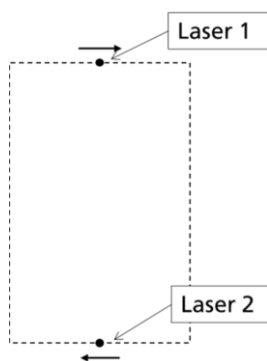


Highlight

Aachen,
August 27, 2012

Laser polymer remote welding in "Dual-head QSLW" configuration

Figure 1: Fiber laser polymer welding using the Dual-head QSLW method with two scanners and two laser beams



PolyBright's WP4 partners (VTT, LUT among others) carry out welding experiments with fiber laser radiation. It is demonstrated that Dual-head quasisimultaneous laser welding (QSLW) technique, which is an extension of state-of-the-art QSLW, allows to realise large welds quasisimultaneously in a remote arrangement of work piece and scanner head.

Two times longer welds can be welded with Dual-head QSLW technique compared to conventional QSLW within the same time interval and by using the same scanning frequency. 1000 mm long welds can be realised with Dual-head QSLW technique at short welding time. Heat deposition takes place more smoothly and high laser powers which could destroy the material can be avoided.

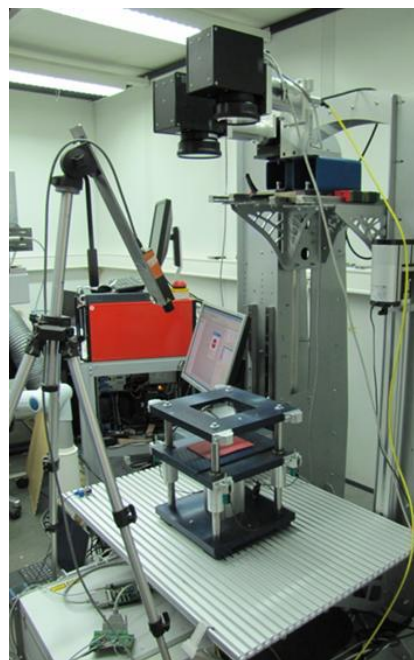


Figure 2: VTT's experimental setup of Dual-head QSLW welding

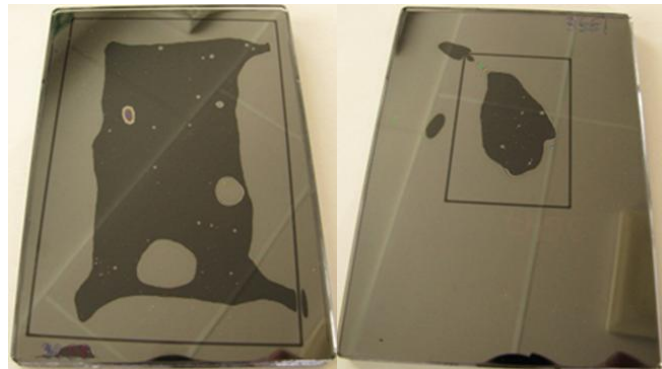


Figure 3: Welded Polycarbonate samples, left: 450 mm with Dual-head QSLW, right: 225 mm with QSLW. P=105W, scanning frequency $22s^{-1}$, 10m/s, 100 scans.

If Dual-head QSLW would be used together with VTT's Intelligent Power Control (IPC) system, which had been reported within PolyBright WP7, the method will become even more flexible and generally improved.

Contacts at VTT:

M.Sc. Petri Laakso
Phone +358 40 544 5646
petri.laakso@vtt.fi
Tuuantokatu 2
53850 Lappeenranta, Finland

Contacts at Fraunhofer ILT: (project coordination)

Dr. Alexander Olowinsky (project coordinator)
Phone +49 241 8906-0
alexander.olowinsky@ilt.fraunhofer.de
Steinbachstraße 15
52074 Aachen, Germany
www.ilt.fraunhofer.de

