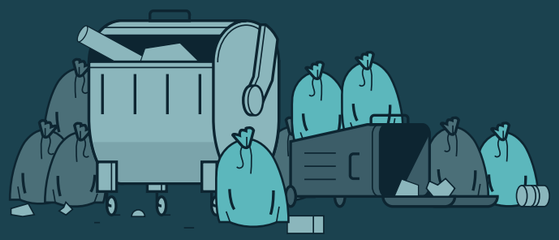
What can we help you with?

The nature of plasma gasification makes it possible to apply this technology to create solutions for a broad spectrum of waste products...

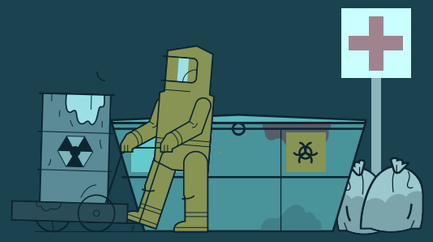


Municipal waste

Municipal waste is one of the possible feedstock sources for plasma gasification. Even after sorting out the usable components we are able to derive energy from the remaining municipal waste.

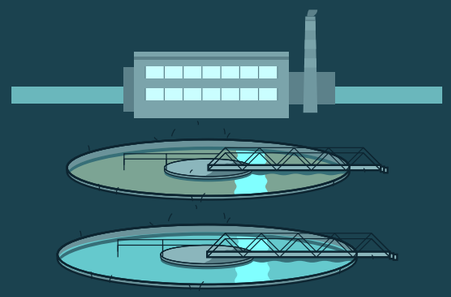
Industrial waste

We offer technical solutions for companies producing specific types of waste, which enables them to become independent of the current waste storage and disposal system and the costs it entails.



Hazardous and medical waste

We offer various solutions to work with incinerators that have already been installed for hazardous or medical waste, or we can build new units.



Sludge treatment

In conjunction with new legislation governing waste water treatment plants and the handling of sludge, we are preparing a combination of sludge dryers and plasma gasification system to derive energy from this raw material.

