



Intelligent Plasma Solutions for Waste Management



High Temperature Technologies Corporation

Waste has always been a by-product of human activity and industrialization. Nearly 30,000,000 tons of waste is disposed of annually in Canada; even bigger amounts of waste are disposed of in USA and Europe.

Current waste disposal methods are generally limited to landfills and incineration – both of which are harmful for the environment, but are used because they are relatively inexpensive and are readily available.

There is a need for new cost-effective solutions for waste disposal that are safe for the environment and for the atmosphere.

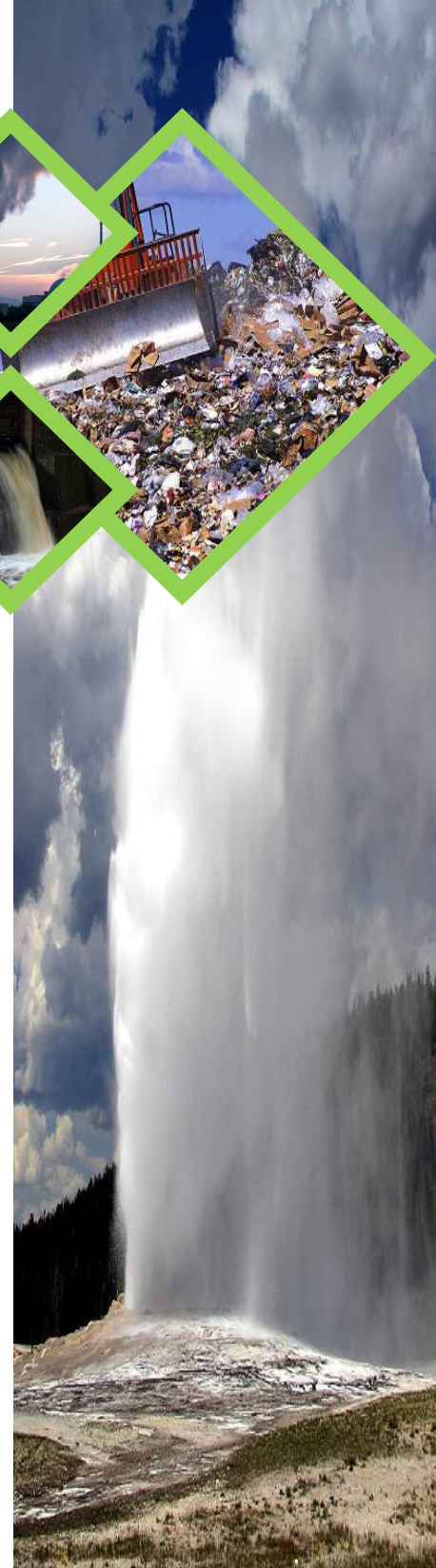
HIGH TEMPERATURE TECHNOLOGIES CORPORATION

HTT Corp. offers environmentally-friendly and cost-effective plasma solutions for waste treatment and disposal. Its highly innovative technology is based on plasma arc torch and is suitable for the treatment of liquid, disperse and solid waste. Plasma technology produces virtually no emissions or toxic slag.

HTT ADVANTAGES:

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- Cost competitive
- Environmentally friendly
- Meets regulatory requirements worldwide
- Produces no emissions or toxic slag
- Produces energy and value-added products
- Simple to operate and requires low maintenance



HTT TECHNOLOGY IS IDEAL FOR THE TREATMENT OF:

- Organic-Polymer waste
- Municipal Solid Waste
- Biomass
- Scrap Tires and Plastic Waste
- Hazardous Waste
- Medical and Biological Waste
- Chemical and Industrial Waste
- Low-level Radioactive Waste
- Fly Ash and Sludge of Power Plant

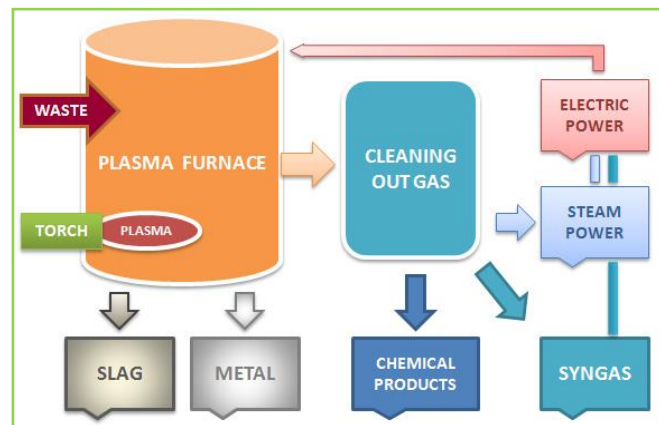


APPLICATIONS OF PLASMA TECHNOLOGIES INCLUDE:

- Environment
- Energy Sector
- Plasma Chemistry
- Plasma Metallurgy
- Plasma Processing of Materials
- Construction Materials Technologies
- Manufacturing of Nanomaterials

PRODUCTION OF VALUABLE BY-PRODUCTS:

HTT's waste disposal process is accompanied by a production of valuable by-products that can be used as commodity products in various applications and technologies.



