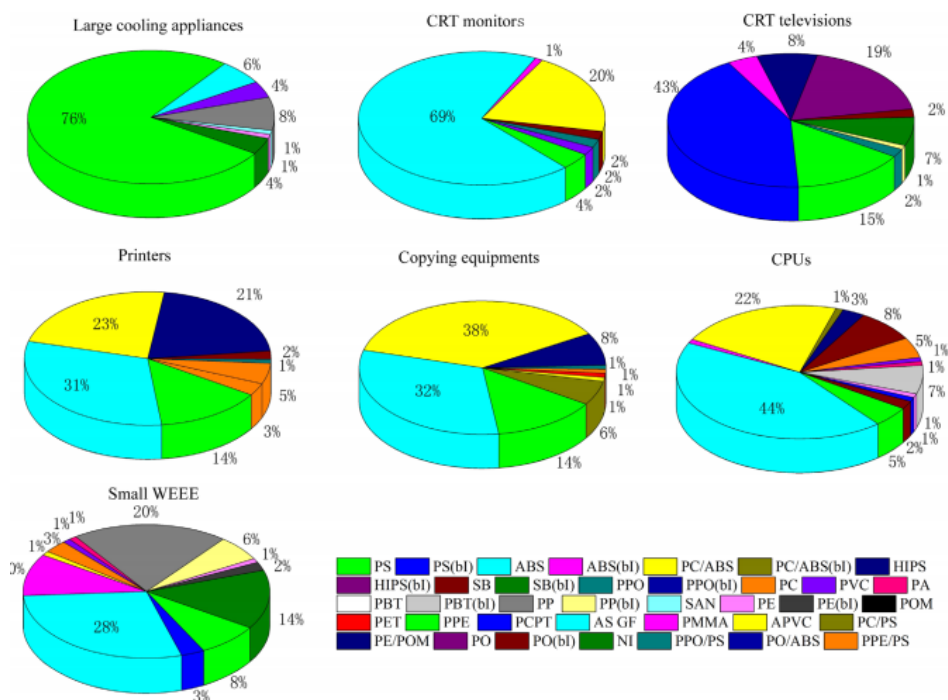


## Global Issue: E-Plastic Recycling

Nowadays, Electronic waste plastics (e-plastics) are growing rapidly due to increased production in electrical and electronic waste. Following metals, plastics have the greatest potential value in E-waste recycling. However, only about 25% of the plastics in the collected E-waste are recycled.

### Plastic Compositions in E- Waste

Plastics, taking up about 20% of the total WEEE, include 5% are flame retardant plastics and 15% are non-flame retardant plastics. In the component of these wastes consisting of different types of engineering plastics; Acrylonitrile butadiene (ABS), high density polystyrene (HIPS), polyethylene (PE), polypropylene (PP), polystyrene (PS) contains plastics with various polymer types. High density polystyrene and acrylonitrile butadiene are present in 55% of e-plastics.

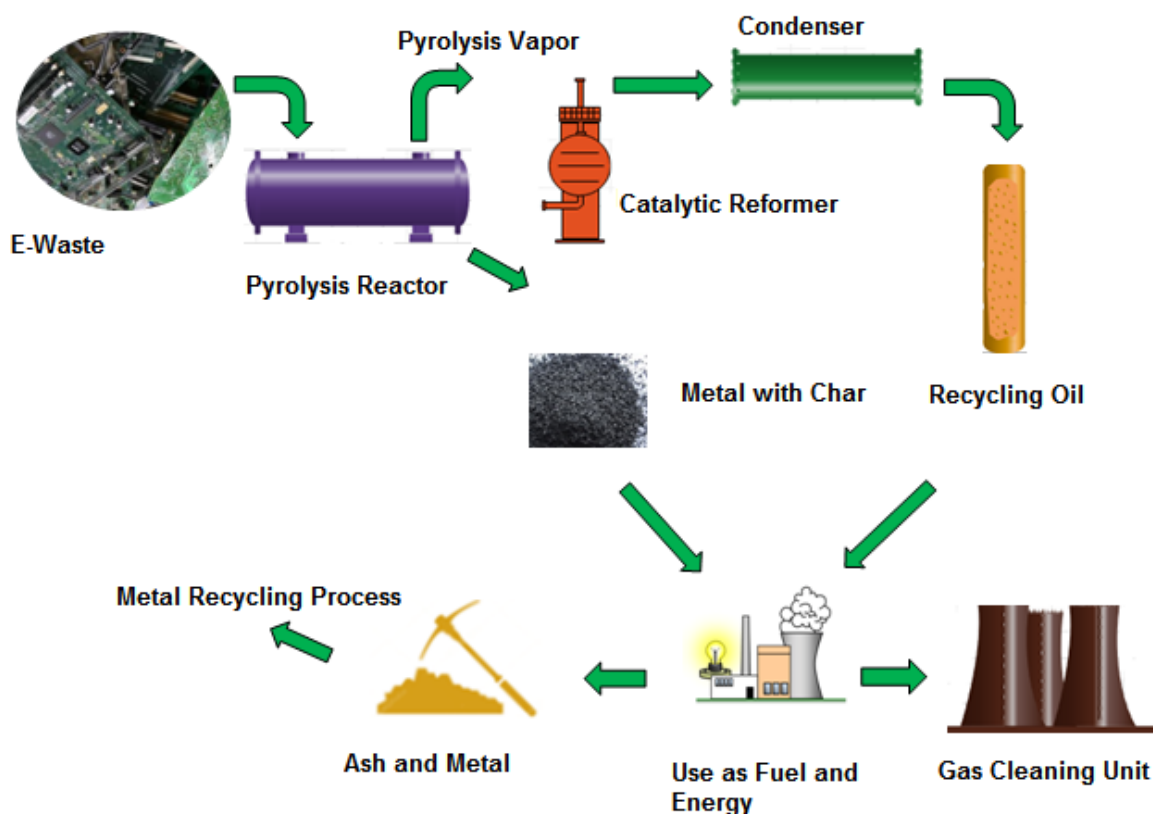


### Brominated Flame Retardants (BFR) in E-Plastics

Nowadays BFRs, which are the most effective flame retardant agents, are widely used to increase the fire resistance of plastic. Each of them has different properties and toxicological behavior.

These materials, which have 200000 tons of production per year, have negative effects on environment and human health.

Even though brominated flame retardant (BFR) materials found in e-plastics are the main obstacle for recycling, pyrolysis is an environmentally method for recycling e-plastics for clean fuel production.



## Recycling of BFR Plastics in Electronic Waste

BFR with different structures such as Br-HIPS and Br-ABS is a problem during the pyrolysis of plastics and electronic waste. In order for the liquid formed as a result of pyrolysis to be used as a clean fuel and to be commercial, bromine must be removed from the environment. As a result of pyrolysis, while gaining precious metals that are not oxidized, the use of pyrolysis liquid as fuel has made this method interesting. To summarize, plastics in complex structure from electronic wastes, which have become a global problem, can be recycled by one of the alternative methods, pyrolysis method. Thus, the harm caused by the plastic to the environment is minimized and brought into the economy.

**As Proses Makina R&D Team**, we are working on the pyrolysis of e-waste plastic. We aim to feed the pyrolysis liquid as fuel to the rotary furnaces used in the recovery of precious metals in the industry and to remove the bromine from this liquid. In this way, we will be able to recover the precious metal remaining in the pyrolysis reactor without oxidizing the solid.

**HANDE CEBECİ**