Elimination of environmental pollution

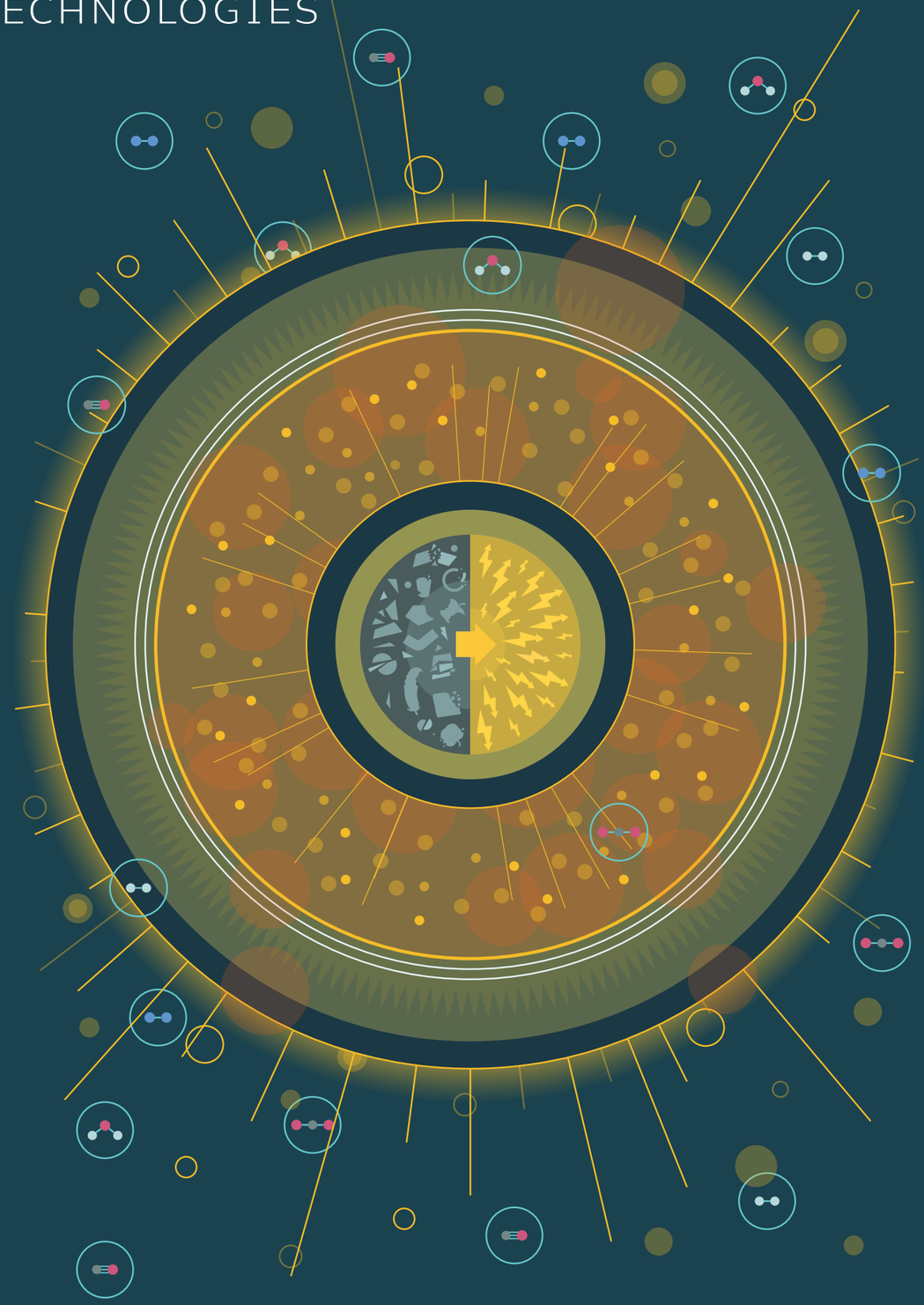
One particularly interesting use of plasma gasification technology is the elimination of environmental pollution, which can be done right on the site where it was created. For this purpose we will develop a mobile unit that can be transported directly to the contaminated site to ecologically eliminate the pollution.

Contact us

www.millenium-technologies.cz / korunní 810/104, 101 00 Praha 10 / info@mltech.cz

millenium

TECHNOLOGIES



Waste doesn’t need to be a problem ...

Steps Involved in Plasma Gasification

1 Receipt and treatment of feedstock

To convert waste into energy it is first necessary to remove from the feedstock as much material as possible that does not contain energy (e.g. ash, rubble, metals, and glass). After sorting, the feedstock is crushed. It may also be dried after sorting.

2 High temperature plasma gasification

Within the reactor the feedstock is subjected to temperatures of 1250-1500 °C and comes into direct contact with the plasma discharge which has a temperature of 3000-5000 °C. Synthesis gas and slag are thus formed.

3 Cooling and purification of synthesis gas

Before purification the synthesis gas is cooled to a temperature of roughly 200 °C. Purification removes acid gases (HCl, H2S), solid contaminants and excess moisture.

4 Slag

The inorganic portion of the gasified feedstock melts to the bottom of the reactor and is then removed. After cooling it forms non-leaching slag which is not hazardous to the environment.

Possible uses of synthesis gas

5 Separation of hydrogen

Synthesis gas can be a source of hydrogen production, for example by using a membrane process that is efficient with respect to energy and media consumption (steam, water, chemicals).

6 ingle-stage production of heat and electricity

Synthesis gas is burned in a fire-tube boiler and the heat energy from combustion is used to produce high-pressure steam. Along with the steam produced from cooling the synthesis gas in a heat recovery steam generator, the high-pressure steam is then used to produce electricity in a steam turbine.

