"We switched from nano to femtosecond lasers and never looked back"

Axel Kupisiewicz, founder and CEO at Lasea and Stéphane Bussa, CCO of the Lasea group, talked to EPIC's technology manager Antonio Castelo

Lasea is a provider of laser micromachining, plastic welding, marking and traceability, and surface treatment for the medical, watchmaking and jewelry, electronics, and R&D sectors. Its CEO and CCO were interviewed by EPIC's technology manager for biomedical and lasers.

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Lasea CEO and founder Axel Kupisiewicz

Axel, what is the background to you founding Lasea as CEO?

Axel Kupisiewicz: After completing a degree in engineering and then a master's in economics at the University of Liège, I worked as an engineer at the Liège Space Center where I was involved in developing a laser cleaning process to remove the coatings of satellite mirrors. I saw the opportunity to develop a business in the fields of laser coating removal and laser cleaning, and so in 1999 I set up Lasea in my garage.

How has the company developed?

AK: I started by patenting and selling layer removal applications, and in 2000 I launched the first laser industrial process for installation in production lines to remove layers from coated glass for windscreens. It was very challenging because I was on my own at the time, so I had to find some partners to manufacture the production line equipment, which I successfully sold to major glass manufacturers in Europe and Japan.

Then I was asked to do other things like plastic welding and laser marking. I was surprised how old fashioned the technology was at that time, for example using glue for plastic welding, acid baths to microcut components, and a high energy consumption milling center for micromachining. Laser welding processes and laser micromachining were much cleaner, easier to use, and used a lot less energy – so I saw it as not only a business opportunity, but also an opportunity to do something useful for the environment and society.

In 2004 we participated in the EU-funded NAGINELS project and began selling traceability and anticounterfeiting applications to the pharmaceutical industry. We then developed plastic welding, marking, layer removal, and cutting production lines for the automotive and food industries.

But the key landmark in our history was the 2011 Laser Munich show where we presented the first micromachining workstation that incorporated Amplitude's Satsuma femtosecond lasers. At that time there were only eleven of us, but after this event we grew by thirty percent each year and we now have a workforce of two hundred.

In 2012, we set up Lasea France to specialize in micromachining, and in 2016, we created Lasea United States. In 2017, we established Lasea Switzerland and acquired WOW, a leader in the development of automated solutions in Belgium. In 2020, we acquired Optec, a manufacturer of femtosecond and excimer laser machines specific to the medical and electronics sector. In the same year, Lasea relocated to a new 3,500 m^2 building in Liège, and in 2022 we acquired the French company Laser Cheval, since when the Lasea group has become the number 1 in laser micromachining in Europe.

What challenges did you have in expanding your workforce?
AK: Growing at thirty percent each year has meant increasing the workforce by one third annually. So since 2011, we have had to double the team every three years, train them and move to a new plant twice as big.

What was your main criteria for the acquisitions?
AK: Of course, we have a formula for evaluating the strategic, financial and human resource advantages of an acquisition, but for me the most important factor is that the culture of the company needs to be compatible with Lasea's.

How important have femtosecond lasers been to your success?
AK: Very much so. The first systems we sold to universities were scientific lasers, which were unreliable. The big change was in 2011 when we incorporated Amplitude's Satsuma femtosecond lasers in our first industrial systems. These lasers proved to be far more reliable for 24-hour operation and only require one preventive maintenance, so we switched from nano to femtosecond lasers, and we have never looked back.

How important are EU projects like NAGINELS for the industry?
AK: Technological readiness is rather low in Europe, and EU funding is very important for the future of European competitiveness and industrialization. R&D is very costly, and when you are a small company or a startup with a limited R&D budget, it is impossible to develop new kinds of technology and cutting-edge applications without financial support from the EU. It is not about being able to develop a product that you can put on the market today – it is more about preparing to push the boundaries so that in a few years we can develop new applications like biomimetics and compete with the giants in the US and China.

Stéphane, what were your personal challenges when you joined Lasea?
Stéphane Bussa: I have known Axel for 25 years. When he started Lasea, I was working for Thales selling lasers to him for his cleaning processes. Rather than a challenge, joining Lasea in March 2024 was an exciting adventure because I saw it as an opportunity to make it a more effective and efficient company – manufacturing laser machining systems with a much more standard approach and pushing our machines onto the market. So it is all about market intelligence, product marketing and more accurate sales processes.

How do you see the future?
SB: We are turning Lasea into a company that designs and delivers industrial standard machines for the key verticals that we have identified. We will always keep an eye on our partner universities because we want to continue to pioneer applications such as biomimetics. The laser is all about the interaction between light and materials and the big added value of a company like Lasea is our knowledge of this interaction: how to use the laser, the type of parameters, and what kind of jobs can be done on a machine. In this context, we are designing our own range of specially designed modules that can quickly and easily be integrated into our workstations or into our customers' specific environments. We also own 120 patents in thirty families that we want to leverage, so we have a lot to do.


Stéphane Bussa

Another of our challenges is to develop Lasea out of Europe. We have had a subsidiary in the US since 2016 and we intend to invest massively in the coming years to develop business in the Americas. We are also exploring the market in Asia where we have a lot of inquiries. We could develop in so many directions because the market is huge and the requirements are enormous, particularly for photovoltaics, batteries for automation, and aeronautics. A lot of electronic applications providers are now willing to use ultrafast lasers. Ultimately, the challenge for a company of two hundred people with a yearly growth of thirty percent is to focus on where we think we can really make a difference.

The neo 1 from Lasea

Axel Kupisiewicz: What is very nice in our field are the opportunities that appear thanks to the increasing power of the laser. Although we have stayed focused on the luxury, MedTech, electronics and R&D sectors, thanks to the increase in power, each year we have gone into the new markets of thin layer laser ablation, cutting, drilling, engraving, and surface structuring. But there are many other markets such as aerospace, defense, and biomimetics – i.e., reproducing the structure of shark skin on aircraft wings to improve aerodynamics, or that of a lotus leaf to make the surface hydrophobic, or copying the tips of gecko legs that make them adhesive.

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Company

Lasea

Lasea has been a pioneering figure for more than twenty years, and is a partner for the design and manufacture of femtosecond laser micromachining tools. It designs innovative solutions with an unparalleled level of precision thanks to its expertise, research, and unique project management. Its laser machines are equipped with lasers and automation features that perfectly complement the application and meet the required quality and safety criteria.

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