

AMESOS and Polymaker partner to develop FFF 2.0 - a high-speed 3D printing solution for series production applications

AMESOS and Polymaker announced today a strategic partnership to co-develop high-speed fused filament fabrication (FFF) based 3D printing solutions.



Polymaker is a well-known name in the 3D printing industry – the Shanghai-based company develops and manufactures a large variety of materials for material-extrusion based 3D printing. Their products have won multiple awards and are widely used by a large spectrum of professional and industrial users. AMESOS, on the other hand, was formed recently as a spin-off of Akribis Systems, a Singapore-based, global leader in direct drive motors and motion control technologies founded in 2004. Despite being a new entrant, the teams at AMESOS and Akribis have been working on 3D printing for the last 5 years. The deep technical capabilities in motor design and motion control from Akribis allowed the team to design 3D printing systems in ways that are very different from the status-quo.

It is widely known that speed is a key bottle neck for FFF based 3D printing. It is a major barrier to the wider adoption of the technology, particularly in series production applications. Despite this industry consensus, progress in improving the printing speed of FFF has been rather limited over the years. The key reason for the lack of progress, is that the problem is intrinsically hard. It requires multiple domains of technical expertise working in a concerted effort.

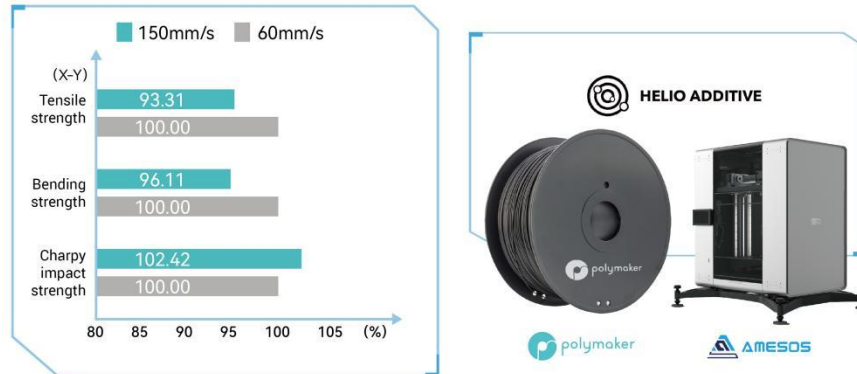
“We started by trying to solve the problem alone,” says Tommy Huang, the Co-Founder of AMESOS, “but very soon we realized we are only part of the solution and desperately need many other areas of expertise.”

“The process complexity of FFF 3D printing is orders of magnitude higher than traditional polymer processing technologies,” says Dr. Xiaofan Luo, President of Polymaker, “therefore to really tackle this problem we need some major paradigm shift in the R&D process.”

The goal of this partnership between AMESOS and Polymaker is to co-develop a high-speed FFF based 3D printing solution, which they call “FFF 2.0”. “We will take a process-centric and bottom-up approach,” Xiaofan explains, “we will start with studying and defining the process, which then guides the printer design and material development, not the other way around. And this is very different from how R&D is done today in many printer and material companies.”

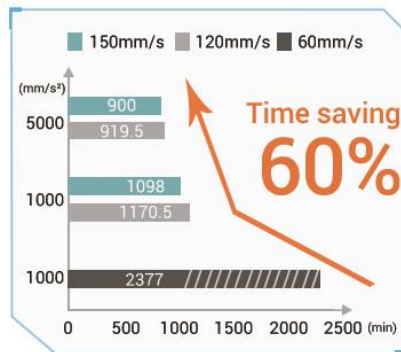
To tackle the process complexity, Polymaker will also bring in Helio Additive, a new startup company which Polymaker helped co-found. Helio Additive is developing a unique software solution that combines physics-based simulation and data science to guide the development and optimization of printing processes. Helio's software tool will be a vital part to the success of this partnership.

Comparison of mechanical strength at 150mm/s and 60mm/s speeds

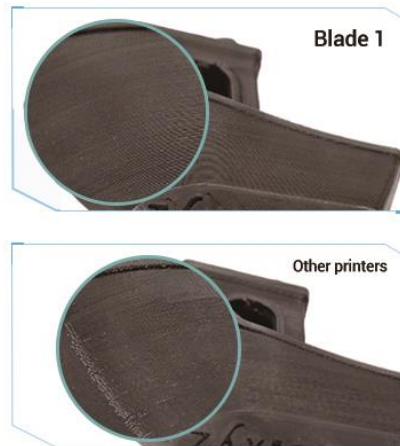


The test is based on a newly developed carbon fiber reinforced composite filament from Polymaker

Over 60% time saving in printing times



Comparison of printing efficiency between Blade 1 and other printers under different accelerations



“We have already seen some promising preliminary results that have proved the viability and effectiveness of our partnership model.” Says Tommy, referring to the Blade 1 system, the first-generation 3D printing system AMESOS will introduce to the market later this quarter. Initial results show a consistent, over 60% reduction in printing times over existing FFF printers. This is achieved with no compromise in the overall printing quality. Furthermore, with the custom

developed material by Polymaker, the mechanical properties are on par or even higher under high-speed printing.

“What we want is to achieve consistent high-speed printing without sacrificing part quality or properties,” says Tommy, “this is very different from some false claims you see in the industry – yes you can print faster but this comes with other, unspoken compromises. What we want is true speed improvement.”

“AMESOS and Polymaker have a shared vision about the future of FFF in series production,” says Xiaofan, “we are still in the beginning and there is huge, untapped potential to be explored.”

AMESOS and Polymaker are currently working on a multi-year technical roadmap. Their ultimate goal is to make FFF based 3D printing a competitive, widely adopted production technology.

About AMESOS

The Amesos team encompasses strong knowledge and experience in precision equipment design, hardware, software, processing parameter and industrial applications. Core knowhow in motion control and direct drive enable Blade Series to manifest both speed and precision at the same time. With global offices in Singapore, China, USA, Germany, Israel, Japan, Korea, Malaysia and Thailand, synergy with strategic partners, Amesos can offer a “FFF 2.0” turn-key solution in series production applications, focus on semiconductor, robot, auto, defense, aerospace, health care, energy and other industries.

About Polymaker

Polymaker is a developer and manufacturer of 3D printing materials committed to innovation, quality and sustainability. Its award-winning product portfolio has enabled numerous individuals and companies to better create and make. Headquartered in Changshu, China, Polymaker has multiple office locations in Shanghai, Utrecht and Houston ready to serve customers across the globe.