ERDWICH
... SHREDDING UNLIMITED ...

PROCESSING OF LCD SCREENS

UNDER COMPLETELY CONTROLLED PROCESS CONDITIONS.

WITH GREATEST EFFICIENCY.
FOR SIZES UP TO 55".

Over many years now, ERDWICH has already established itself as a leading manufacturer worldwide of recycling technology for WEEE and is offering, for this purpose, well-engineered complete system solutions and stand-alone machines.

We specifically expanded our range of plants for the recovery of reusable materials from LCD monitors and the related complex processing of components containing mercury. Due to the amount of pollutants they carry, LCD monitors have to be classified as "hazardous waste" in terms of the German General Administrative Regulation (AVV) and be registered in the German Electrical and Electronic Equipment Act (Elektro G) under category 3.

Landfilling has to be barred completely, as the quotas relating to recovery and recycling apply to these devices, too.

The only effective solution for these materials is the following useful approach: Safe collection, removal of pollutants and separation of the residual waste in relation to the recycling rates.

The main challenge with regard to the removal of pollutants is to remove the mercury containing gas discharge tubes without problem. To enable this process, the multilayer polarization film and the diffusing panel must first be removed.

ERDWICH has developed two tried-and-tested machine technologies:

- **The monitor sawing plant for sizes between 15" and 25"**
- **The robot-based plant for sizes between 25" and 55"**

ERDWICH
... SHREDDING UNLIMITED ...

ALL OF YOUR REQUIREMENTS ARE IN EXPERTS HANDS WITH US.

As an owner-managed company, we are able to offer you personal consulting, short reactions times and customized solutions. Combined, of course, with comprehensive services and first-class quality made in Bavaria.

Whether for refrigerating devices, washing machines, electronic waste, air coolers, printed circuit boards or other applications, ERDWICH always offers a most economical and technologically advanced solution.

We look forward to your challenges!

Welcome to ERDWICH!

Core competencies:

- **Shredding machines**
- **Plant engineering**
- **Service**

Stand: 0416

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PROCESSING OF LCD SCREENS

OPTIMAL RECYCLING OF MONITORS CONTAINING MERCURY.

www.erdwich.com

Made in Bavaria

PLANT ENGINEERING

LCD PROCESSING.
SAWING PLANTS.
ROBOT-BASED PLANTS.

Processing LCD display devices up to 55" under controlled process conditions!

The mercurial background lighting contained in LCD display devices is regarded as a hazardous substance within the waste from electronic equipment. It has been classified by the legislator as a substance which has to be processed separately, whereby special conditions must ensure that there is no risk for nature and for humans due to mercury.

New special processes developed by ERDWICH through practical application guarantee that the most diverse LCD display devices up to a size of 55" can be recycled under controlled process conditions. For this purpose, two plant designs are available.

Monitor sawing plant for sizes between 15" and 25"

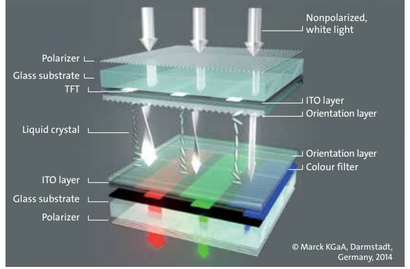
On these devices, the layer of mercury-contaminated background lighting is contained in the upper and/or lower section of the flat screen monitor. Using the bandsaw technology with automatic positioning, these are cut off in three work steps, so that the monitors are easy to open afterwards. Thus, the mercury containing backlighting (CCFL) in the edge strips can be easily removed.

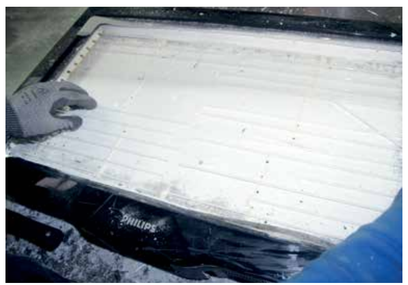
Robot-based plant for sizes between 25" and 55"

The robot-based plant engineering allows the processing of 45 LCD devices per hour of the most diverse sizes between 25" and 55". Owing to the complex sensor and control technology, an absolutely safe process sequence is guaranteed at all times. Thus, for example, the milling cutters, which have been specially developed for this processing, are automatically checked by a camera after each process. In this way, possible fracture of a milling cutter and the degree of wear of the tools can be permanently controlled for predictive maintenance.

Innovative technology for the protection of our environment. Processing of LCD screens by ERDWICH.

DEPENDING ON THE TYPE OF EQUIPMENT, THE CATHODE RAY TUBE IS COMPOSED OF UP TO 7 LAYERS.





PROCESS STEPS ROBOT-BASED PLANT

Process step 1:

The individual monitors are fed onto a conveyor belt and conveyed automatically into a closed processing chamber. In this processing chamber, the device is pushed into the process position.

Process step 2:

In the machine housing a jointed-arm robot equipped with a camera system and a milling spindle is located. Using the camera, the contours of the screen are measured.

The robot cuts open the complete structure of the LCD screen. During the process, the fine swarf produced from this operation is automatically extracted by a filter system.

Process step 3:

Once the screen has been cut open, it is pushed out by a pneumatic device and discharged via a belt conveyor into a closed chamber where a vacuum is maintained. Therein, the different layers of the display device are removed.

Subsequently, within the chamber, the backlighting containing mercury (CCFL) located behind these layers can easily be removed and disposed of in a closed waste disposal container. During the entire process, the air in this chamber is extracted under controlled conditions and the resulting exhaust air is passed through a mercury filtering technology and transformed into non-poisonous sulphide. Thus, mercury vapours are prevented from escaping.

Process step 4:

The LCD screen freed from mercury is discharged and can be recycled afterwards in a downstream ERDWICH plant, in order to recover the precious raw materials such as metals and plastics.

TECHNICAL DATA

Monitor sawing plant LCD 15" - 25"

Dimensions:	
Length	16,000 mm
Width	6,000 mm
Height	3,800 mm
Throughput rate	60 devices/h

Robot-based plant LCD 25" - 55"

Dimensions:	
Length	19,200 mm
Width	3,500 mm
Height	3,800 mm
Throughput rate	45 devices/h