

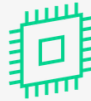
To revolutionize European industry by harnessing the power of next-generation lasers: that is the goal of LASER-PRO. More than just a project, this initiative brings together **18 world-class partners from Czechia, Lithuania, and Ukraine** to foster breakthrough innovation in sustainable manufacturing, semiconductor technology, biomedical applications, and digital laser systems.

Furthermore, LASER-PRO is empowering the next generation of innovators through talent development, collaboration, and knowledge transfer, transforming visionary ideas into real-world solutions that will **redefine Europe's high-tech industries.**

**Sustainable Manufacturing  
with Advanced Laser Processing**



**Next-Generation Laser Technologies  
for the Semiconductor Industry**



**Laser Applications in Biomedicine  
and Biotechnology**



**Digital & 3D Printing  
in Laser System Development**



**BEYOND A PROJECT**



**Tomáš Mocek**  
Project Coordinator  
(HiLASE Centre)

“LASER-PRO is not just another EU-funded project – it is a **strategic movement reshaping Europe's laser technology landscape.** By driving cross-border collaboration and accelerating the commercialization of laser technologies, we will establish a European Powerhouse in Laser Innovation centered around Central Bohemia and Lithuania.”

**LEARN MORE AT [LASERPRO-EH.EU](https://LASERPRO-EH.EU)**



**18 world-class  
partners**



**4 research  
areas**



**3 European  
countries**

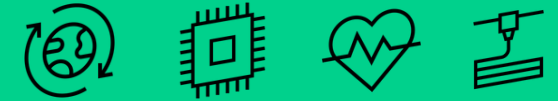


**1 Excellence  
Hub**

“By harnessing our collective expertise, LASER-PRO aims to shape a sustainable and competitive future for Europe's industry. Our driving motivation is to lay a strong foundation for long-term economic prosperity by delivering tangible solutions to real-world challenges.”

**LASER-PRO PARTNERS**





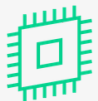
## Excellent Laser Technologies for the Sustainable Prosperity of Europe



### Sustainable Manufacturing with Advanced Laser Processing

Innovations for **greener**, more **efficient production lines**, supporting Europe's transition to sustainable industrial manufacturing:

- **Surface Functionalization & Texturing:** precision laser structuring techniques for advanced material properties;
- **Minimizing Material Waste & Enabling Circular Economy:** high-efficiency laser processing reducing raw material usage;
- **Multi-Beam and High-Speed Laser Processing:** enhancing laser capabilities to increase throughput and productivity;
- **Real-Time Process Monitoring & Optimization:** AI-driven laser diagnostics for real-time adjustments.



### Next-Generation Laser Technologies for the Semiconductor Industry

Future-proofing Europe's semiconductor industry, ensuring a strong, resilient, and technologically **strong supply chain**:

- **Deep-Ultraviolet (DUV) Laser Technology:** high-energy DUV lasers for advanced chip manufacturing and inspection;
- **Through-Silicon Vias (TSV) and Selective Laser Processing:** laser drilling and metal deposition techniques to enhance chip interconnectivity;
- **Heterogeneous Integration & Packaging:** laser-based selective metal plating for next-generation electronic devices;
- **Laser-Assisted Semiconductor Manufacturing:** precision laser machining improving yield rates, reducing defects, and increasing energy efficiency.



### Laser Applications in Biomedicine and Biotechnology

Development of safer, more effective medical treatments, transforming healthcare and biotechnology with laser-enabled solutions:

- **Microfluidic and Lab-on-a-Chip Devices:** laser micromachining creating high-precision biochips;
- **Antibacterial & Biocompatible Surfaces:** development of laser-textured implants and medical tools that reduce bacterial adhesion;
- **Laser-Assisted Cell & Tissue Engineering:** high-precision laser techniques for controlled cell growth, wound healing, and regenerative medicine;
- **Precision Laser Surgery & Therapeutic Applications:** exploration of minimally invasive laser-based treatments.



### Digital & 3D Printing in Laser System Development

Smarter, more adaptable, and highly efficient laser systems for seamless adoption across high-tech industries:

- **3D-Printed Laser Components:** advanced additive manufacturing to create lighter, stronger, and thermally optimized laser systems;
- **AI & Digital Simulation for Laser Optimization:** machine learning and real-time simulations for enhanced precision, stability, and energy efficiency;
- **Topology Optimization for Lightweight Laser Designs:** innovative structural designs reducing system weight;
- **Hybrid Manufacturing for Next-Gen Lasers:** subtractive and additive laser processing for more efficient, flexible laser production.

