

PRESS RELEASE

September 3, 2013

Prototype machines for laser polymer welding using high-brilliance lasers

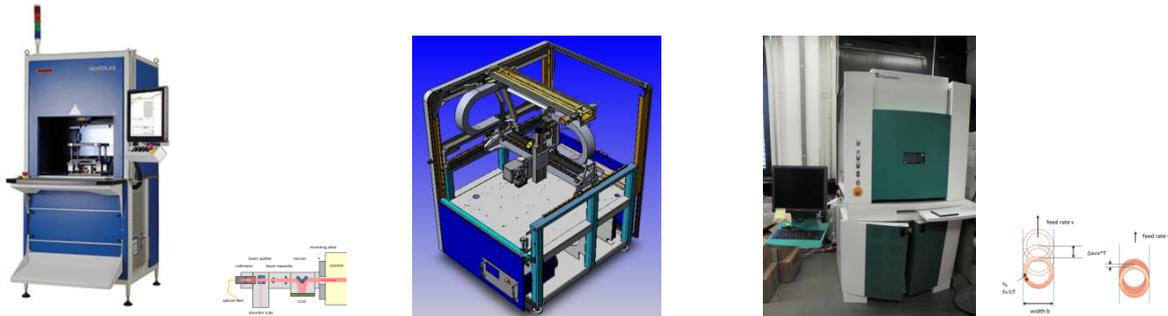
After three years of intense work, the European project *PolyBright* presents its final results. Three laser welding prototype machines using a high-brilliance (fiber) laser have been developed two of which will be exhibited from October 16-23 at the K2013 plastic trade fair in Düsseldorf, Germany.

The first prototype – a high-flexible dynamic mask welding unit developed by Leister (CH) is a real novelty in laser polymer welding, since it allows the weld contour change within minutes due to the use of a Liquid-Crystal-on-Silicon (LCoS) reflective mirror. Additionally, with the build-in scanner and beam shaping facility using transmissive diffractive optical elements, contour welding and quasi-simultaneous welding is feasible as well. The beam source is a polarized fiber laser, emitting at 1070 nm with 70 W maximum output power (see below left).

The second one is a scanner+axes QSLW machine developed by Cencorp (FI) which allows to apply every utilized laser contour welding method (contour, contour TWIST, quasi-simultaneous) along the large working area (see below mid).

The third machine is the TWIST prototype developed by Arges (DE), IPG (DE) and ILT (DE) with its 1567 nm fiber laser wavelength and wavelength-adapted scanner focusses on the TWIST contour welding process and the use of 1567 nm instead of regular 1070 nm fiber laser wavelength to achieve weldability of high-opaque coloured polymers, especially welding white-white configuration (see figure below right).

The Dynamic Mask as well as the Quasi-Simultaneous prototype will be exhibited during this year's "K 2013" plastics trade fair 16.-23.October in Düsseldorf, Germany. The PolyBright project partners are going to present results in booth 07 C 03, located within the hall 7 "Science Campus" exhibitors.



**Left: Dynamic Mask prototype for high-flexible simultaneous laser welding + schematic (fiber laser 1070nm)
 Mid: Prototype for contour welding, quasi-simultaneous welding, TWIST welding (fiber laser 1070nm)
 Right: TWIST welding prototype (fiber laser 1567nm) + TWIST schematic**

POLYBRIGHT project: general information

POLYBRIGHT, the FP7 project on extending the process limits of laser polymer welding with high-brilliance beam sources, started in October 2010 with 18 partners from 9 countries and will end in October 2013. The aim of the project was to develop high power high brilliance lasers with new wavelengths between 1500 and 1900 nm which are adapted to the absorption properties of polymers. The EC has allocated € 6.6 mio of public funding to this project with an overall budget of € 10.2 mio. www.polybright.eu

Contact

Dr. Alexander Olowinsky, Polybright Co-ordinator: alexander.olowinsky@ilt.fraunhofer.de +49 241 8906-491
 Fraunhofer Institute for Laser Technology ILT, Steinbachstraße 15, DE 52074 Aachen