

EU-Project

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For further information please see: www.ultrasurface.eu

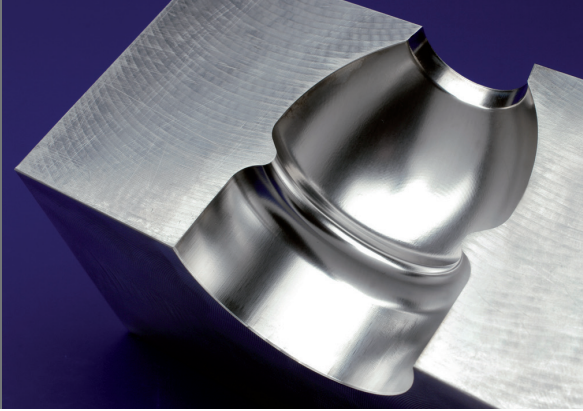


PHOTONICS²¹

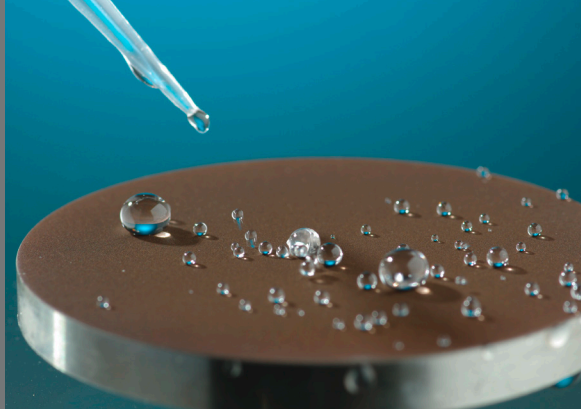
ultra SURFACE

ULTRA DYNAMIC OPTICAL SYSTEMS FOR HIGH THROUGHPUT LASER SURFACE PROCESSING

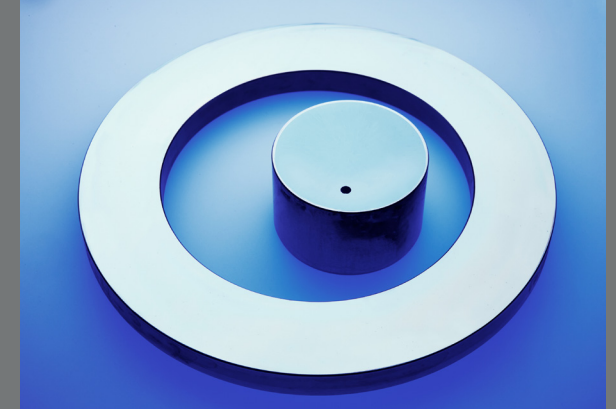




Laser Polishing.



Laser Structuring.



Laser Thin Film Processing.

THE PROJECT

In nearly every sector of industrial manufacturing a broad spectrum of surface processing techniques is used, e.g. for structuring, coating or polishing 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 especially laser structuring while new developments in the processing techniques are fostering laser polishing and laser thin-film processing.

In many applications these laser based surface processing techniques already achieve highest precision and quality, but often the throughput is limiting the industrial capability.

The idea of *ultraSURFACE* is to increase the throughput for laser surface processing by at least a factor of 10 without any drawbacks in the quality of the processing results.

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 Union's Horizon 2020 program under grant number 687222.

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).

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 break-even 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>ultraSURFACE</i>
Project name	Ultra Dynamic Optical Systems for High Throughput Laser Surface Processing
Project no.	687222
Call	H2020-ICT-2015
Starting date	01.01.2016
Duration	36 months

For further information please see: www.ultrasurface.eu

