

The Need for LCD Recycling

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METALS · RECYCLING

Liquid crystals are currently used in a wide variety of applications ranging from small electronic displays such as digital watches to 100-inch TV Liquid Crystal Displays (LCDs). According to NDP Display Search global, the total TV LCD sales in 2010 were 250 million, of which more than 110 million units were CCFL LCD's (See Fig. 1).

national legislation and implement, stipulate that components containing mercury and liquid crystals must be removed from LCDs on disposal. WEEE recycling companies are currently struggling to comply with these directives.

The majority of recyclers use a manual disassembly (85% according to a WEEE Forum Survey 2017) process to remove the mercury lighting tubes and liquid crystal panel which is a slow and labour

WEEE recycling market is now rapidly increasing - they represent the recycling challenge for the next 15 - 20 plus years.

There is a business continuity from the rapid decline of CRTs with new opportunities arising in an evolving market, e.g. LCD recycling and accessing Critical Raw Material (CRMs) such as indium.

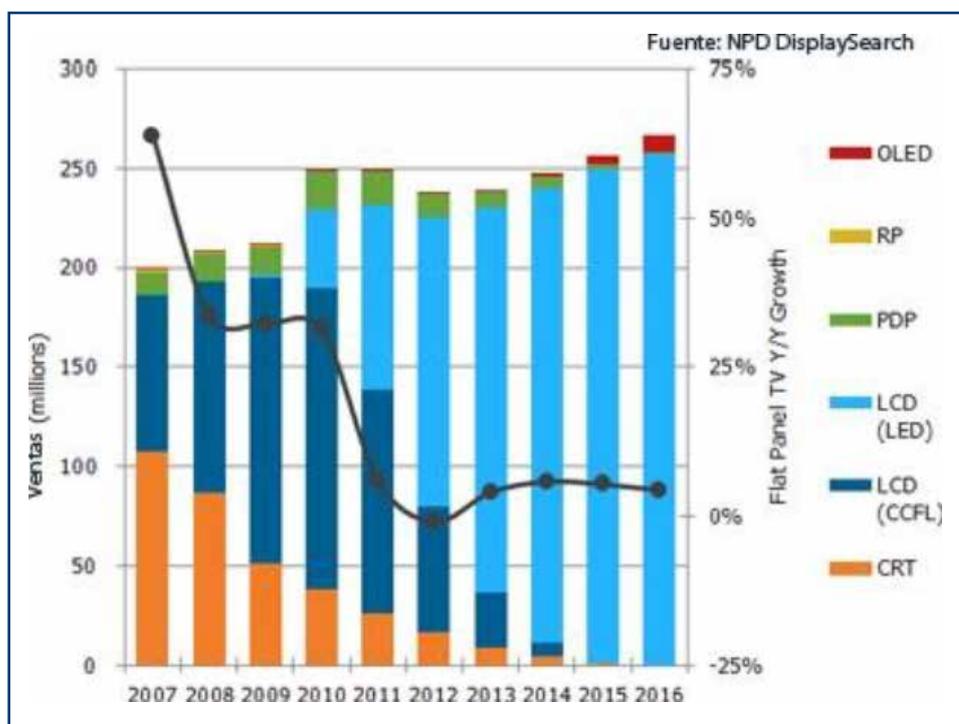


Figure 1. Global TV sales forecasts according to their technologies between 2007 - 2016 (NDP Displays Search, 2012)

Given that many LCDs have a short lifespan of 7-8 years, a large amount of LCDs are made redundant each year and require proper disposal. LCDs now represent 10-20% of the waste display screen intake at recycling facilities with volumes rising each year while the remaining 80-90% are cathode ray tubes (CRT) displays.

The recycling of LCD panels poses a particular problem for electrical and electronic equipment (EEE) producers and hence their designated recyclers. The WEEE2 Directive³, which all EU member states must transpose in

intensive process as LCD displays have a complex internal structure which consists of layers of circuit boards, mounting frames, enclosure cells, fluorescent tubes, liquid crystal glass panel, filter sheets and typically between 100 to 150 screws. The difficulty of LCD disassembly combined with high costs has led to a situation for a tendency to stockpile LCDs at recycling facilities across Europe.

Given that LCDs have an average 7-year life time (Zhuang, 2012) and the amount of LCDs appearing on the



ReVolV

The ReVolV project has demonstrated the latest machine in its series called ALR 3000© for fully automated high-speed recycling of LCDs enabling capitalization of this particular market opportunity. This first machine is designed to process CCFL- LCDs, while the technology is designed to be adaptable to LEDs.

See www.revolvproject.eu for more information.

To contact the ReVolV Project please email info@revolvproject.eu



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