Pulsate

Funded by

PHOTONICS PUBLIC PRIVATE PARTNERSHIP

In partnership with

PAN-European Network for Laser-Based Advanced and Additive Manufacturing

January 2023

Funded by
PHOTONICS PUBLIC PRIVATE PARTNERSHIP
In partnership with

Pulsate

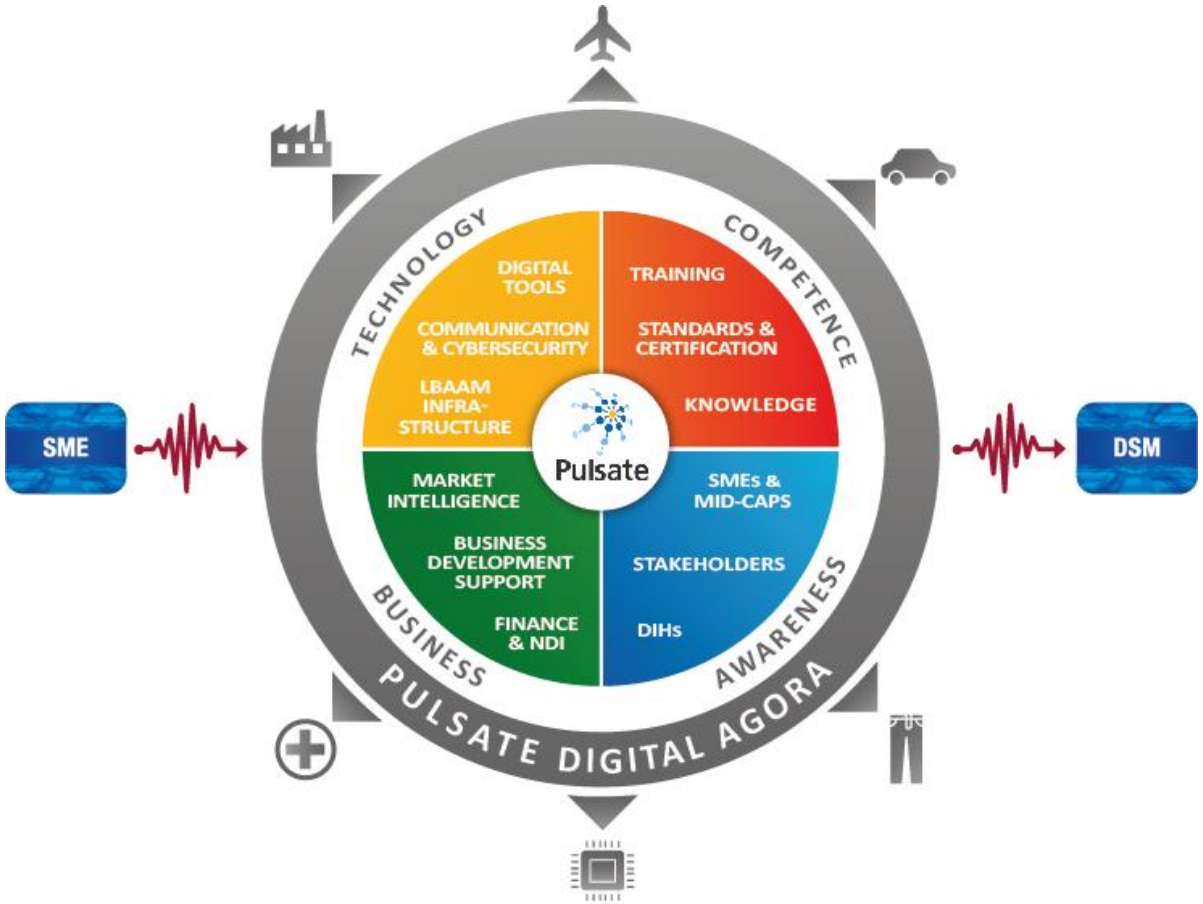
Fostering the PAN-European infrastructure for empowering SMEs digital competences in laser-based advanced and additive manufacturing

About PULSATE

PAN-European Network for Laser-Based Advanced and Additive Manufacturing

The main objective of PULSATE is to set up and consolidate a robust and open PAN European Network, sustainable beyond the project timeframe, to promote and facilitate the adoption of Laser-Based Advanced Additive Manufacturing (LBAAM) technologies by SMEs and Mid Caps.

The network will connect DIHs, top class Competence Centres, Public Institutions, Standardization Organizations, Financing and Business Development entities through a Single Entry Point.

