Fraunhofer UMSICHT develops innovative recycling technologies for residues from Waste Electrical and Electronic Equipment (WEEE) in order to recover valuable metals for recycling and to gain high-quality fuels.

The newest development is a thermo-chemical treatment concept (Pyrolysis), which is able to extract metals without oxidation. Oil and gas are produced from plastics and can be used in a combined heat and power plant (CHP).

The technology concept is economically viable at small decentralized scales.

**Keywords**
- Treatment of residues from WEEE-Treatment
- Recovery of Metals
- Production of high-quality liquid and gaseous fuels
- Treatment of flame-retardant plastics (Bromine, Chlorine)

**Industrial sectors**
- WEEE-Treatment
- Plant Operators
- Metal Recycling
- Remelting and Refinery
- Plastics Compounding
Waste Plastics.

Pyrolysis-Oil.

Recovered Metals.

Our service

Fraunhofer UMSICHT runs a pyrolysis pilot plant for treating residuals from WEEE treatment at the institute branch Sulzbach-Rosenberg. The system is combined with process plants to prepare, refine and analyze feedstock as well as products. This combination makes the system able to treat and analyze variable residual waste streams concerning a conversion.

Additionally, the team of the department recycling management calculates profitability analysis and life cycle assessments for different process combinations.

Against the background of recent legislations actualizations (e.g. WEEE-directive or federal laws), Fraunhofer UMSICHT finds solutions for new and special approaches like handling of brominated flame-retardant plastics or treating PV modules accurately.

Your benefit

Instead of a cost-intensive disposal of residuals, the developed recycling technology increases the recycling rates and improves the profitability. Especially for decentralized treatment plants, the developed technology can gain added value for your company.

For you, Fraunhofer UMSICHT develops customized processes to treat different mass flows and calculate profitability analysis and life cycle assessments on demand.

According to this approach we design together with you the way from conceptualization through to first tests and a completed prototype.

Technological specification

• Pyrolysis-Plant
- Semi continuous pyrolysis pilot plant
- Suitable for laminar, fragmented or agglomerated (pelletized) and halogen containing feedstock
- Steady Heating up to 700 °C at 5,5 kW
- Heated test module for catalysts
- Process integrated dehalogenation
- Water cooled char release
- Online-measuring of major gases (CO, CO₂, O₂, H₂, CH₄, CₓHᵧ)
- Elemental analysis

• Mechanical Treatment
- Crushing & Milling: Jaw crusher, planetary ball mill, mortar
- Sizing: Sieving unit, air classifier
- Shaping: Briquette press and pellet plant
- Thermal characterization: Drying chamber and muffle furnace