

SYNTECS

SUSTAINABLY AND DIGITALLY DRIVEN HIERARCHICAL
LASER TEXTURING FOR COMPLEX SURFACES



NEWSLETTER #3



APRIL 2025

SYNTECS | Project Meeting (M24)

In November 2024 we held our M24 Project Meeting host by FARPLAS in Istanbul, Turkey. This event was an important milestone where we reviewed progress and set future goals.

We're now ready to integrate all the developed modules into the LASEA machine and in May 2025 we anticipate seeing the first tests conducted on the machine – an exciting step towards realizing the full potential of SYNTECS Project!

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SYNTECS | Videos

Project Coordinator video – Here is a testimony of Christoph Zwar, the SYNTECS coordinator from Fraunhofer IWS, as he discusses the groundbreaking SYNTECS process monitoring and its real-world applications.

[WATCH THE VIDEO](#)

Innovations in SYNTECS - In this video, Tobias Steege from Fraunhofer IWS, an application engineer, showcases our first acoustic monitoring prototype using microphones to assess laser process quality in real-time. Anvesh Gaddam from the University of Birmingham demonstrates the inline optical module, featuring a white light source and machine learning to monitor and control laser texturing.

[WATCH THE VIDEO](#)

SYNTECS | Case Studies

Copper Vapour Chamber Innovation - We've enhanced the cooling efficiency of complex-shaped copper vapour chambers using Laser Surface Texturing (LST) to improve water/vapour transport and evaporation, with tested samples included in the project deliverable.

Stainless Steel Mould Inserts - We've developed and tested laser-textured stainless steel mould inserts to enhance plastic part functionality (anti-scratch, anti-microbial) and improve recycled polymer injection moulding, validated using a specialized moulding tool to reduce injection moulding pressure.

Orthopaedic Implant Advances - We've designed orthopaedic implants with enhanced longevity and properties to meet modern healthcare demands, with wetting analysis samples in development and final test results included in the project deliverable.

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SYNTECS | Future actions and events

The first plugin version for the CAD tool is developed and will be demonstrated in the next months.

EFW will present a poster at the sister project Sure2Coat in March. (February 2025). The Sure2Coat ambition is to make a significant contribution to the twin digitalized and sustainable transition and an increased competitiveness of European manufacturing businesses stimulating new innovation ecosystems by developing and integrating sustainable surface treatments for complex shape components for transsectorial industrial innovation.

An EAB (External Advisory Board) meeting will be on March 19 2025. This gives the opportunity for organisations outside the consortium to understand the innovations made, comment on them and suggest future opportunities for development.

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LASEA will install the Fusion Bionic module into the machine during April 2025 with the aim of...

Fraunhofer IWS and the University of Birmingham will integrate the acoustic and optical monitoring module in April 2025, with the goal of monitoring and, in the future, controlling the laser process

SYNTECS will be present with a booth in Laser World of Photonics 2025! Visit us!

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Laser World of Photonics 2025
24th - 27th June • Messe München

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WE LOOK FORWARD TO MEETING YOU.

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SYNTECS IN 2024

During this year, the focus will be on participating in various events, such as conferences, webinars and joint events with other clusters and projects. Training events will also be a priority for the project in 2024!

Stay tuned for more news on SYNTECS developments.

PARTNERS

The consortium consists of world class research organisations including Fraunhofer IWS and Fraunhofer IML (Germany), the University of Birmingham (UK), Centre Technique Industriel de la Plasturgie et des Composites – IPC (France), IST-ID (Portugal), Manufacturing Technology Center (UK) and the European Federation for Welding, Joining and Cutting (Belgium). Bringing their technology expertise are Laser Engineering Applications SA - LASEA (Belgium), Fusion Bionic (Germany), 3 Drivers (Portugal) and Iconiq Innovation Ltd (UK). End users providing application case studies in the automotive, medical, and electronics sectors are Centro Ricerche Fiat - CRF (Italy), Farplas Otomotiv Anonim Sirketi (Türkiye), DePuy Synthes (Ireland), and European Thermodynamics Limited (UK).

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