ADIR – NEXT GENERATION URBAN MINING
AUTOMATED DISASSEMBLY, SEPARATION AND RECOVERY OF VALUABLE MATERIALS FROM ELECTRONIC EQUIPMENT

Call Spire7
Recovery technologies for metals and other minerals

Duration 9/2015 – 8/2019

Cord Fricke-Begemann, Fraunhofer ILT
2017 EU process industry conference, Sep. 19, Brussels
ADIR project case study

1. The EU/ SPIRE needs
Recovery of raw materials from end-of-life products.
SPIRE goal: 20% less primary raw material usage.

2. The Project Solution
Selected disassembling of products will replaced non-selective mechanical processing.

3. Value to Customers
Closed material cycles will provide high quality secondary raw materials and avoid losses to slag dumping EU export.

4. How will this happen?
Automated disassembling machines will provide enriched material fractions to the process industry.
ADIR expected sustainability impact

- in EU annually 200 mio. recyclable mobile phones and 60 mio. PCB from personal computers
- today no recovery of Ta/Nb/W from post-consumer electronic scrap
- added value from sorted technology metals fractions will support recycling activities and reduce import dependencies by up to 35% (e.g. for Ta)

part of the „wheel of metals“

[Metal recycling – opportunities, limits, infrastructure, UNEP Int. Resource Panel 2013]
ADIR outputs for other SPIRE projects

- concepts for automated selective disassembling,
- technology for robotic handling,
- material segmentation,
- fast localized material identification,
- contact-free extraction of high-value components,
- metallurgical treatment of enriched secondary raw materials
ADIR concept – key technologies

sequence control, data base

- opening case, removal rechargeable battery, (S0), extraction PCB
- 2D image processing
- 3D laser measurement
- material analysis
- machine I
- robot
- container
- S0

- 2D LIBS
- machine II
- machine III
- laser processing
- unsoldering
- cutting
- S1, S2, S3, RF

output S0
output S1-S3
output RF

Fraunhofer ILT patented approach
ADIR – next generation urban mining

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