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Regaining Indium from e-waste Study results

Conference: „ICT Remarketing & Recycling – Renewed Products for a Sustainable Economy“

Thursday, 4th March 2010 – CeBIT green IT, Hannover



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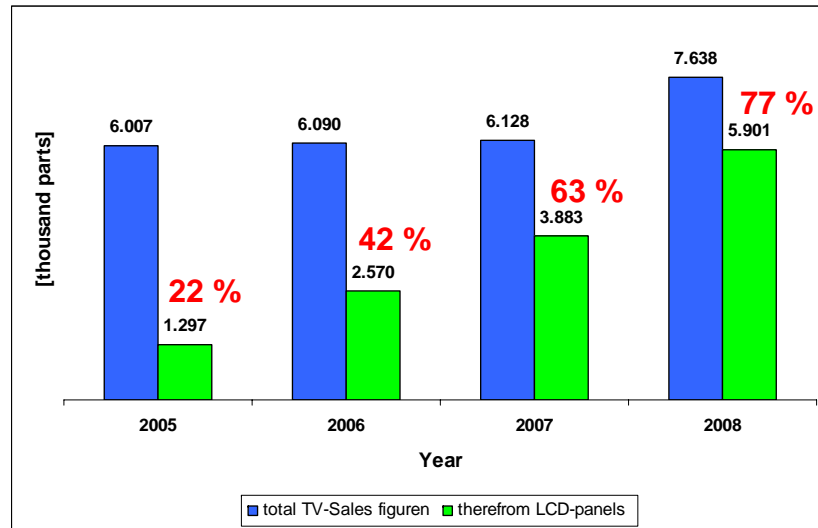
History

- 1989 Founded as Institute for Environmental Technology and Analytics
- 1991 Associated Institute of the University of Duisburg-Essen
- 1998 Renamed in Institute for Energy and Environmental Technology

Figures (2010):

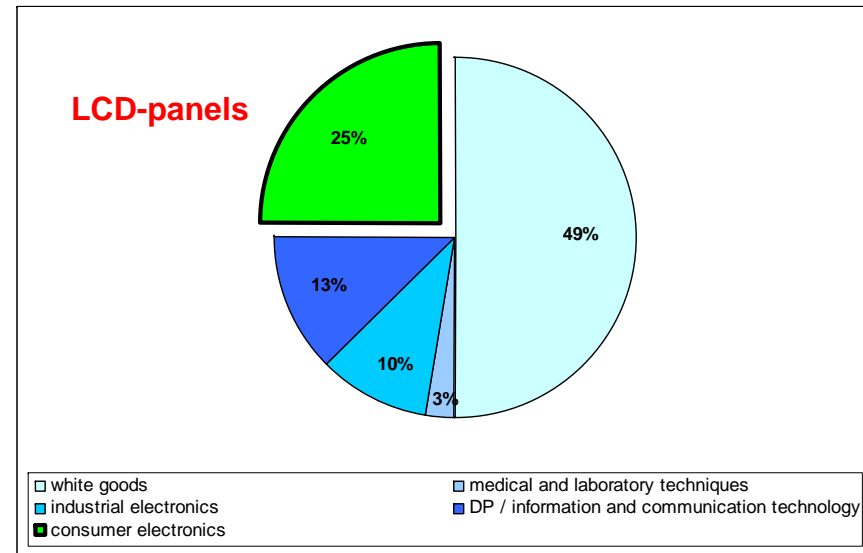
Employees	145 (average)
Offices/Laboratories	2.400 m ²
Pilot Plant Area	4.000 m ²
Industrial Cooperations	350 (current)
Annual turnover	8 Mio €

Development of TV- sales figures



Reference: BITCOM

Estimation Electronic Waste advent



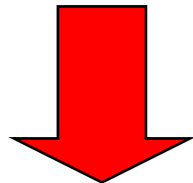
Reference: bvse

- LCD-panels fraction increase continuous
- 17,2 million consumer electronics sold in 2008 therefrom 44,3 % TV
- fraction to dispose of LCD-panels increase time-delayed
- on presently practice a larger quantity of indium will be irrecoverable

Motivation

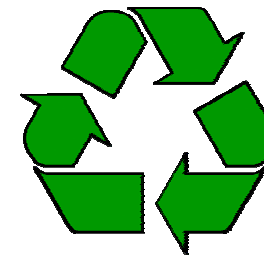
Motivation of the research and development project:

- limited amount of indium
- but increasing demand for new technologies
- presently energy recovery



Target solution:

