Waste polystyrene liquefaction technology

The Energy Research Laboratories (ERL) in Taiwan, Republic of China, has developed a liquefaction technology to treat waste polystyrene foam. The patented process involves thermal decomposition of waste polystyrene foam in an oxygen-free furnace below 400ºC. This results in the production of heavy oils and vapours; the vapours are then condensed to form light oils and combustible gases. These oils and gases can be utilized after separation.

Liquefaction technology can reduce the volume of waste polystyrene foam and convert it into useful fuel oils. It is also suitable to treat polystyrene that is used as raw material to manufacture polystyrene foams. Moreover, the ERL process can operate at low temperature and normal pressure, and as such produces fewer fumes. In addition, good sealing property makes it unnecessary to add other gas treatment units to the system.

Based on the success of this technology, ERL has developed a similar technology for mixed plastics. At present, an experimental system has been set up to determine the optimum operating conditions to prevent the formation of wax and to maintain good product quality for frequently used plastics like polyethylene, polypropylene and polystyrene in different mixing ratios. *Contact: Mr. Shang-Wei Ying, Industrial Technology Research Institute, Taiwan, Republic of China. Tel: +886 (3) 5916 393; E-mail: 710112@itri.org.tw.*