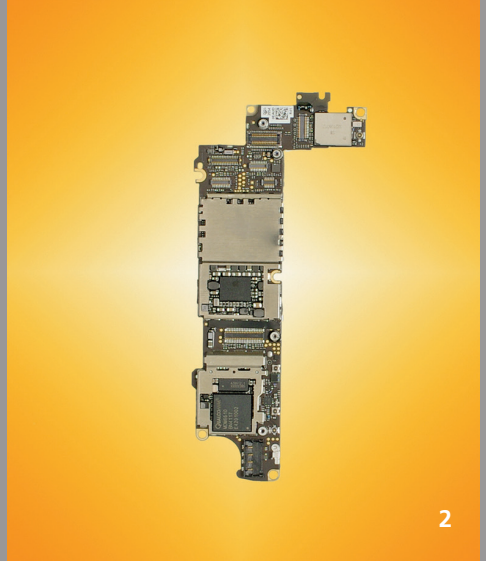
1



2

RECOVERY OF VALUABLE MATERIALS FROM END-OF-LIFE ELECTRONICS

Task

Modern electronics contain a variety of materials, e.g. so-called technology metals, which are considered as valuable or critical raw materials in Europe. At the end of the useful life of equipment, these raw materials are, however, only partially recovered with current recycling methods.

Method

Fraunhofer ILT coordinates the European Collaborative Project »ADIR«, in which technological solutions are developed to recover individual materials in an automated process. To this end, the valuable electronic items should be identified and selectively removed to make them available for recycling in separated fractions. As an example, the methods are being tested for the processing of mobile phones and of commercial electronic boards from network technology.

Result

Laser technology plays a crucial role at several key points of this approach. On one hand, the laser equipment is needed for the identification of the valuable components because, in general, there are no data available from the manufacturers or their suppliers. For this purpose, methods are employed to conduct materials analysis, geometry measurement and object detection. On the other hand, the laser is also used as a tool to selectively remove valuable components or modules, for example, by laser unsoldering or laser cutting.

Applications

The project »ADIR« is initially aiming at processing electronics from the telecommunications industry. It strengthens an economically and ecologically attractive recovery of old electronics by providing a technology for improved recovery of raw materials. The introduction of networked and intelligent electronics in more and more private and economic goods will, in the future, lead to a broad application potential of laser-based recovery.

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1+2 Electronics from end-of-life smartphones with valuable materials for recycling.

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