

ALR

INNOVATIONS



AUTOMATED LCD RECYCLING



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ALR Innovations has developed a state of the art recycling technology which through a fully automated process removes the hazardous waste materials from LCD flat screen panels and monitors. The process has been developed to be compliant with the European WEEE Directive of 2002. The company's key metrics for the machine design include, high reliability, cost effective operation in demanding environments, low maintenance and high quality end user interfaces.

The technology is a result of three years of research and was a collaborative effort between the Irish Environmental Agency (funded the project), an environmental inspector at European level, mercury handling specialists, WEEE Ireland, recyclers and the University of Limerick. This collaborative approach has ensured that the technology meets the practical needs of recyclers while conforming to current legislation and is designed to comply with the WEEELABEX industry standard.



Automated Solution

ADVANTAGES

- HIGH THROUGHPUT — 80 LCD / HR
- LOW LABOUR COST
- LOW OVERHEADS
- SEPERATION OF HAZARDOUS MATERIALS
- EASILY SCALEABLE
- EASE OF INTEGRATION TO CURRENT OPERATION
- FLEXIBLE VOLUME
- NON SPECIALISED CONSUMABLES



Removal of Cold Cathode Fluorescent Tubes (CCFLs) which contain the hazardous material mercury is a regulated requirement of the Waste Electrical and Electronic Equipment Directive (WEEE) which was implemented within the European Union in 2003. Removal of the Liquid Crystal (LC) material is also a regulatory requirement under this Directive.

The WEEELABEX is an industry standard, due to be implemented by the 31st December 2013 by the WEEE Forum compliance schemes, which will includes a more stringent recycling standard for LCD Flat Panel Displays. Current discussions are on-going with Genelec regarding the European standard. The latest report states "Crushing or compacting is not permitted prior to treatment."

Innovative Technology at Work For You

ALR Innovations automated LCD disassembly process is designed to safely remove the hazardous CCFL tubes and LC material prior to the LCD been recycled. The process conforms to current legislation.

Key Benefits to The Recycler:

- ✓ Maximized release of value content from LCD waste stream
- ✓ In-house recovery of valuable materials
- ✓ Efficient and high volume processing

- ✓ Three distinct waste streams



LCD Shell Fully Recyclable



Hazardous CCFL Tubes

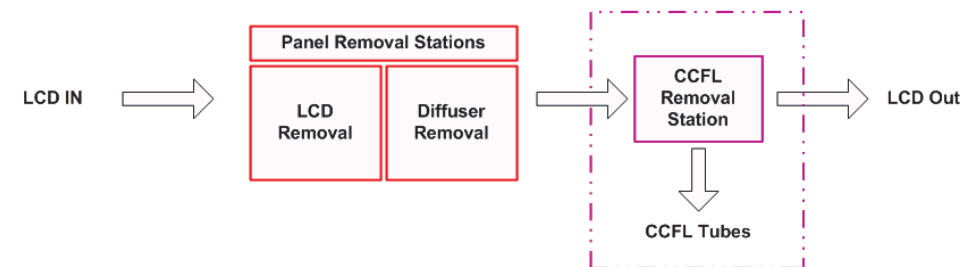


LC Material

GENERAL SPECIFICATIONS

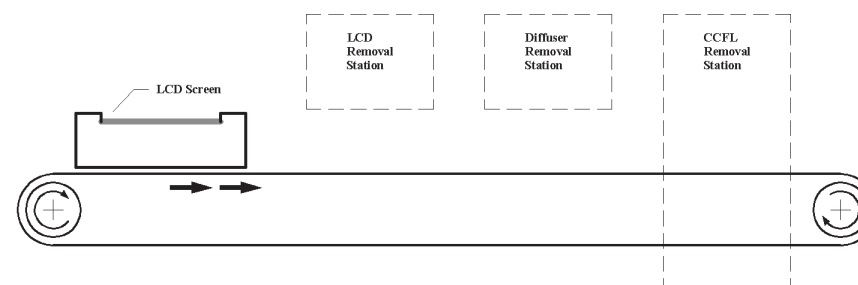
- THROUGHPUT - 80 LCDS / HOUR
- ALL FLAT SCREEN MAKES AND MODELS WITH INTERNAL ARRAY BACKLIGHTING
- SAFE SEPERATION OF HAZARDOUS MATERIALS
- FULLY AUTOMATED PATENTED PROCESS AFTER THREE YEARS OF DEVELOPMENT