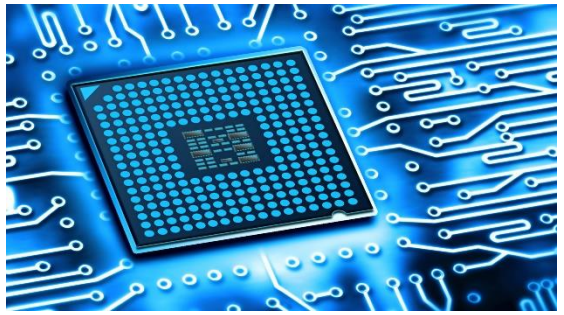
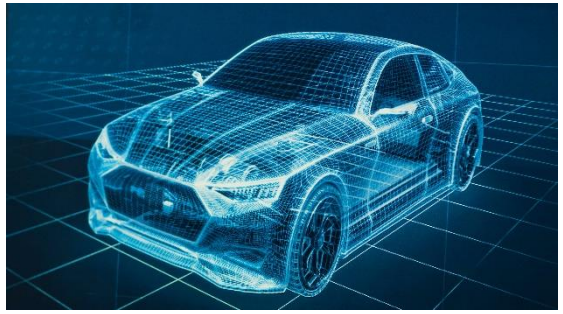


Revolutionising Markets

LBAAM provide maximal benefits towards flexible manufacturing and highly digitalized production environments

LBAAM technology is particularly beneficial for sectors like aerospace, automotive, medical devices, industrial machinery, customised electronics, and textiles & clothing.



Implementing Services

Through our PAN-European Network for Laser-Based Advanced and Additive Manufacturing PULSATE will:

- Mobilise at least 200 SMEs to participate in open calls:
  - 20 Technology Transfer Experiments (TTEs)
  - 42 Adopters Use Cases (AUCs)
- Consolidate technological and business offering by providing at least 5 LBAAM access to infrastructure, 4 software services and 8 business support services.
- Consolidate digital competency by offering a minimum of 6 digital maturity assessment and 6 LBAAM technology knowledge development services.
- Deliver at least 6 specific technical webinars, 2 info-days, 4 general webinars and 11 specific brokerage and matchmaking events.
- Deliver at least 30 courses offering on training in LBAAM and publish at least 20 training materials.
- Successfully deliver training to 1,000 trainees in LBAAM technologies.
- Achieve a minimum of 500 community members/ users and a wide catalogue of services.

Open Calls

Technology Transfer Experiments (TTEs)

First open call, Q1 – 2021. Second open call, Q2 – 2022.

TTEs are focussed on the adoption of LBAAM technology in production environments. Consortia of technology providers with end-users are invited to apply with a goal to create prototype systems during the 13-month PULSATE Support Programme that includes:

- Technical and business mentoring
- Services provided by consortium partners
- Funding with up to 150k EUR funding per experiment

Adopter Use Cases (AUCs)

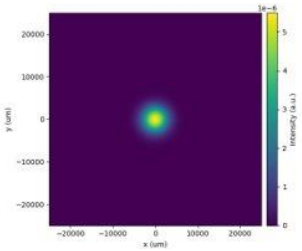
First open call: Q1 – 2022. Second open call, Q2 – 2023.

AUCs are focussed on technical and/or economic feasibility assessment for the implementation of LBAAM technologies.

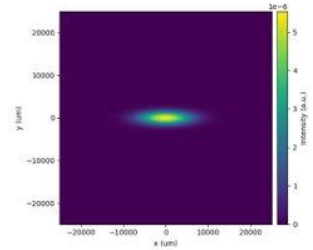
Selected SMEs will receive 3 months of support and funding with up to 25k EUR per adopter.

Success stories: AMLABS - Additive Manufacturing with Laser Beam Shaping

- **Aim:** Beam shape optimization to increase productivity and material processability of the LASER Powder Bed Fusion Additive Manufacturing Process (LPBF).
- **Technology:** LPBF is a promising additive manufacturing technology, but with two main limits: very low productivity and a high number of non-processable materials. These can be tackled by beam shaping optimization.
- **Results:** A plug-in mechanism was developed to change between different beam shapes. Three different beam shapes (elliptical, ring, and top flat) have been tested, the best results have been obtained with top flat.



Input beam



Output beam

cailabs SHAPING THE LIGHT

PRESX

Pulsate

Funded by

PHOTONICS21 PHOTONICS PUBLIC PRIVATE PARTNERSHIP

In partnership with I4MS

Success stories: SUBAR - Scale up of biomimetic antireflective surface laser structuring

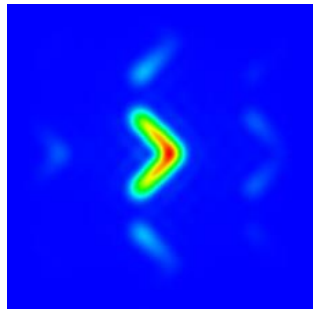
- **Aim:** The assessment of Biomimetic's Tettix AR glass treatments in real imaging applications related to optical microscopy.
- **Technology:** An anti-reflective or anti-reflection coating is an optical coating applied to the surface of optical elements to reduce reflection and improve quality. Usually, developing anti-reflective coatings for new materials is a long and challenging process with many iterations to reach the desired properties.
- **Results:** Automated and sustainable AR treatment of curved optical elements with direct laser nano-texturing, which can reduce the reflectivity <1% for broad spectra of the visible and the NIR.

