

International News

Latest Trends in Recycling Technologies for Plastic Waste Contained in Post-use Home Appliances and Household Trash in Japan

New Technology for Recovering Brominated Flame Retardants from Plastic Waste Established

Brominated flame retardants are contained in the plastic used for home electric appliances, in shredder residue from automobiles, and in printed circuit boards. The Plastic Waste Management Institute (PWMI) has headed a successful effort in establishing the world's first completely closed recycling technology for brominated flame retardants.

At the same time a variety of trash-processing methods for use by local governments are now attracting attention. One of these is a system

that generates electricity not only by incinerating household trash that includes plastics but also by completely processing its toxic gases for reuse as a heat source. Another system generates electricity by using the heat produced by gasification and melting, and thermal recycling and material recycling use the slag and metals generated by gasification and melting as auxiliary materials in public works projects.

The report given below describes these latest trends in recycling technologies.

Plastics containing brominated flame retardants are found in post-use home electric appliances and automobile components. These

Japan is making great strides toward systematizing the zero emission recycling of all plastics in society.

brominated flame retardants have traditionally presented a problem when processing such plastic material. In response to this problem, a PWMI-led project has established the world's first technology for recovering brominated flame retardants using gasification and melting plants without generating dioxins in the process and for recycling them as electrical energy and chemical materials (completely closed recycling technology).

A demonstration test for this technical development was performed by a partial-oxidization type of high temperature gasification and melting technology developed by Sumitomo Metals. Three types of samples were used in the test: television back covers, general plastic from the four designated appliances, and Automobile Shredder Residue (ASR).

The demonstration test employed a zero-emission process consisting of three main elements. The first is a high-temperature gasification and melting furnace that performs gasification at 1200°C and melting at 1500°C simultaneously. The second is a quenching column that cools generated gases almost instantly dropping them from a high-temperature state of 1000°C to 200°C or less (to prevent the generation of bromine-based dioxins). The third is bromine recovery equipment that separates and recovers bromine from fly ash (for reuse as a chemical material). The test achieved a decomposed-gas/cooled-gas efficiency of

