

# FARSOON, HUAXIANG & LEHVOSS GROUP: ADDITIVELY MANUFACTURE SAFETY GOGGLES TO FIGHT COVID-19



*Assembled safety goggle under UV disinfection. Image by Huaxiang Group.*

## ↓ Project Overview

- |                     |   |
|---------------------|---|
| <b>CHALLENGES</b>   | Urgent needs for medical-grade PPE<br>Short manufacturing lead-time<br>Find new, alternative local supply chains                                  |
| <b>SOLUTION</b>     | 3D design by Medical expert Huaxiang Group<br>Farsoon plastic LPBF system 403P with high-performance LUVOSINT TPU material                        |
| <b>KEY BENEFITS</b> | Accelerated design-optimize-validate-batch production cycle<br>Better protection & wearing experience<br>Digital workflow allows local production |

# Development & Batch Production of High-performance Medical PPE in only a few days - Through Additive Manufacturing.



Covid-19 is a high infectivity virus that is mainly transmitted through droplets released into the air by coughing or sneezing. To prevent infection in highly contaminated hospital environments, medical workers who are in close contact with patients must wear personal protective equipment (PPE) including masks, gloves, and respiratory systems to prevent infections transmitted through the nose and mouth.

In addition to the safety PPE equipment listed above, another critical protection equipment are the safety goggles. The conjunctiva membrane, located inside the eyelid to lubricate the eyeballs - is the only exposed mucous membrane of the body. When the eyes are opened the conjunctiva membrane is also exposed, making it an important but often overlooked entrance for viruses. In this case, effective safety goggles are in high-demand to provide full cover and good sealing to the eye area to blocking against hazards including flying particles and liquid splatter from every direction.

## ↓ Medical Protective Goggles

With a solid background in medical 3D printing, Huaxiang experts were able to quickly develop,

## ↓ Customer Profile

Huaxiang Group is the industrial leader of medical 3D printing application in China. With an established medical industrial chain including materials research and development, software, additive manufacturing, post processing, etc., Huaxiang Group is ready to offer hospitals and doctors with comprehensive, accurate and efficient industrial grade medical 3D printing solutions.

*Batch production of 3D printed medical safety goggles were ready for delivery to health facilities. Image by Huaxiang Group.*

optimize, validate these safety goggle within only 10 days, and rapidly produced thousands of pairs of products on [Farsoon 403P systems](#). The main goggle frames are produced from Farsoon [FS3300PA material](#), which offers good strength and durability; the sealing rings are made of [LUVOSINT TPU material](#) from LEHVOSS – with excellent elongation and flexibility, which ensures better fit and improved sealing protection compare to traditional PC material. The lens is cut from transparent acrylic and coated with an anti-fogging coating. The optimized design also decreases weight while improving comfort for extended periods of wear. The as-printed goggle parts need to be assembled, then disinfected under UV light, high heat and pressure. The design and production of these safety goggle have been registered for Category One Medical Tools in China.

On March 18th, 2020, the first batch of 1000 sets of 3D printed medical safety goggles were donated to the Red Cross Society of China. The second batch will be produced and donated to domestic and overseas countries at the end of March. Last week Farsoon was also contacted by an Italian hospital in need of safety goggles. With the help of Italian service bureau [Prosilas Rapid Prototyping](#), the safety goggles will be produced locally with LUVOSINT TPU material from LEHVOSS.



## 3D Printed Safety Goggle

Better protection & wearing experience

3D design by **Huaxiang Group** & printed on **Farsoon 403P System**

**FREE DOWNLOAD**

Adjustable Strap Buckle  
Farsoon FS3300PA Material



Goggle Sealing Ring  
Lehvoss TPU Material

Protection Lens

Safety Goggle Frame  
Farsoon FS3300PA Material



Assembly diagram of additively manufactured safety goggle. Image by Farsoon

*"At this time of national and global health emergency, Huaxiang Group is proud to take action fighting against COVID-19 using our expertise in medical 3D printing applications.", says Jun Li, Medical application Director of Huaxiang Group, "After the goggle, the next project of safety visor is under final testing and validation, we will see it soon applied to better protection of medical workers. We will keep contributing our strength until the epidemic is overcome."*

*"This is a great example of the impact 3D printing is making as an alternative supply chain in this time of critical shortage." Says Don Xu, Global Business Group Director of Farsoon, "by working closely with our partners from material, industries and service, Farsoon is committed to build a more open, connected and capable AM eco-system. This highly-efficient team work ensures faster, best-in-class communication and quality production on Farsoon additive machines."*

### ↓ AM Help Fighting Pandemic Worldwide

*"The global AM industry has offered a powerful response to the COVID-19 emergency worldwide. We have already created a global resource for AM companies worldwide to share their resources and coordinate their efforts. We are working with partners in Italy, US, UK, France, Germany, Spain Netherlands, Poland and Australia. These goggle designs will now be made available to healthcare facilities worldwide through the dedicated Forum on our 3D Printing Media Network portal," Said Davide Sher, Co-Founder of 3dpbm, a leading media agency for the AM industry.*

*"While traditional manufacturers can produce millions of parts, they require much longer times to modify their production lines, while 3D printers can begin producing new, needed parts right away: all they need is the new part's design and the right material."*

Thanks to Huaxiang Group, now the goggle design files can be downloaded and produced globally. The design is available in two sizes for better fit for all medical workers. The goggle frame and sealing ring can be printable for Laser Sintering (SLS), Fused Deposition Modeling (FDM) and Stereolithography (SLA) technologies, and the protective lens outline is also included for ease of production.

↓ Safety Goggle-Large

↓ Safety Goggle-Small

### ↓ About our partner LEHVOSS Group

The LEHVOSS Group under the management of Lehmann&Voss&Co. is a group of companies in the chemicals sector that develops, produces and markets chemical and mineral specialties for various industrial clients. Lehmann&Voss&Co., Germany, was founded in 1894 as a trading company. With the 3D printing product lines LUVOSINT® and LUVOCOM® 3F the LEHVOSS Group offers innovative and customized polymers for 3D printing. They are dedicated to the most common technologies as powder bed fusion and fused filament fabrication (FFF). The materials provide good processability and excellent material properties.

## ↓ Farsoon's Plastic Laser PBF Systems

▼ HT1001P

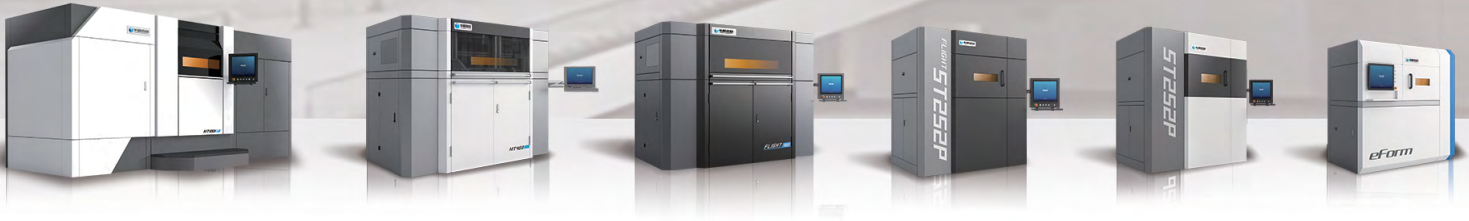
▼ 403P Series

▼ FLIGHT 403P Series

▼ FLIGHT 252P Series

▼ 252P Series

▼ eForm



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