

Nuremberg, November 16, 2021

Formnext 2021, Hall 12.1 | Booth D 81 and Virtual Siemens AM Summit 2021

Siemens enables You Mawo and Additive Scale to scale up additive manufacturing of bespoke eyewear in a cost-effective and sustainable way

- **End-to-end automation and digitalization of all process steps enables the industrialization of additive manufacturing**
- **Simulation and digital twins help to test and implement profitability and scalability**
- **Individual financing models lower investment hurdle and time-to-market**
- **Carbon footprint to be reduced by up to 58 percent with additively manufactured eyewear**

Siemens enables the start-up You Mawo in offering bespoke eyeglass frames in such a way that they are accessible, affordable, and sustainable for a broad market and You Mawo can have them produced in an economically cost-effective and responsible way. The customization process considers parameters such as design, a perfect fit for the person wearing the glasses, and color.

"We believe that the market for individualized eyewear is very large. Additively manufactured eyewear fits perfectly and requires significantly less material. Compared to conventionally produced eyewear, we can reduce the carbon footprint by up to 58 percent through additive manufacturing," explains You Mawo founder Daniel Szabo. He goes on to say, "Until now, however, reproduceable production in very large quantities has been the tricky part." The production of 3D printed eyeglass frames is the goal of Additive Scale GmbH, which was founded specifically for this purpose. Its approach consists of a priority solution chain of 3D printing systems, surface, and coloring finishing, as well as software, to produce customized eyeglass frames with reproduceable part properties. Siemens is supporting Additive Scale's project with its

comprehensive portfolio of automation and digitalization solutions as well as financing solutions.

Additive Scale has been producing individualized eyeglass frames for You Mawo since May 2021 with an annual capacity of approximately 50,000 frames and is already planning to double capacity for the coming year.

"The decisive factor for high productivity with the greatest possible flexibility is the automated and digital integration of coordinated manufacturing steps of all participants in the production process. This includes automated processing of the entire workflow and begins with the arrival of the order, continues through design and on to printing, post-processing and final delivery," explains Dr. Karsten Heuser, Vice President Additive Manufacturing at Siemens Digital Industries. He continues, "Here we can learn a lot from our manufacturing expertise in our own production facilities and use this know-how to enable end-to-end automation and digitalization for our partners. This applies to the production of series parts as well as to highly flexible lot-size-1 manufacturing of individualized products or spare parts."

Simulation with the digital twin

In the first step, the factory planning experts from Siemens Advanta worked with Additive Scale to create a digital twin of the production that contains all process steps and machines. This allows different approaches to material flow and production layouts to be simulated - for example, the transport of parts from one machine to the next via AGVs, conveyor belts or robots. It also allows the profitability of production to be tested without taking risks. The eyeglass frames are printed using selective laser sintering on EOS machines. For surface finishing and coloring, the specialist DyeMansion is on board. "You Mawo were one of our first customers. Together, we managed to raise the entire post-processing for eyewear to a level that meets the highest demands in terms of quality and reproducibility. With our strategic partners EOS and Siemens, we are now incorporating all of this into a factory that has the potential to change the entire eyewear industry. A lighthouse project for the entire 3D printing industry that was only made possible by strong partnerships," says Felix Ewald, CEO and Co-Founder of DyeMansion. EOS, DyeMansion and Siemens have already collaborated in the past on innovative projects in the field of automation and digitalization of production facilities, with the aim of accelerating the industrialization of additive manufacturing.

Individualized financing concept

The industrial 3D printing machines for Additive Scale are financed by Siemens Financial Services (SFS), Siemens' financing arm. The goal was to lower the immediate investment hurdle and enable scaling as production needs grow.

"Integrating financing into an ecosystem approach like this, where all the right partners come together from the start, has allowed us to create a smart leasing solution at a start-up's pace. Moreover, it offers enormous potential to adapt as market demands evolve," says Matthias Grossmann, CEO Commercial Finance at Siemens Financial Services. Depending on the specific requirements, SFS offers a range of models for financing the assets, from standard leasing to full or partial pay-per-use or pay-for-outcomes models.