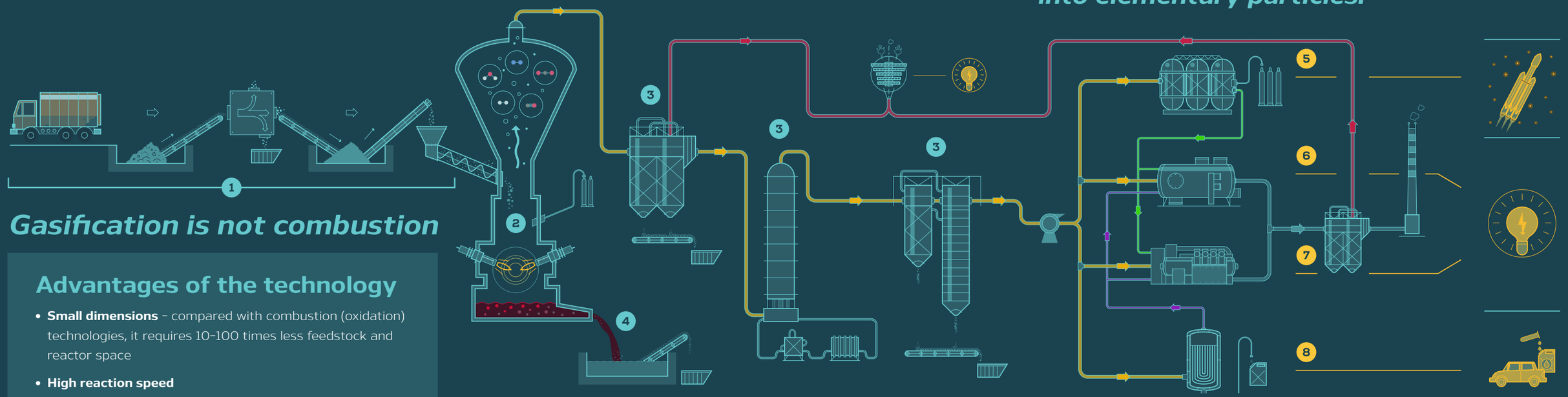
7 Combined generation of heat and electricity

In this case, synthesis gas is use to generate heat and electricity in a co-generation unit. The combined production may also include a steam turbine that is fed with steam produced from cooling synthesis gas and cooling exhaust gases of co-generation units.

8 Production of synthetic motor fuels

Synthesis gas can also be used as an input material to produce motor fuels through Fischer - Tropsch synthesis.

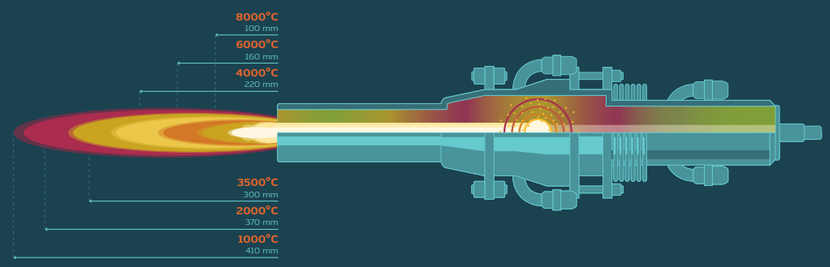
Gasification process, means decomposition into elementary particles.



Gasification is not combustion

Advantages of the technology

- **Small dimensions** - compared with combustion (oxidation) technologies, it requires 10-100 times less feedstock and reactor space
- **High reaction speed**
- **High efficiency** - more than 95% of carbon and hydrogen atoms are transformed into CO and hydrogen in the synthesis gas, resulting in extremely efficient use of the calorific value of the feedstock
- **High temperatures** – ecological liquidation of hazardous materials
- **Variability of inputs and outputs**
- **Precise management of the reaction**
- **No emissions** – the only outputs are synthesis gas and slag



Plasma – torch

A plasma torch is a tool for generating plasma, which is used to create the high temperatures necessary in the reactor for gasification. The plasma discharge is created when a working gas passes through an electrical arc.

Synthesis gas

Gasification of the organic matter in feedstock creates synthesis gas. It has a stable composition, always a mixture of CO, H2, CO2 and N2. As a result, it is similar to coal gas, which was previously widely used instead of natural gas.