We offer many different types of plasma torches, plasma reactors and plasma furnaces that are sure to satisfy all your needs!

We offer GAS and STEAM Plasma Torches with power ranging from 50kW to 500kW

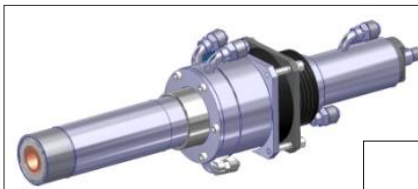
Plasma torches are available by themselves

OR

As a part for a furnace/reactor!



Plasma Torches with Power of 50kW to 500kW



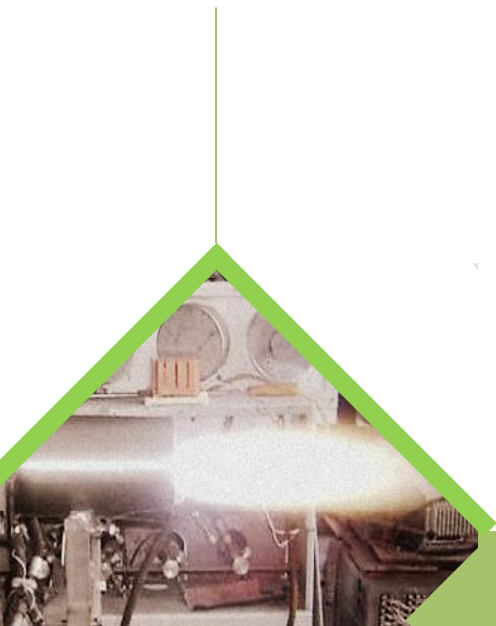
Gas Plasma Torch



Steam Plasma Torch

HTT OFFERS PLASMA REACTORS AND FURNACES FOR YOUR WASTE!

Waste	Product
Municipal Solid Waste	Plasma Furnace 1000 kg/hour
Biomass	Plasma Furnace 1000 kg/hour
Scrap Tires and Plastic Waste	Plasma Furnace 500kg/hour
Medical and Biological Waste	Plasma Furnace 50-500 kg/hour
Chemical and Industrial Waste	Plasma Reactor 50-100 kg/hour
Sludge and Power Plant Fly Ash	Plasma Furnace 150 kg/hour
Low-Level Radioactive	Plasma Furnace 100 kg/hour

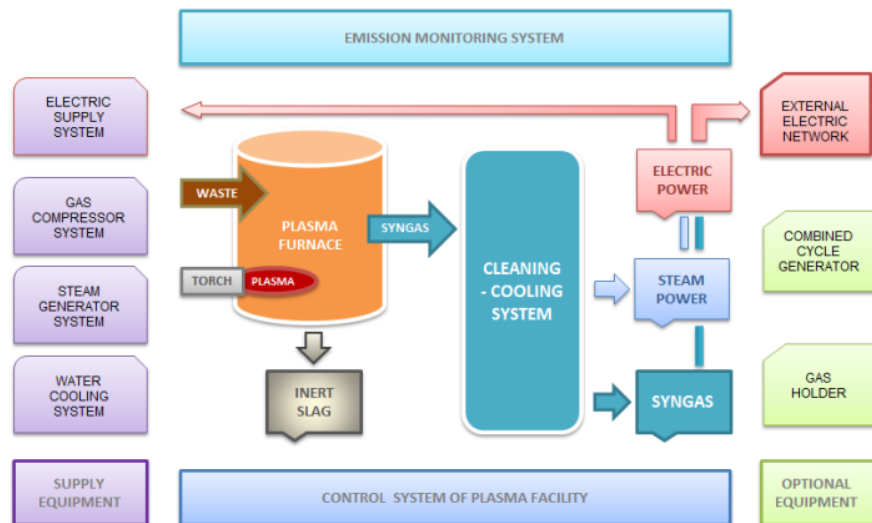


Advantages of Plasma Waste Treatment

- Environmentally-friendly
- No harmful emissions or toxic waste
- Production of inert vitrified slag which could be used as construction material
- Processing of organic waste allows production of combustible gases which can be used in various applications
- Electric and thermal energy generation
- Production of value-added products

Plasma Waste Treatment Process

Plasma pyrolysis is used to safely treatment various types of waste, either in a furnace or in a reactor. The main element of plasma technology is a plasma arc torch. A plasma torch uses gas or steam and powerful electrodes to create plasma with a temperature up to 5000 degrees Celsius, which allows for full decomposition and disintegration of organic components. The process allows the reception of pure high-calorific synthesis gas. The same temperatures are capable of melting various non-flammable inorganic components and turn them into inert slag.



