FLASHING
into the
FUTURE OF LASER MANUFACTURING

Transforming Industrial Manufacturing with Precision Photon Distribution & Flexible Laser-Based Technologies.

www.flashlaserproject.eu

What is the Flash & Motivations?

FLASH project develops a modular, energy-efficient laser manufacturing system for **high-precision, flexible, and sustainable production**, serving sectors like medical devices, e-mobility, advanced tooling, and mobility.

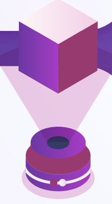

There is a need for **machining tools** that are:

- *More Flexible*
- *Use fewer Consumables*
- *Generate less waste*
- *Allow digital control*

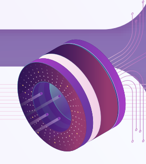
Core Technologies & Innovation:


Modular Laser Platform:

- 3 laser types + 3 interchangeable beam-delivery heads.
- Fully automated tool/head change.


Beam & Focus Control:

- Dynamic beam shaping — Gaussian/ top-hat/ring/composite profiles.
- Real-time focus control.


Beam Coupling & Delivery

- All-in-one fiber coupling & switch box.
- **3 Head Types:** Nozzle for high-power processing, WJGL for ultra-precise cutting, Galvoscanner for micro-machining & surface engineering.

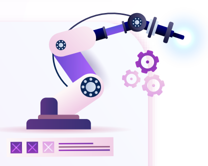
Industrial Applications & Benefits:


Automotive:

- Dissimilar metal joining (Al–Steel) -> lightweight, high-strength components.


E-Mobility / Motors

- Copper hairpin processing -> fast, clean, reliable motor connections.


Toolmaking & Advanced Tools:

- Multi-step laser processing -> less waste, no hazardous chemicals, longer tool life.


Medical Implants / Devices:

- Ultra-precise laser processing -> reduced cycle time, high surface quality.

16	+10.000	11	5
ORGANIZATIONS	WEBSITE VIEWS	COUNTRIES	CASE STUDIES


Commercialisation & Next Steps:

- Business models under development for: ***Medical · Tooling · Automotive · E-Mobility.***
- Complete ***demonstrator assembly*** & full system integration ***coming soon.***
- Live industrial ***trials planned.***


Skills, Training & Standardisation:

- Training on ***laser processing, sustainability, digital infrastructure*** & ***in-process monitoring.***
- Collaboration with ***European manufacturing R&D*** & ***standardisation bodies.***
- Active links to ***EFFRA & Made in Europe.***
- Preparation for ***large-scale European deployment.***


Smart & Green Manufacturing:

- Real-time ***acoustic & optical process monitoring.***
- Machine-learning-based ***process optimisation.***
- Environmental impact tracking via ***Life Cycle Assessment (LCA).***
- Circular design: ***reduced waste & scrap, energy savings, elimination of hazardous chemicals.***

Outcomes & Strategic Value

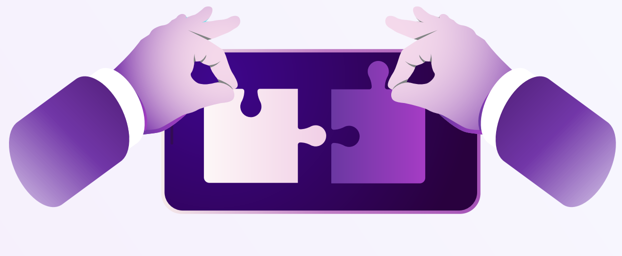

Reference for Industry 5.0
& Standardisation (ISO, CEN, EFFRA).

65%	50%	80%
Energy Savings	Faster Processing	Lower Environmental Impact


Validated
on PRIMA IANUS hybrid robotic/ CNC demonstrator
with **3**
Synchronized Lasers & Automated Head Switching.


Business Models
& Industrial trials underway.


Real-Time AI
Acoustic & optical monitoring with closed-loop optimisation


Embed LCA
For eco-design & green manufacturing

3drivers QUADRANTE
aimen CENTRO TECNOLÓGICO
ATS
cailabs SHAPING THE LIGHT
UNIVERSITÀ DEGLI STUDI DI PALERMO
diamoutils PRECISION DIAMOND TOOLS
IMA AUTOMATION
DePuy Synthes THE ORTHOPAEDICS COMPANY OF Johnson&Johnson
University of HUDDERSFIELD Inspiring tomorrow's professionals
COSMOS THRACE
ALTFORM
ROBUST AO
SYNOVA
TOFAŞ TÜRK OTOMOBİL FABRİKASI A.Ş.
EWF
mtc where progress happens

FLASH
Flexible Laser-Based Manufacturing

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Health and Digital Executive Agency. Neither the European Union nor the granting authority can be held responsible for them. **Project Number: 101138380.**