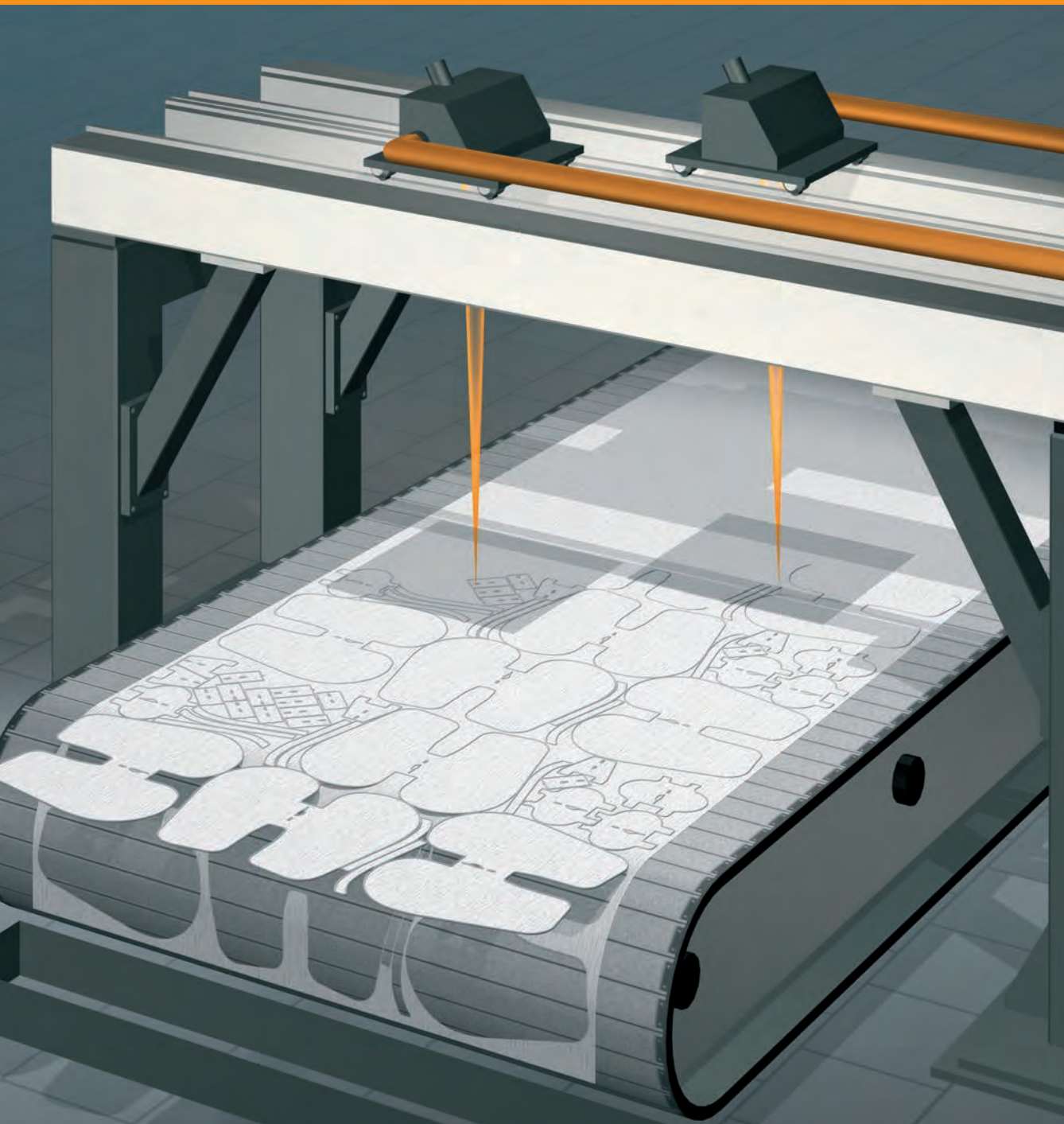
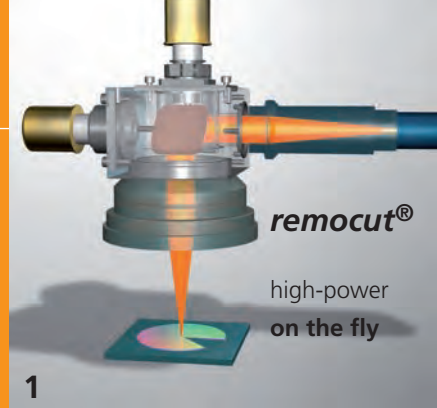


MODERN PRODUCTION TECHNOLOGIES
FROM THE FRAUNHOFER IWS





REMOTE LASER CUTTING OF AIRBAG WEBS

During remote-processing, tilting mirrors bend the laser ray with highest dynamics across the material. Thus, positioning times between individual processing steps are minimized and the processing speed of complex geometries keeps almost constant. The speed of the laser spot can reach several meters per second so that complex material processing, for example cutting airbag components, is completed in a few seconds.

The Fraunhofer IWS Dresden develops customer-specific processing optics and software solutions for process control and production preparation for the industrial application of remote technology for welding, cutting, cleaning and engraving. The combination of the remote technique of fast beam movement with a continuous material feed (several meters wide) leads to a very powerful and space-saving technical system.

System concepts with industry-proven remote processing optics

Until 2007, the form cutting of airbags from up to three meter wide polyamide fabric webs was done almost exclusively with gas-assisted laser cutting. Although productivity could be increased through the use of multilayer systems, on which up to 30 layers of material can be cut at the same time, the separation of the layers remained very expensive. Also, the cut quality of the individual layers proved inconsistent. Therefore, for high quality standards, the number of layers had to be drastically reduced.

0 System principle of remote laser cutting "on the fly" with two moving scanning heads

1 Principle of the high-speed beam deflection



Based on many years of experience in remote processes, the Fraunhofer IWS together with HELD Systems has developed a workable industry concept. The contiLAS system realizes a processing “on the fly” in two dimensions. The remote technology allows the implementation of a laser cutting process on any cutting contours and material widths. One or several scanners can work on the fabric webs. Thus, material handling speeds of up to 25 meters per minute are achieved.

The advantages over gas assisted laser cutting are obvious:

- reduced part cycle time when cutting material from the coil
- improved quality of the cut parts
- processing of wide webs with the laser
- improved material usage/utilization
- elimination of separation materials
- no subsequent separation of the parts is required

The system is suitable for all applications where a space-constrained high speed beam deflection on large areas is to occur such as:

- flexible foil cutting
- welding of heat exchanger plates
- cutting of upholstery and filter materials
- processing of high performance fiber reinforced composites

With seven systems based on the technology of laser remote cutting “on the fly” successfully transferred to industry by the end of 2012, productivity has been shown to have increased 50 – 90% when compared to previous multi-layer cutting technology.

- 1 Laser assisted airbag production system Contilas 2500 2Sc of Held Systems Deutschland GmbH
- 2 Passenger automobile side airbag