econ INDUSTRIES

Case Study

Recycling plant for multiple types of Fluorescent Lamps

econ industries
Schiffbauerweg 1 • 82319 Starnberg • Germany

Tel.: +49 8151 446377 - 0
Fax: +49 8151 446377 - 99
E-Mail: info@econindustries.com
Web: www.econindustries.com

Zero industrial waste … !

Fluorescent lamps recycling

Shredder-sieving-washing process by econ industries

The fluorescent lamps recycling plant was designed for a Taiwanese recycling company. The task was to develop a treatment plant which achieves a high recycling quota while keeping the investment level moderately low. This was achieved by combining several specially developed technologies. These technologies include a high efficient shredder-sieving system, the closed-loop washing unit, an economical dewatering unit and a one-step all metal detection system.

With the econ industries fluorescent lamps recycling plant all types of mercury discharging lamps can be recycled. To feed the plant with all sizes and shapes of tubes, as well as with CFL and HID lamps, the plant has two different, specially designed shredder units. This leads to the most efficient separation of soda lime glass, lead glass and metals.

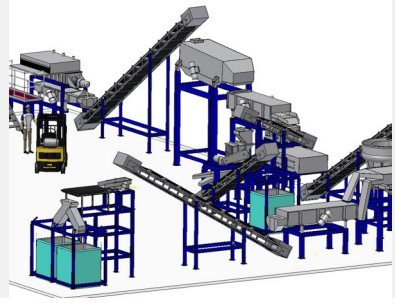
The soda lime glass fraction is conveyed to the washing unit to remove fluorescent powder and mercury contaminants from the culets. A closed loop water system ensures low water consumption. The washed out fluorescent powder forms a sludge which is removed and treated by a dewatering unit. The mercury can be recovered from fluorescent powder (sludge) by VacuDry® vacuum distillation. This is the most efficient and economical way, as the unit can be used for the treatment of other mercury containing wastes as well.

The recovered soda-lime glass can be returned to the lamp manufacturing process to produce new lamps. This is possible because of the high purity and low content of lead glass in the soda-lime glass.

Performance data

- Throughput capacity: 1.5 t/h
- Vacuum Dryer type: 140
- Process parameters: 50 mbar(abs) / 350 °C
- Input material: Different types of energy saving lamps, inclunding tubes, HQL and CFL
- Output fractions (mechanical): metals (Al, Fe), soda lime glass, lead glass mercury, fluorescent powder

Washing unit



3D model

Crushing unit

Design characteristics

- Designed for the recycling of all types and shapes of lamps
- No manual sorting of lamps required
- Treatment of glass breakage and glass production waste possible
- Recovery of pure soda-lime glass, lead glass, metals and mercury
- Extremely low residual mercury content in the glass fractions due to wet washing process
- Allows closed loop recycling management for the lamp industry