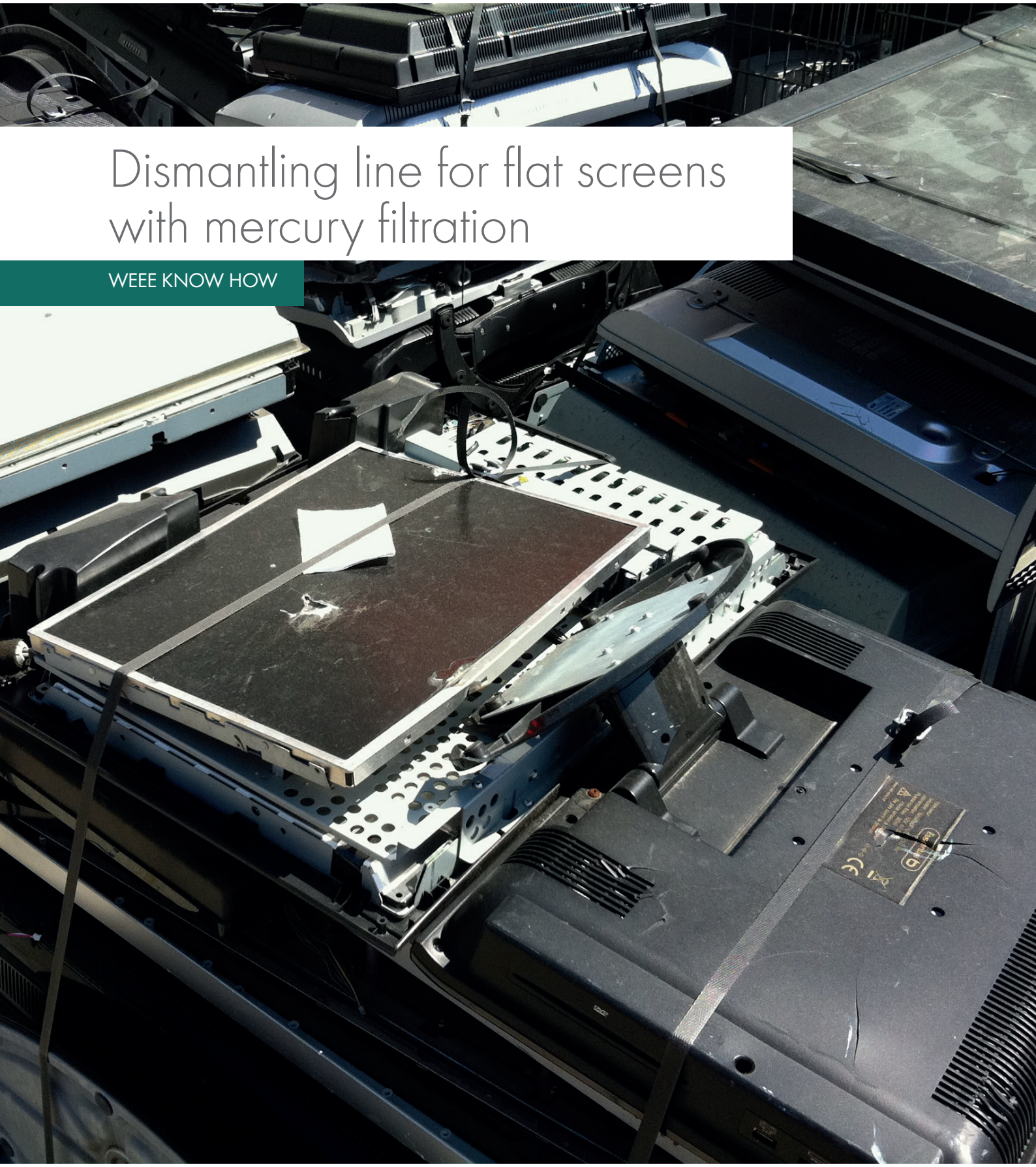
Dismantling line for flat screens with mercury filtration

WEEE KNOW HOW



Technical Data

- Main dimensions L x W x H: **approx. 2100 x 1600 x 2500 mm**
- Ventilator output: **0.75 KW max. 250 m³/h**
- Workspace: **approx. 1500 x 2000 mm**
- Total weight: **approx. 730 kg**

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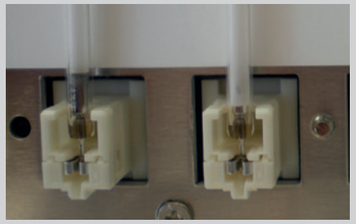
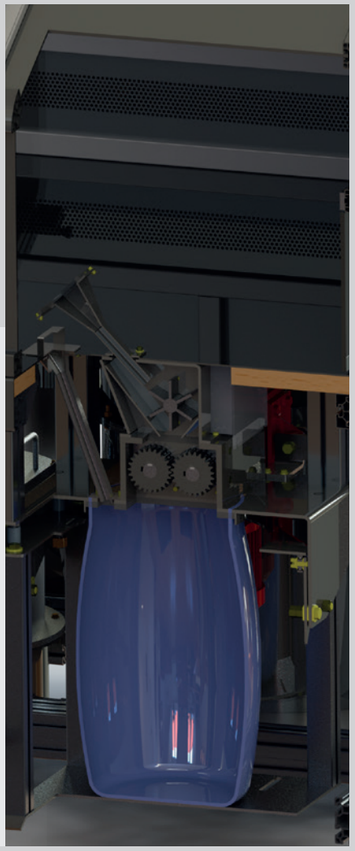
Filter with color change

Flow measuring



Background lightening of flat screen for demounting



Adsorption filter

Integrated collection and transport barrels

Capillary shredding

To ensure an optimal filling of the unbroken capillary tubes into the designated barrels, URT developed an emissi-on-free shredding directly at the disposal companies. After this process the material flow is prepared for reuse.

DISMANTLING LINE FOR LC-DISPLAYS

Preamble

A research project between IUTA (Institut für Energie- und Umwelttechnik e.V.) and URT (URT Umwelt- und Recyclingtechnik GmbH) had as goal to develop a dismantling line for LC-displays. Precondition for the work within the dismantling line depends on the pre-treatment. Only the back wall with the open-laid capillary tubes will get into the dismantling line.

2500 visual display units (LCD-monitors, LCD-television sets and laptops) have been dismantled during pilot tests. During these tests, approximately 0.53 capillaries per dismantled unit broke down. In worst case, with a mercury contamination of 13.25 mg/h.
This corresponds to 5 mg mercury per capillary.

Design of dismantling line

The dismantling line consists of aluminum profiles with linings partially transparent.
The actual table plate consists of a multiple glued wood with a stainless steel plate within the working area. By a circular opening with sealing, the neck of a collecting barrel for Hg-capillaries is leading in direction of the work plate. This way, broken capillaries will directly be thrown into this collecting and transporting barrel. Gas emissions will be captured. The opening at the front side is closed by a transparent slide valve, height-adjustable.

Hg-filter technology

A filter with a sulfur doped active carbon is used in order to keep the labour limit of 0.02 mg/m³.
Thus, a conversion of mercury into mercury sulfide takes place (non-toxic, also named cinnabar).
In order to recognize the saturation of the filter the absorbent potassium manganate is inserted into a transparent filter. Once the active carbon is saturated the absorbent is changing its colour.
All pipings and filter housings are made of stainless steel 1.4301. By using the circulating air mode, the access opening of the dismantling line is covered by an air curtain.

One-stop planning, production, delivery and service

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Design Department

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