



Japan Awards the Industry Technology Prize to the EUP Process.. ... *The Pressurized Two-Stage Gasification System for Waste Plastics*

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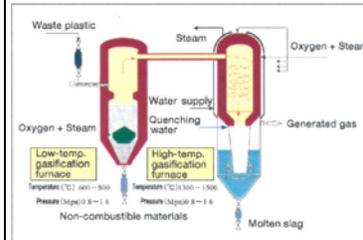
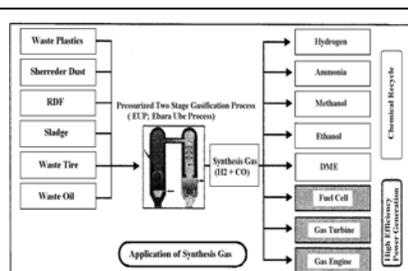
The 31st Japan Industry Technology Prize was recently awarded to Ebara Corporation (<http://www.ebara.co.jp/en/index.html>) and Ube (http://www.ube-ind.co.jp/english/index_e.htm) Industries Ltd for their Pressurized Two-Stage Gasification System for Waste Plastics, also called the Ebara-Ube Process (EUP). The EUP was developed to recycle waste plastics into raw materials for chemical industry. The process produces synthesis gases such as hydrogen and carbon monoxide by gasification of waste plastics. The synthesis gases are in turn used as raw materials for producing ammonia (fertilizers, etc..) and methanol (fuel for fuel cells, etc..).

The EUP features: 1) No limitation on types of waste plastics (Waste PVC, shredder dust from cars and waste papers can be used). 2) No concern about environmental pollution by Dioxins. Moreover, the waste ash is recycled/used in the production of cement.

The plant's facilities include: Receiving and Storing of Raw Materials, Supply of Raw Materials, Low Temperature Gasification Furnace, High Temperature Gasification Furnace, Purification of Gases, and Waste Water Treatment. The waste plastics are first sent to a crusher and then fed to a RDF (Refuse Derived Fuel) facility for easy handling. The pre-treated wastes are first fed to the low temperature gasification furnace (600-800 deg C), and then sent to the high temperature gasification furnace (1,300-1,500 deg C).

In the low temperature gasification furnace, the waste plastics are thermally decomposed under the incomplete combustion producing synthesis gases such as hydrogen, CO, CO₂, and chars and/or tars. The noncombustible materials such as metal are taken out from the bottom of the furnace. In the second furnace, the products from the first furnace are thermally decomposed by adding oxygen and steam. The synthesis gases from the second furnace are then sent to a quencher and the ashes are separated as a melt slag from the bottom of the furnace. The conventional combustion furnace produces Dioxin. In the EUP process the chemical reaction occurs in the gasification furnaces, under the pressurized reducing atmosphere, and it can theoretically prevent the formation of Dioxin. The water in the scrubber quenches the synthesis gases from the high temperature gasification furnace so that the possibility of Dioxins re-synthesis at low temperature is eliminated.

The plant, located at the Ube factory, was constructed at the end of 1999. The commercial operation started in Jan 2001. Its capacity of 30 tons of waste plastics treatment/day produces 26 tons of ammonia/day. Ube Industries plans to build another plant by September 2002 having a capacity of 60/ton waste plastic treatment capacity/day.



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