranging from lack of healthcare to unsafe and poor living conditions, 2.4 million upper-limb amputees can be found living in developing countries. Both geography and limited infrastructure can greatly reduce access prosthetic care. Now through the technology and innovation of 3D Printing, disabled individuals can be fitted for a custom-made prosthesis. The benefits of access to prosthetic care are life-changing and has the potential to not only enable amputees to pursue gainful employment, but to lead fulfilling and self-determined lives. Victoria Hand Project turned to the combination of Ultrafuse® PLA PRO1 and Ultimaker® technologies to expertly equip clinics to produce high-quality, low-cost prosthetics throughout developing countries.

QUICK FACTS

Material:

- Ultrafuse® PLA

Technology:

- Fused Filament Fabrication

Partner:

Ultimaker

Victoria Hand Project

The Victoria Hand Project (VHP) is a Canadian charity and non-profit with a mission to provide upper-limb prosthesis to amputees with limited or no access to prosthetic care.

By combining the advanced technology, cost-effective tools and innovative strategies of Additive Manufacturing, Victoria Hand prostheses are custom-fit and fabricated directly within the countries where they are needed and used. In collaboration with a network of international clinical partners and healthcare providers, these durable and functional prosthetics are available to amputees throughout the world.

VICTORIAHANDPROJECT.COM

200+ Victoria Hands distributed worldwide

Each prosthetic consists of 31 parts printed in hours with Ultrafuse® PLA PRO1

VHP clinics are active in 10 Countries and across 4 Continents

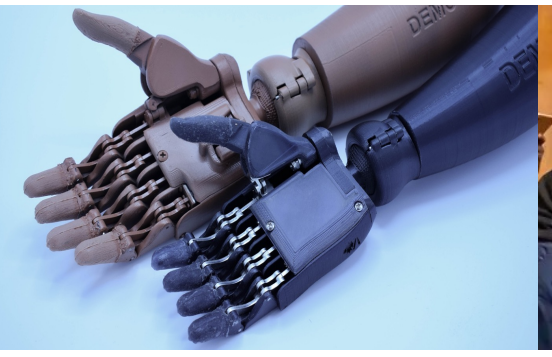
32 Ultimaker® 3D Printers located around the world

Challenge: Create a custom-fit and highly-functional prosthesis with durable and long-lasting materials

After initially producing their prosthetics with a standard PLA, the Victoria Hand Project now utilizes Ultrafuse® PLA PRO1, an advanced version one of the most widely used materials for 3D printing. This innovative material allows VHP to design and manufacture prostheses focused on qualities of durability, comfort and functionality. The tensile and impact strength of Ultrafuse® PLA Pro1 produces an extremely durable prosthetic that is made to last. It is also available in a wide color range and performs as expected, each day, providing amputees with a natural looking prosthesis that is custom-fit, comfortable, and highly functional.

"Switching to Ultrafuse® PLA PRO1 has been a game-changer with improved print quality and less visible layer lines. Ultrafuse® PLA PRO1 improves the overall functionality of the prosthetic hands, while making it easier to assemble, and creates a more comfortable fit for the user."

-- Michael Peirone, CEO, Victoria Hand Project



Challenge: Ensure a reliable and easy-to-use technology adaptable to challenging conditions

Both Forward AM and Ultimaker® are leaders in Additive Manufacturing. BASF Forward AM develops thoroughly tested parameters ensuring a first–time right print with Ultimaker® machines. This solution delivers a seamless, innovative, and fool-proof experience for clinicians with little to no technical training. Ultimaker® Fused Filament Fabrication along with the material qualities of Ultrafuse® PLA Pro1 consistently deliver reliable quality, overcoming the challenges of working in remote locations under a variety of climates.

For more information, read the full Use Case here.

Learn more about Ultrafuse® PLA PRO1: