

EUROPLASMA INDUSTRIES

Europlasma is a French company whose expertise, built up over 20 years, is based on its proprietary technology, the plasma torch, which allows higher temperatures to be reached than by using conventional heating methods.

The Europlasma Group's core business consists in **developing, constructing and operating** various **industrial processes using plasma technology**, to provide environmentally friendly solutions for waste management and to reduce greenhouse gas emissions.

Europlasma's extensive know-how results from its expertise in plasma processes, both in vitrification and syngas refining and overheating, which has been built up over a number of years and is today evidenced by operational references worldwide. Europlasma has sold a number of plasma systems, Turboplasma® reactors and plasma vitrification units in Europe and Asia, and has been operating its own plasma asbestos vitrification plant in France for 15 years.

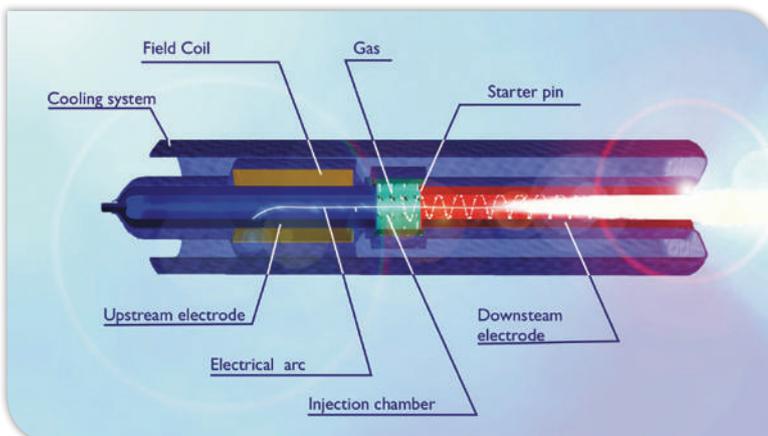


300KW Non-transferred arc plasma torch

Our non-transferred arc technology

The non-transferred arc plasma torch operates independently, with the electric arc being created inside the torch, and does not require any additional equipment to function fully. The electric arc remains inside the torch and only the plasma plume extends beyond the torch, resulting in both a mechanical and chemical effect on the material to be heated to a high temperature.

- *Very high efficiency in transforming electrical energy into thermal energy,*
- *Excellent reliability and adjustability of the plasma torch power in accordance with the process requirements,*
- *Thermal device that does not require fossil energy to operate.*



Advantages of our technology:

- *Electrode lifetime x 5 to 10 compared to competitors, thanks to a magnetic field coil inside the plasma torch, minimising maintenance and cost,*
- *Large power range from 50KW to 4MW, ability to develop 10MW and 20MW plasma power,*
- *Able to operate with different types of gas and gas mixtures (air, helium, CO₂, complex gas mixtures from metallurgical, iron and steel and gasification processes),*
- *Automatic connections as standard to improve operability of the system.*



Our Quality Management

ISO 9001 certified since 2003 (2008 version since 2009) for the engineering, design, construction and sale of plasma systems, plasma furnaces and Turboplasma® reactors, Europlasma Solutions implements a continuous improvement process targeting customer focus and satisfaction, which actively involves and is applied by its entire staff.

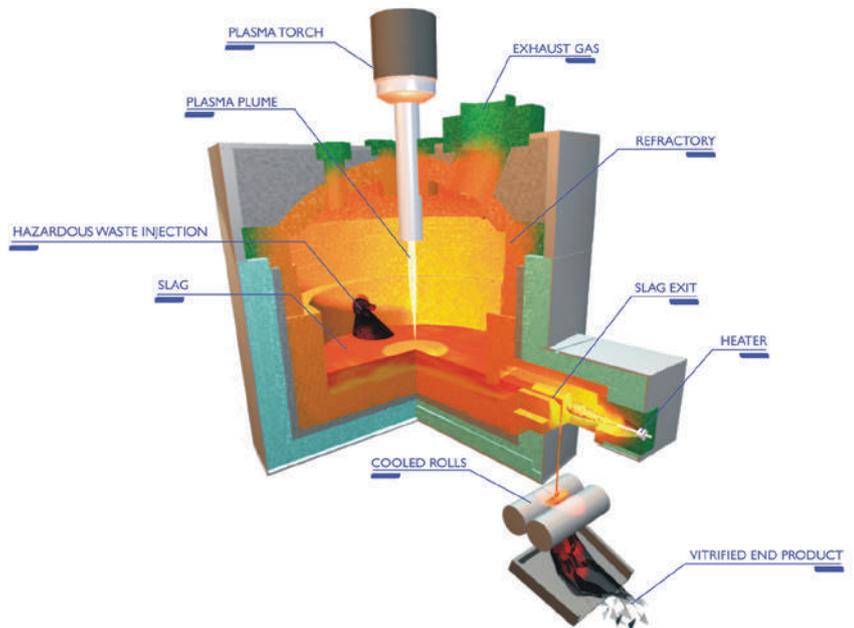
PLASMA SOLUTIONS FOR WASTE

Our plasma technology for hazardous waste treatment and recycling

Our plasma process allows a wide range of hazardous waste types to be treated, such as toxic ashes, asbestos, blasting dust, polluted soil, etc.

Europlasma offers different types of plasma melting furnaces adapted to the specific features of each project: the type of waste feed, the method of extracting the vitrified slag and the operational procedure are tailored in accordance with the client's requirements.

Added value: the vitrified product obtained, which is either vitreous or crystalline in shape, is totally inert and can be recycled as aggregate for use in road construction, for example.



Ashes



Asbestos waste



Other hazardous waste



Plasma treatment



Inert product



Road production valorization



Our plasma technology for volume reduction and conditioning of low and intermediate level radioactive waste (LILW)

The plasma fusion of LILW can reduce volume by up to 80 times while ensuring its long-term immobilisation.

Added value: Our plasma process accepts mixed waste, either organic or inorganic, liquid or solid, without prior separation or pre-treatment.

PLASMA SOLUTIONS FOR GAS

Our plasma technology in the metallurgy and iron and steel industries

1. Process enhancement by wind reheating

The plasma torch, positioned either in the tuyler or in the nozzle, improves the thermal efficiency of equipment, while using fewer raw materials.

Advantages of using plasma:

- The heat brought by the hot wind is not provided by coke,
- Decrease in coke consumption through higher coke recarburisation rate,
- Alternative to the use of oxygen,
- Ability to load more steel and scrap instead of new iron, while retaining the same metallurgical grade,
- Replacement of coopers.

2. Purification of exhaust top gases coming from blast furnaces or cupolas

The use of the plasma torch in a Turboplasma[®] reactor aims to purify the exhaust gases by removing their tars in order to produce energy in an efficient way.

It also enables greenhouse gas emissions to be reduced.

R&D platform tests in France

Located in Morcenx (France), the R&D platform has been designed to be easily reconfigurable and able to test Europlasma's current and future products.



Turboplasma technology in the energy production sector

Europlasma has developed a patented reactor that refines syngas using a plasma torch: the Turboplasma[®]. This equipment reduces the amount of tar formed during gasification reactions. The clean syngas obtained can then be used for chemical applications (such as the production of SNG, H₂, ammonia, methanol, diesel, etc.) or for electricity production in gas engines, allowing greater efficiency than with other methods.



Turboplasma[®]

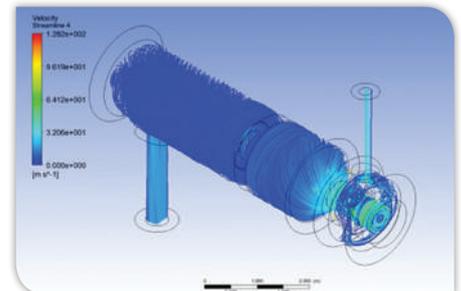
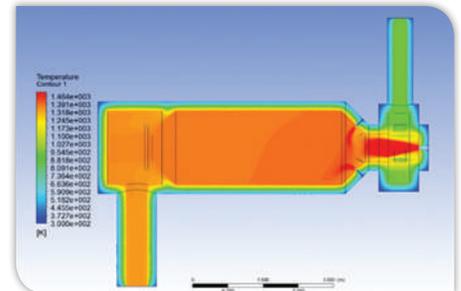


This platform:

- Allows testing of new plasma torches, which can be supplied with different gas mixtures representative of those found in industry, together with validation on a pilot scale of new processes developed by the company;
- Hosts a pilot gasifier with a processing capacity of 800kg/hour coupled with a Turboplasma[®] reactor, enabling the transformation of different combustibles into clean syngas to be tested;
- Hosts companies seeking a test platform for the industrial development of their own processes using Europlasma plasma torches.

Eurolasma solutions' offering:

- Preliminary technical and economic studies on plasma treatment possibilities,
- Detailed engineering studies of furnaces or plasma reactors equipped with plasma torches,
- Feasibility studies and testing on its R&D platform,
- Supply of plasma torch systems,
- Supply of Turboplasma® reactors,
- Supply of turnkey hazardous waste vitrification units,
- Sale of know-how licenses,
- Construction and commissioning of equipment,
- Technical assistance and training of operators,
- After sales service and spare parts.



Modelling of equipments

Main references

Hazardous waste treatment

- Design, manufacture and installation of an ash vitrification unit (capacity 7t/day) in France,
- Design and engineering of four ash vitrification units (capacity from 6t to 40t/day) and supply of associated plasma systems and licence sale in Japan,
- Design, manufacture and installation of an asbestos waste vitrification plant (capacity 40t/day). Operation and maintenance is provided by Inertam, a Eurolasma Group subsidiary,
- Design and engineering of an ash vitrification unit (capacity 15t/day) and supply of associated plasma systems and licence sale in South Korea.

Low-level radioactive waste volume reduction and immobilisation

- Design, manufacture and installation of a plasma melting furnace (capacity 200t/year) in Bulgaria.

Gas cleaning

- Design, manufacture and installation of a Turboplasma® reactor at a wood gasification plant in France,
- Design, manufacture and installation of a Turboplasma® reactor at a waste and biomass gasification plant in France.



Asbestos waste vitrification unit (Morcenx-France)

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EUROPLASMA
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