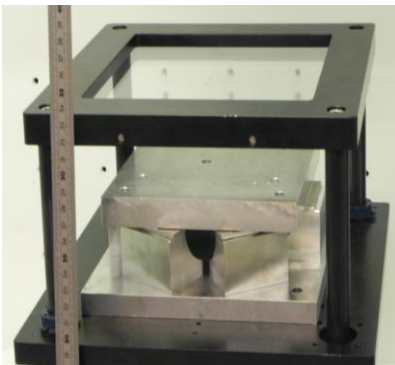


# Highlight

Aachen,  
February 26, 2013

## Selection of a White Goods application for polymer welding with high-brilliance laser beam sources

Figure 1: Clamping device for laser welding of a selected White Goods component (door handle + cover).  
Parts' fixture plate will be assembled on lower mounting plate, which is lifted and pressed against the upper glass during welding.



Subsequently to PolyBright's basic workpackages like "Lasers", "Beam shaping/scanning", "Welding processes", "Machines", "Materials", workpackage 8 (Validation of laser polymer welding processes) deals with demonstrating laser welding of commercial components from several industries like Automotive and White Good.

Characteristic for polymeric White Goods parts is their brilliant-white appearance. To match laser welding demands, polymer compatibility, upper part's transparency as well as lower part's absorptivity must be assured even for these opaque colours.



Figure 2: Door handle + cover, (3D version A) of a washing machine (Electrolux)



Figure 3: Door handle + cover (2D version B) of a washing machine (Electrolux)

Within WP6 (Materials), several polymeric colours and absorber additives have been tested for laser welding. IPG's fiber laser with 1567 nm is suited to weld white-white combinations together with Treffert's infrared absorbers and white pigments. For the test case, a door handle with 2D welding contour (Figure 3) is selected. Compounds for door handle and cover will be supplied by Treffert for

- **1. PC, white** cover on **ABS, white** door handle
- **2. PC, grey** cover on **ABS, grey** door handle

Door handles and covers are going to be injection molded by Electrolux according to this definition. To enable good mechanical contact for optimum heat flow between lower and upper component, cover's edge (Figure 3 right) will be mechanically machined (flattened) after molding. An aluminium fixture is manufactured and aimed to be integrated in the clamping unit (Figure 1) to carry the joining partners, lift up and press them against the laser-transparent glass plate during welding.

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