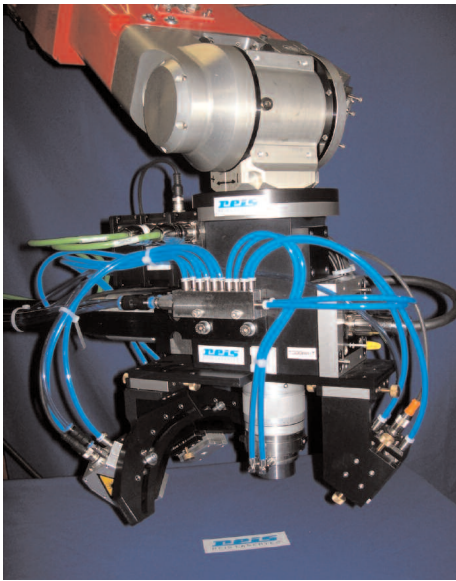
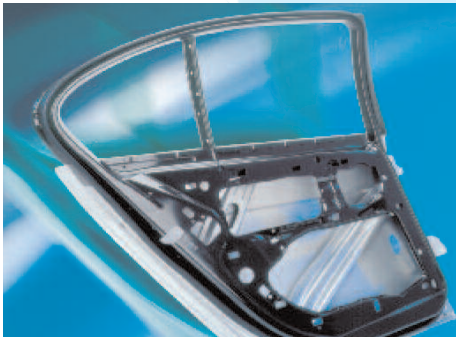


Beam Control Optic (BCO)



The automotive industries use moldings of different sheet thicknesses for optimization of weight in body shells or doors. Basic products of these moldings are so-called »Tailored Blanks« or »Engineered Blanks«, zinc-plated sheet metals of different sheet thicknesses that are welded to one blank. In further production in presses these blanks are reshaped by deep-drawing which puts high demands on the weld seam quality.

The Beam Control Optic BCO is a custom-made laser processing head for the generation of high-quality laser seams in the »Engineered Blank« production.

Thanks to integrated triangulation sensors it is possible by means of the optic, to recognize the step in the joining area up to a minimum nominal step thickness of 0.3mm and to control the laser beam towards this position. Measurement will be taken 1.5mm ahead of the processing point. Beam tracking is ensured by a highly dynamic tilting mirror integrated in the optics. The optics are water-cooled and allow the use of an Nd:YAG laser (1064 nm) up to 6 kW laser capacity with a focal length of 200 mm. The high dynamics of the tilting mirror system compensate without any difficulty for normal robot vibration within a range of +/- 1.5 mm perpendicular to the seam. Thus allows the use of low cost handling robots.

The system can locate the seam start point at speeds of up to 8m/min. Because of the negligible distance between the measurement and processing points, path radii of up to 60 mm can be followed without the need for advance computation. Therefore interfacing with the handling robot can be achieved with just a few I/O lines. The robot simply acts as a guiding machine. Setting and teaching of the optics and the processing path is fully supported by the system software. Optionally, a cross hair camera is available as further a programming tool.

For integrated quality control a seam inspection based on triangulation sensor technology may also be provided to directly inspect the seam surface in the follow up of the process.

The system was developed on behalf of ThyssenKrupp Steel and was honored with the laser technology innovation award of the symposium AKL e.V.

We are always at your disposal for any questions or further information.

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