Scaling scenarios can be simulated and validated

As a next step, Additive Scale, with support from Siemens Digital Industries and Siemens Advanta, plans to scale up production, with a mid-term goal of producing one million or more individualized eyeglass frames per year. "Our long-term goal is to have fully automated and digitalized small production sites around the world that allow us to produce locally and respond quickly to customer requests. This reduces shipping costs and time, and leaves a significantly lower carbon footprint," explains Sebastian Zenetti, CEO of Additive Scale. Using the Factory Planning Toolbox developed specifically for additive manufacturing, scalable production concepts can be simulated and validated. In the simulation, product and process variants are compared in terms of production costs and yield. Scaling scenarios are then evaluated based on order scenarios and the degree of automation. Particularly important will be the efficient handling of the order-to-delivery process, so that every customer can also receive their customized glasses within a period of around 14 days. In addition to the connectivity of the machines to each other and to the cloud, scenarios of the ordering process of participating opticians, for example via the Additive Manufacturing Network, and the traceability of the individualized frames for the end customer will also be considered here. For this purpose, Siemens is testing solutions for the respective next scaling level in its own Additive Manufacturing Experience Center in a dedicated production cell, such as the connection to an industrial cloud and the creation of dashboards with Mendix for the optimization of Overall Equipment Efficiency (OEE).

During Formnext and the Virtual Siemens Additive Manufacturing Summit, Siemens together with You Mawo, Additive Scale, and DyeMansion will demonstrate in detail how the production of individualized additively manufactured eyeglass frames can be scaled up economically and sustainably through eco-system collaboration.



Caption: Siemens enables the start-up You Mawo in offering bespoke eyeglass frames in such a way that they are accessible, affordable, and sustainable for a broad market.

This press release and a press picture are available at <https://sie.ag/3c2MJC7>

Further information on Siemens at Formnext and the Virtual Siemens AM Summit 2021 please see www.siemens.com/formnext and www.siemens.com/press/formnext2021

Further information on Siemens Financial Services: www.siemens.com/financing

Further information on Siemens Additive Manufacturing Network: <https://additive-manufacturing-network.sws.siemens.com>

Contact for journalists

Katharina Lamsa

Phone: +49 (172) 8413539

E-Mail: Katharina.Lamsa@Siemens.comFollow us on our **social media channels**:**Twitter:** [www.twitter.com/siemens_press](https://twitter.com/siemens_press) and [www.twitter.com/SiemensIndustry](https://twitter.com/SiemensIndustry)**Blog:** <https://ingenuity.siemens.com>

Siemens Digital Industries (DI) is an innovation leader in automation and digitalization. Closely collaborating with partners and customers, DI drives the digital transformation in the process and discrete industries. With its Digital Enterprise portfolio, DI provides companies of all sizes with an end-to-end set of products, solutions and services to integrate and digitalize the entire value chain. Optimized for the specific needs of each industry, DI's unique portfolio supports customers to achieve greater productivity and flexibility. DI is constantly adding innovations to its portfolio to integrate cutting-edge future technologies. Siemens Digital Industries has its global headquarters in Nuremberg, Germany, and has around 72,000 employees internationally.

Siemens AG (Berlin and Munich) is a technology company focused on industry, infrastructure, transport, and healthcare. From more resource-efficient factories, resilient supply chains, and smarter buildings and grids, to cleaner and more comfortable transportation as well as advanced healthcare, the company creates technology with purpose adding real value for customers. By combining the real and the digital worlds, Siemens empowers its customers to transform their industries and markets, helping them to transform the everyday for billions of people. Siemens also owns a majority stake in the publicly listed company Siemens Healthineers, a globally leading medical technology provider shaping the future of healthcare. In addition, Siemens holds a minority stake in Siemens Energy, a global leader in the transmission and generation of electrical power.

In fiscal 2021, which ended on September 30, 2021, the Siemens Group generated revenue of €62.3 billion and net income of €6.7 billion. As of September 30, 2021, the company had around 303,000 employees worldwide. Further information is available on the Internet at www.siemens.com.