FLASH

Flexible Laser-Based Manufacturing

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FLASH System specifications

FLASH will merge four advanced laser processing technologies into a flexible machine system, uniting cutting-edge capabilities from European companies on the PRIMA IANUS robotic machining center chassis.

The FLASH system employs three laser sources to meet industrial needs, offering multi-wavelength, high-power processing capabilities for welding, drilling, cutting, and surface treatment.

Synova will develop a fibre coupling unit to combine these sources, overcoming challenges in delivering differing wavelengths, polarisation, and coherencies of light through a two-core fiber.

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Review of case studies: system Specifications

Consortium projects require analyzing partners end-use cases to identify common laser processes. To support this and enhance skills, the Manufacturing Technology Centre (MTC) provided an introductory laser processing course on April 22, 2024, for all FLASH Consortium members.

The training covered laser-based manufacturing fundamentals, aiding rapid up-skilling and helping end-users understand the benefits of laser processing.

It also helped specialists in machine development, AI, and metrology integrate their technologies to maximize the FLASH system's impact.

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Optimizing Laser Manufacturing: Leveraging Machine Learning for Enhanced Efficiency and Quality

In the FLASH-IANUS platform, a machine learning algorithm is pivotal for optimizing laser production by analyzing and predicting the best parameters to achieve desired quality outcomes for various materials, thereby enhancing efficiency and consistency.

Cosmos Thrace (COS) has defined the inputs, outputs, and desired outcomes for the algorithm, drawing insights from scientific literature to refine the model's accuracy and robustness.

Moving forward, COS will collaborate with consortium partners to develop the experimental database and, once sufficient machine data is available, will focus on training the algorithm, developing testing protocols, and incorporating operator feedback to continuously improve the model's recommendations.

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Cloud Environment Setup in FLASH

The ATS team secured internal technical resources, completed a comprehensive review of use case requirements, and conducted brainstorming sessions to explore potential technologies.

They will now focus on system requirements, particularly machine integration with higher-level data management systems, and evaluate Life Cycle Assessment (LCA) and AI deployment options to identify the best software solutions.

These steps aim to ensure a thorough and effective approach to achieving the project's objectives.

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Partners

Prima Additive, DePuy Synthes, Diamoutils, TOFAŞ, EWF, cailabs, 3drivers, ATS Smart Digital Transformation, COSMOS THRACE, aimen, Università degli Studi di Palermo, IMA AUTOMATION, ROBUST AO, mtc Manufacturing Technology Centre, University of HUDDERSFIELD Inspiring tomorrow's professionals

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