Environment protection

High Temperature Technologies Corp. pays special attention to sustainability and environment. HTT's plasma arc facilities have advanced systems put in place at different stages of waste treatment process to control various

Air



Factories and plants are some of the main contributors to the air pollution. Emissions are regulated by the United States Protection Agency ("USEPA"). The Agency places special concern on the following emissions: sulphur dioxide (SO_2), hydrogen chloride (HCL), carbon monoxide (CO), nitric oxides (NO_x), particulates (PM), volatile organic compounds (VOCs) and hazardous air pollutants (HAPs), including chlorinated hydrocarbons (dioxins.).

HTT's state-of-art facilities meet and exceed the standards set forth by the agency.

Solid



The primary solid output generated at plasma facilities is a glassy slag: the result of melting the inorganic fraction of the waste. Any waste disposal facility that generates an ash or slag is regulated by the USEPA and subjects it to a Toxicity Characteristic Leaching Procedure ("TCLP") test. The TCLP test is designed to measure the amount of eight elements that leach from the material being tested. TCLP tests on plasma facilities, even those processing highly hazardous materials or medical waste, show results that are well below regulatory limits.

In other words, HTT's plasma arc technology melts the inorganic material so that almost none of it can leach back into the environment.

Water



Synthesis gas ("syngas") obtained in plasma furnaces and reactors through waste treatment are used in the chemical industry and electric gas generators. Before use, syngas should be cleared of chlorine, sulphur and other harmful substances to prevent their emissions in the atmosphere. The clearing equipment includes scrapers, filters, and systems of a sorbent. Circulating water in these systems removes harmful substances from the gas and is itself, cleared.



Ecology

Plasma-chemical pyrolysis and vitrification of various waste

- Safe treatment and disposal of medical and bio wastes
- Plasma processing of toxic fly ash originating in waste incinerators and fuel-burning power plants
- Processing of organic waste (including waste that contains chlorine)
- Recycling solution for used tires with hydrocarbon production that is to be reused
- Treatment and disposal of toxic waste using plasma reactors, including agricultural, defence and industrial waste

Energy

Solid Fuel Gasification

Various solid fuels (including low-grade fuel, as well as organic waste) can be converted to liquid and gaseous fuel (such as black oil, diesel, kerosene and gasoline fractions) with high intensity in a plasma reactor.

Construction Materials Technologies

- Production of high temperature heat insulating microfibers (ultra and super thin) from molten mass or solid minerals.
- State of the art technology and implementation enable the production of ultra and super thin mineral fibbers from hard-to-melt minerals (basalt, quartz, etc). The resulting fibbers are effective heat-insulators and are used to manufacture mats, tiles, cardboard and other products used in construction, aviation and marine, metallurgy and energetic.
- Production of heat-resistant hollow ceramic microspheres and macrospheres manufactured from aluminum oxide and zirconium oxide (materials that are widely used as lightweight filling materials for composite materials, sound and heat insulating materials).
- Plasma finishing of construction materials surfaces: plasma vitrification of concrete, silicates and other construction materials where the two are used as a basis. Depth: 0.1 to 0.8mm.





Plasma Processing of Materials

- Active carbon regeneration
- **Plasma plating**
A process has been developed for the plating of crankshafts of heavy-duty trucks and tractors using wear-resistant materials. Processed parts' life is 80-100% longer than the guaranteed period of new crankshafts.
- **Extra-fine plating of metallic and non-metallic materials: 0.01-0.1mm**
Metallic and inter-metal plating of various materials, without prior heating: copper plating of carbon, nichrome plating of glass, copper plating of stainless steel, zinc plating of quartz, nickel-based intermetallic compound plating of copper.
- **Thermal processing of materials in the form of powder for various technological processes**
- **Production of materials in the form of powder**
- **Spheroidization and other types of plasma-chemical agglomeration of powders**
- **Industrial processing of hard-to-melt materials**