

High temperature treatment of waste: from laboratories to the industrial stage

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Waste are increasing so much that countries are planning and enforcing measures against this problem. Electricity of France is working in the field of waste reduction, recycling, incineration heat recovery and propose some solutions: high temperature incineration has been applied to two kinds of waste, asbestos and fly ash.

FLY ASHES

Waste incineration smoke residues generated by the combustion of household waste contain leachable harmful elements with levels between 10 ppm (mercury) to 12 000 ppm (lead).

The EDF Research Division has developed a process using heat treatment for neutralizing the fly ash:

This installation built at the end of 1992, can process 0.3 t per hour of ash and consists of:

- a vitrification furnace allowing continuous operation at 1800 °C equipped with a graphite electrode
- additional equipments for introduction of the ash, quenching, washing and neutralization of the gases leaving the furnace, ingot pouring.

The experimental results show that vitrification allows totally inert and widely usable residues (as backfill or storage materials) and that a small amount of secondary ash can be treated by special techniques aimed to stabilize it in glass form or to reduce it to avoid storage in hazardous dump.

EDF and engineering companies are studying a project for an industrial plant with a capacity of 2 tons per hour.

ASBESTOS

Asbestos has been widely used in the buildings for its good protection against fire. Medical studies have proved that this product was very harmful for humans, specially through inhalation.

Since 1990, EDF was testing waste plasma vitrification on an industrial bench test facility located in Porcheville. According to the good results, INERTAM, joint venture formed by EDF and JEUMONT SCHNEIDER, has decided in 1994 to build and commercialize a mobile industrial waste processing facility with a capacity of 1 ton/hour, including the plasma system, the loading mechanism, the furnace and its post-combustion chamber, and the gas treatment.

It has treated about 1500 t of asbestos waste coming from the dismantling of the electrical power generation unit in Arjuzanx. This installation requires no specific selection of asbestos wastes which can be for example contained in metallic drums or cardboard boxes. The non leachable glass rock can be used as filling material for roads. INERTAM has a new storage and treatment area near PARIS which can receive asbestos waste coming from France and Europe. INERTAM is also marketing complete installations for european costumers.