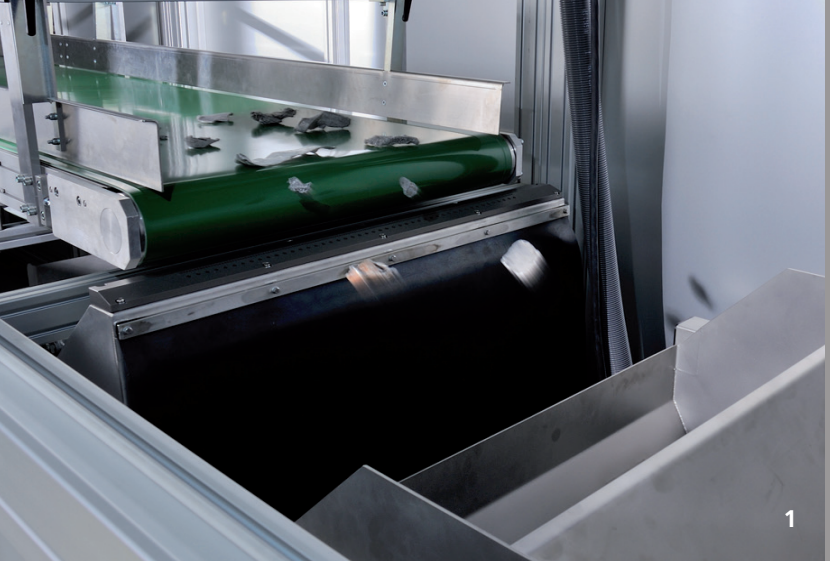

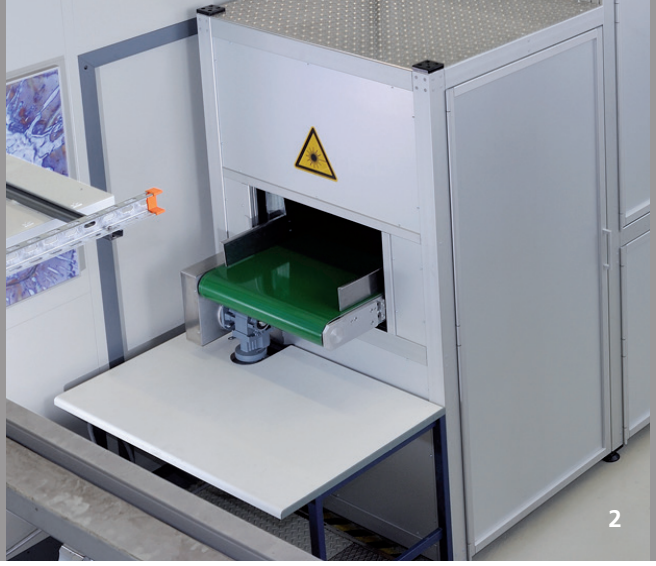

HYBRID LASER IDENTIFICATION OF MOVING MATERIAL FLOWS – HYLIBS

Task

In order to mechanically recycle secondary raw materials and to extract mineral resources, the processing industry has to generate material flows having clearly defined compositions. The inline analysis needed for this, however, is only partially available. Fraunhofer ILT has developed an inline method for the direct laser analysis of moving objects; it has already been successfully tested for sorting flat production scrap metal. In order to make this method more economically attractive for other applications and to thereby open up further markets, it shall be transferred to material flows comprised of individual grains with any possible 3D geometry.

Method

In the project HyLIBS, laser-induced breakdown spectroscopy (LIBS) has been combined with a laser-light section measurement of surface geometry and optical detection in order to create an integrated process approach. Here, surface features of a moving stream shall form the basis for optimizing the measurement positions. The geometric information will be used to minimize the dependency of the analytical results on the material topography and to gain additional criteria for object classification.

Result

HyLIBS has made a laser-measuring method available which enables the inline analysis of economically important material flow rates, in particular of metallic shredder scrap. As it is a combined process with simple interfaces, customers can integrate it without significant development of their own into a process line. The solutions developed here were implemented in the iSort demonstration plant at Fraunhofer ILT.

Applications

Sorting based on LIBS is particularly suited to differentiating and classifying different materials in the shortest possible time thanks to a multi-element analysis. It can be used not only to segregate various metals such as steel, aluminum, copper, zinc, and titanium, but also to finely differentiate individual alloys. The new demonstration plant can be flexibly adapted to different materials so as to provide practical solutions for customized sorting tasks.

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1 Ejection of bulk material after the direct laser analysis.
2 iSort sorting plant.