EU-Project

PARTNERS



For further information please see: www.ultrasurface.eu



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ULTRA DYNAMIC OPTICAL SYSTEMS FOR HIGH THROUGHPUT LASER SURFACE PROCESSING





In nearly every sector of industrial manufacturing a broad spectrum of sur-

of aesthetical or functional surfaces. In the last years laser based surface

processing techniques have made tremendous technical progress and are

now entering industrial manufacturing on a broad scale. Reduced prices for

short and ultra-short pulsed lasers and enhanced reliability promote espe-

In many applications these laser based surface processing techniques

already achieve highest precision and guality, but often the throughput is

The idea of *ultra*SURFACE is to increase the throughput for laser surface

processing by at least a factor of 10 without any drawbacks in the quality

The runtime of the project is 3 years, starting at the beginning of 2016, with

an overall budget of 8 million EUR. The project is funded by the European

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are fostering laser polishing and laser thin-film processing.

cially laser structuring while new developments in the processing techniques

face processing techniques is used, e.g. for structuring, coating or polishing

Laser Polishing.

THE PROJECT

Laser Structuring.

THE CONCEPT

The increase of the throughput should be realized by using sophisticated optics for specific laser beam manipulation.

Therefore two different optics concepts will be realized and combined with fast and synchronized mechanics, scanner and optics control. Everything is built into a machine specialized for fast laser surface processing.

Optics Concept 1 refers to a dynamic and flexible beam-shaping approach with piezo-deformable mirrors which enables the realization and the fast adaption of application specific intensity distributions. This will allow significant increase in feed speed and track offset and therefore in throughput.

Optics Concept 2 is a beam-splitting approach which allows simultaneous processing with multiple laser beams and thus a significant increase in throughput.

For both concepts the implementation of prototypes is planned as well as their industrial validation in different fields of application (laser structuring, laser polishing, laser thin-film processing).

Laser Thin Film Processing.

IMPACT

Today, existing laser surface processing systems do not fulfil the requirements of throughput and flexibility demanded by the industries. ultraSURFACE will enhance both throughput and flexibility significantly. Thus, laser-based processing will exceed the breakeven point in comparison with conventional surface processing techniques. This will be a breakthrough for high throughput laser processing in nearly all branches of industrial manufacturing.

Acronym	<i>ultra</i> SURFACE
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	High Throughput Laser Surface Processing
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limiting the industrial capability.

of the processing results.