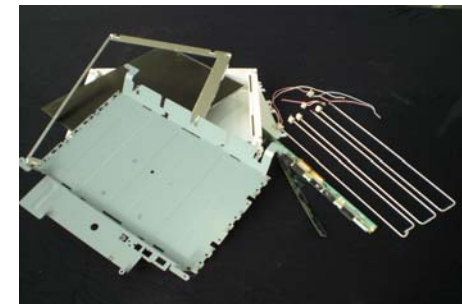
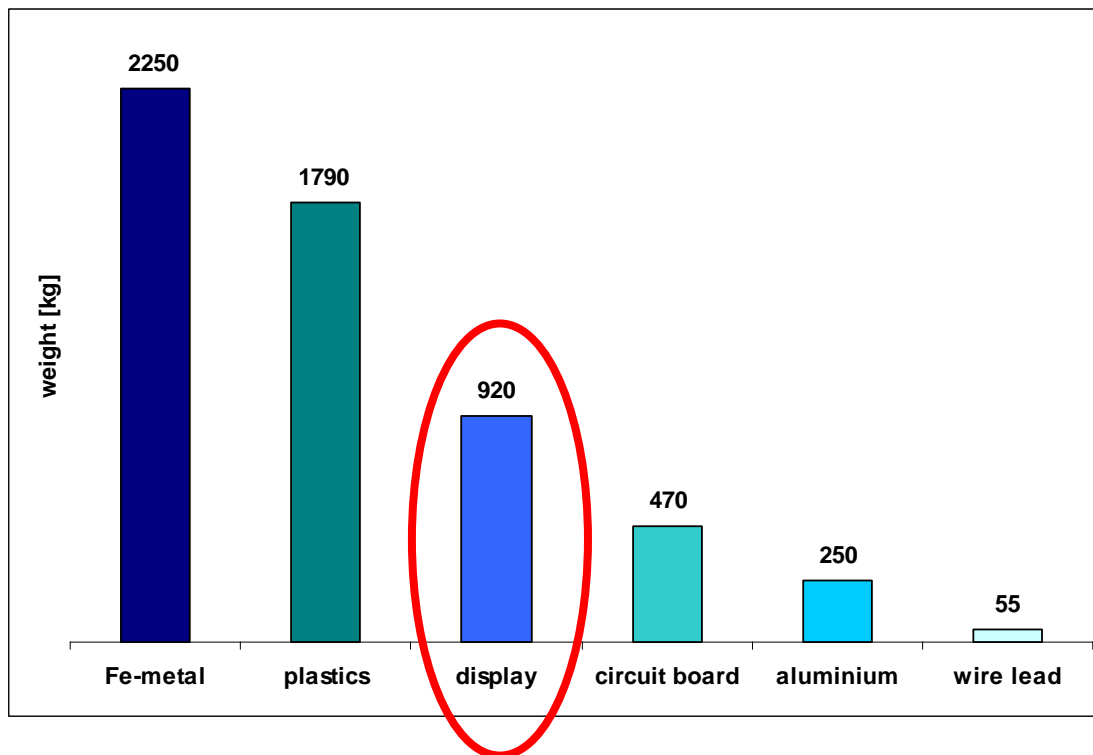
- research new disposal strategy for the containing indium fraction
- research accumulation procedure for indium
- comprise cycle of materials



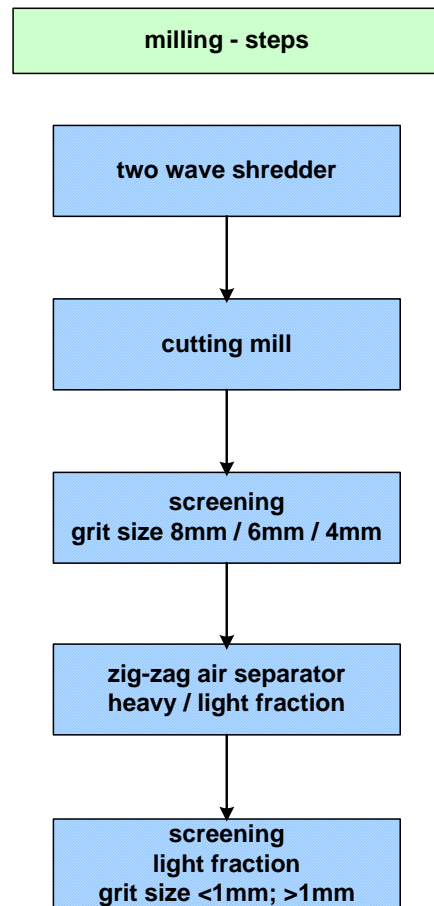
Workflow

First steps:

- analysis accumulate LCD fraction for disassembling
- research excavator desing
- issue material balance after disassembling 2.500 LCD



display fraction – mechanical treatment
target: qualitative analysis and material classification



- theoretical 0,07 mg indium in one cm² attached
- analysis of indium accumulation after milling-steps
- research functional adapted process



achieved results of analysis
FEM