AUTOMATED PROCESS

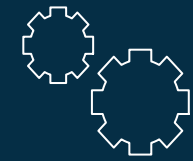
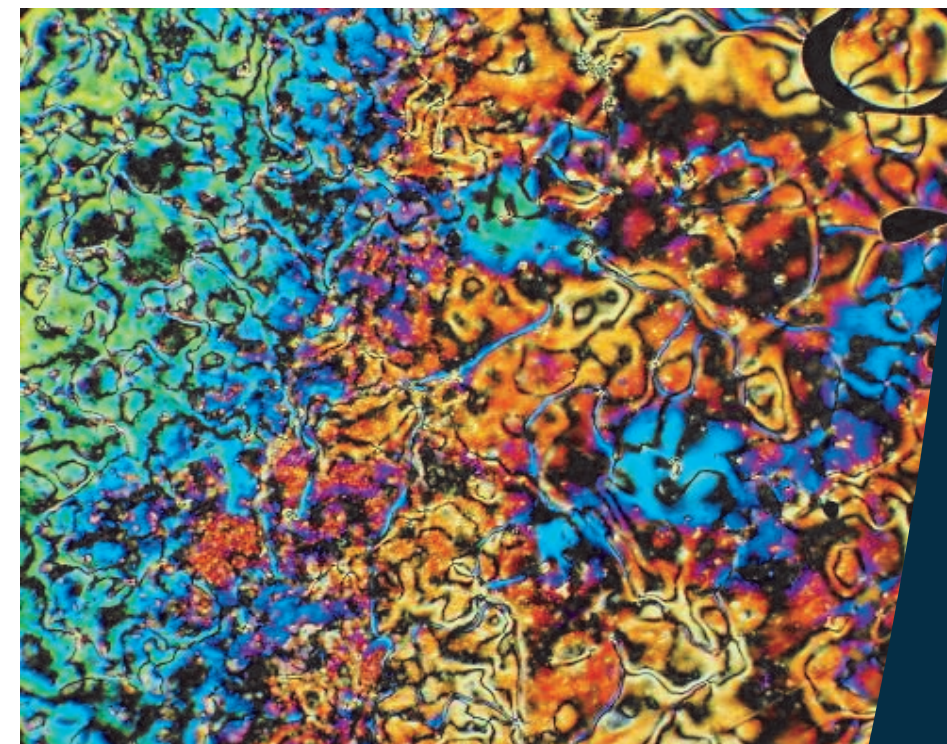


The process comprises of three distinct phases:

- 1) LC Panel Removal
- 2) Diffuser Panel Removal
- 3) Hazardous CCFL Removal



Liquid Crystal Material



INDUSTRY READY

ALR Innovations has partnered with a leading European industrial automation company who has 25 years of proven experience in the manufacture of industry ready automated machines.

Key metrics include high reliability, low running cost, operation in demanding environments, low maintenance and high quality end user interfaces



HUMAN MACHINE INTERFACE

- Ease of operation
- Low maintenance
- Provides safe work environment
- High reliability
- Minimal Training



DATA TRACKING

Management of WEEE waste processing is important in two respects. The recycler is commonly paid for processing on a per LCD basis. Hence accurate data tracking is essential. Also Important for the determination of infrastructure / plant resizing and scalability studies. Such data is automatically logged and relayed back to remote office peripheral PCs