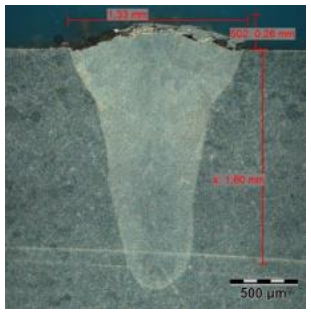
Biomimetic.

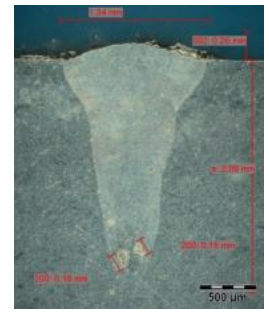
optimal ptik

Success stories: WELDSHAPE - Laser welding of hard to weld aluminum alloys

- **Aim:** The development of a unique and innovative remote welding machine that operates using a special single-mode fiber laser.
- **Technology:** In conventional laser welding processes, high-power fiber laser sources are commonly used as light sources along with heavy laser welding head that restricts the processing speed, and hence the productivity. The remote laser material processing is proposed as the technology to solve this problem, where a longer focal length than a conventional related process is used. This enables a high possible welding speed and beam shaping possibility (wobbling).
- **Results:** BBW started to weld hard-to-weld materials, like crack-sensitive aluminum alloys, in a special machine integrating both Smart Move scanner and Civan laser.





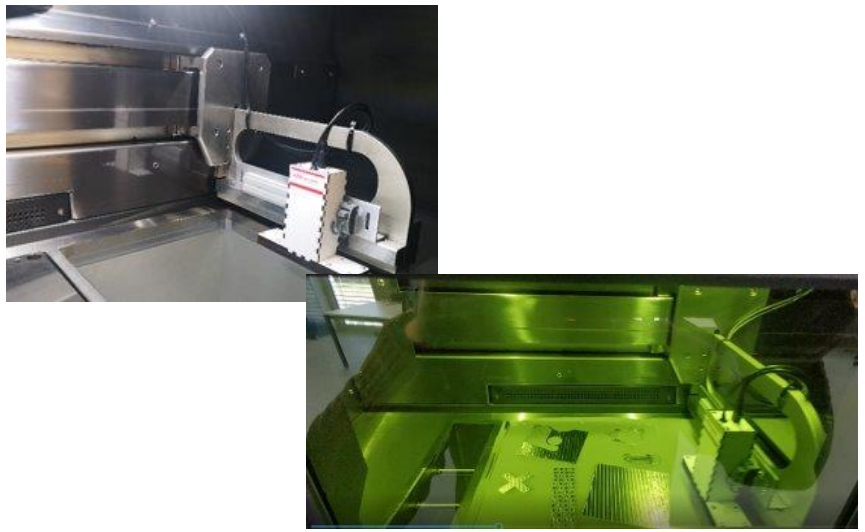


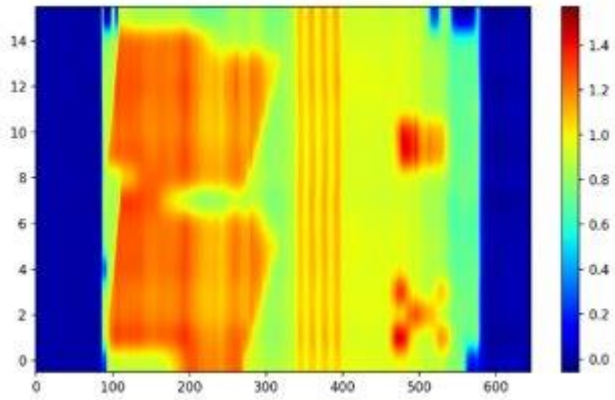
Civan Lasers

BBW LASER TECHNIK

Success stories: ADDINSPECT - Digital in-process NDT for Laser based powder Additive Manufacturing

- **Aim:** Develop the technology enabling the direct in-machine part certification, saving high postprocessing costs and delay, to increase the applications of the laser powder bed fusion technology.
- **Technology:** Qualification of Metal AM processes and the certification of the resulting parts require costly and time-consuming X-Rays tomography technologies and many samples for destructive testing. It is an offline process, and it can represent 30-40% of the total production cost.
- **Results:** The key components of compliant measurement technology have been developed (hardware and software), integrated into commercial machines and performed several pilot projects.





AMiquam

IDEKO MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE

alcor GRUPO mizar

Pulsate

Funded by

PHOTONICS 21

PHOTONICS PUBLIC PRIVATE PARTNERSHIP

pulsate@pulsate.eu

www.pulsate.eu

www.linkedIn.com/company/pulsateEU

www.twitter.com/pulsateEU

aimen TECHNOLOGY CENTRE · SINTEF · cea · Fraunhofer IWS · CENTER FOR PHYSICAL SCIENCES AND TECHNOLOGY · mtc Manufacturing Technology Centre · FundingBox · EPIC EUROPEAN PHOTONICS INDUSTRY CONSORTIUM · clerogo

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 951998.

In partnership with

I4MS