Voices Shaping the Future of Laser Manufacturing – Rachel Assa

Civan Lasers is transforming industrial welding with its groundbreaking Dynamic Beam Laser technology. By giving manufacturers unprecedented control over the laser beam in real time, Civan enables higher-quality welds, improved productivity, and new possibilities in advanced manufacturing applications.

As part of the *Voices Shaping the Future of Laser Manufacturing* series, we interviewed Rachel Assa, SME/engineer at Civan Lasers. We will learn more about her work within Lasers4MaaS and her ideas to improve Gender Balance in advanced technology environments.

1. Could you briefly describe your role in Lasers4MaaS and your involvement in the project activities?

I am the Head of the Materials and Laser Processing Department at Civan, where I lead the Process Development team and oversee researchers, engineers, and technicians working on process development for dynamic beam laser welding.

In Lasers4MaaS, I serve as the Project Manager for Process Development. I work closely with Civan's internal departments and consortium partners, supporting engineers and researchers and helping to address both technical and management challenges.

2. How would you describe gender balance in your organization, particularly in technical or leadership positions related to photonics and advanced manufacturing?

At Civan, we place great importance on equal opportunity and are committed to fostering diversity across all areas of the company. Women are actively represented in a wide range of roles, including management, PhD-level research, engineering, team leadership, laboratory operations, and key decision-making functions.

At the same time, it is important to recognize the realities of the talent pool in highly specialized technical fields such as optics, photonics, welding, and advanced engineering, where female representation remains relatively low. In practice, when recruiting for highly technical positions, we continue to receive significantly fewer applications from women than from men.

3. Do you consider gender balance and diversity important for innovation in industrial photonics? Why?

Yes, absolutely. As a woman leading a technical team in industrial photonics, I believe that gender balance and diversity can be important drivers of innovation.

In my experience, teams that bring together people with different backgrounds, experiences, and ways of thinking tend to approach technical challenges from a wider range of perspectives. This is particularly valuable in a complex and multidisciplinary field such as industrial photonics, where innovation often requires collaboration between researchers, engineers, and other technical experts.

Diversity can contribute to more open discussions, stronger problem-solving, and better decision-making, while also helping teams consider different perspectives when developing technologies and processes for industry.

I also believe it is important to encourage more women to pursue technical and leadership careers in photonics, laser technology, and advanced manufacturing. Women are still underrepresented in many of these fields, and having visible female role models in technical and managerial positions can help demonstrate that these career paths are both accessible and rewarding.

At the same time, I believe that gender balance should go hand in hand with equal opportunity. Recruitment, promotion, and professional development should be based on qualifications, competence, experience, performance, and individual talent. The goal should be to create an inclusive environment where everyone has an equal opportunity to contribute, develop professionally, and take on leadership responsibilities.

4. Do you feel women and underrepresented groups have equal opportunities to contribute to technical decision-making, work package leadership, dissemination and visibility activities, industrial stakeholder engagement, and innovation discussions?

Based on our experience at Civan, I believe that women have equal opportunities to contribute to all aspects of our projects, including technical activities, decision-making, dissemination, stakeholder engagement, and management discussions.

Within the organization, both women and men hold leadership positions and contribute to strategic and technical decisions. In my experience, people are encouraged to contribute based on their expertise and experience, regardless of gender.

Our projects also benefit from the involvement of department heads and specialists from different areas, including engineering, application development, project management, and coordination.

This creates opportunities for people with different backgrounds and expertise to contribute to technical discussions and project decisions.

5. Have you observed barriers to participation or advancement in your sector?

Based on my experience at Civan, I have not experienced significant barriers to my own professional development or advancement because of my gender. I have had the opportunity to take on technical and management responsibilities and to lead a team in a highly technical field.

However, in industrial photonics and advanced manufacturing, I believe that some barriers to participation and advancement still exist, particularly for women in technical and senior leadership positions.

One of the main challenges is that women remain underrepresented in many engineering, research, and technical roles. This can sometimes result in fewer female role models and mentors, which may make it more difficult for women to see these career paths as accessible to them.

6. Are there specific challenges in industrial deep-tech environments that affect gender balance?

Yes. Industrial deep-tech is still a very male-dominated environment, particularly in engineering, R&D, and senior technical roles. The combination of a highly technical culture and relatively few women in these positions can make it harder to attract and retain female talent.

Another challenge is that career progression in deep-tech often depends on building specialized expertise over many years. Making sure that women have the same access to challenging technical projects, leadership opportunities, and professional development is therefore important

7. Are gender aspects sufficiently considered in technology development, user engagement or deployment pathways where relevant?

In our field, gender is not usually a specific factor in the development of the laser technology itself. The laser is designed according to the technical requirements of the application, rather than for a particular gender.

Where user interaction is relevant, we focus on making the technology safe, accessible, reliable, and easy to operate for all users. These considerations apply equally to women and men.

Therefore, we consider gender where it is relevant, but we do not see a need to introduce gender-specific requirements into technology that are not technically justified.

8. What obstacles remain to achieving better gender balance in photonics and advanced manufacturing ecosystems?

The biggest obstacles start long before someone enters the photonics sector. Gender stereotypes in childhood, education, and society still influence which subjects and careers girls and boys feel are “for them.”

If we want more women in engineering and deep-tech, we need to encourage girls to explore science, mathematics, technology, and practical problem-solving from an early age, without attaching these interests to gender. We also need to normalise shared responsibility for childcare, including stronger recognition of fathers' role and the importance of paternity leave.

In my view, changing these social expectations is just as important as changing recruitment practices later in a person's career.

9. What additional actions should Lasers4MaaS implement?

I would focus on visibility and practical exposure. Showcasing women working as engineers, researchers, managers, and technical experts can help challenge the idea that photonics and advanced manufacturing are mainly male professions.

Within the project, we should also make sure women have opportunities to lead technical activities, present results, and represent the project externally.

10. What practices should continue beyond the project?

The practices that already work should continue: equal opportunities to take responsibility, visibility in technical activities, and having women represented in both technical and management roles.

It is also important to keep treating gender balance as part of normal project culture rather than as a separate activity that ends with the project.

11. What recommendations would you give for future EU projects in this area?

I would recommend starting earlier and looking beyond the project itself. EU projects can promote gender balance within their teams, but the bigger challenge is building the pipeline of women entering STEM (Science, Technology, Engineering, and Mathematics) and technical careers in the first place.

Future projects could put more emphasis on outreach to schools and universities, female role models, mentoring, and visibility of women in technical careers. At the project level, gender balance should remain a practical consideration in recruitment, leadership, speaking opportunities, and networking.