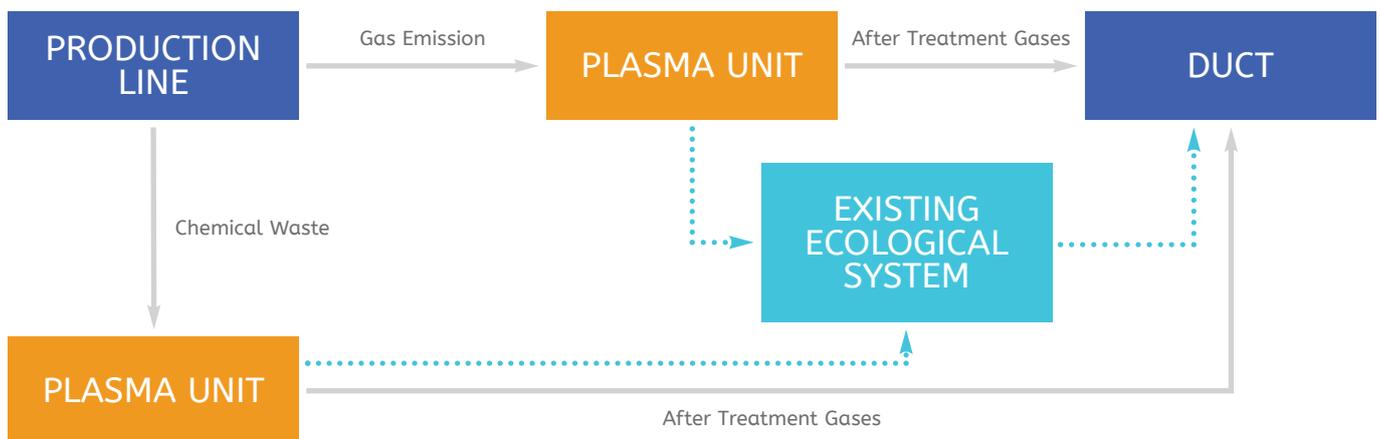


DOWNSTREAM TREATMENT OF LIQUID CHEMICAL WASTE/SUSPENSION



The system can be easily modified, calibrated and adopted into any industrial organic waste polluting production line. The process is continuous and connected to the production line on-site.

The process makes the question of capacity irrelevant, since it is connected directly to the source of wastes, and evacuates them as CO₂, H₂O. The process has a cost advantage over all other known alternative treatment systems.

THE PROCESS CONSISTS OF FOUR MAJOR SUB-SYSTEMS:

- > Plasma reactor: the reactor breaks down the waste into chemical basic elements by high temperatures created by the plasma torch.
 - > Quench system: the products formed as hot gas mixtures are then exposed to rapid cooling in order to eliminate formation of non-desired compounds such as dioxins and furans.
 - > Main absorption system: the gas undergoes further cooling and maintains a process of absorbing the halogen acids by circulation.
 - > Ecological absorption system: this acts as a backup stage for the final neutralisation and cleaning of the gases emitted into the atmosphere.
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THE PROCESS

- > The liquid and slurry wastes are supplied to the reactor by a special pump. They pass through an atomiser and go directly to a plasma jet generated by a DC non-transferred plasma torch.
- > As result of the interaction between waste streams and high temperature plasma jet (about 3000-3500°C – specified on wastes type and flow rate) the following processes are going on: practically destruction of all thermo-stable components contained in the waste, gasification of organic compositions to CO₂ and H₂O, formation halogen acids.
- > The formed products of hot gas mixture are then exposed to rapid cooling (quenching) to eliminate formation non-desired compounds such as dioxins, furans, NO_x, etc. As a result of the cooling process the system produces water vapor, CO₂ and gaseous halogen acids.
- > After quenching the gas flow proceeds to specific gas cleaning system, wherein the decomposition products are separated into liquid and gas phases. The acids solutions can be used as a separate reusable commercial product.
- > Finally the out-coming gases (containing no organic components) are disposed via a thrash duct, in accordance with environmental standards.

TREATED MATERIALS

The Technology currently treats the following types of chemical waste: hazardous organic chemical waste, toxic chemical waste, medical and biochemical chemical waste, halogenated chemical waste and gaseous chemical waste.

Liquid chemical waste/suspension:

- > Contaminated solvents such as Methylene Chloride, Toluene, Xylene, etc.
- > Chemical waste from the production of halogenated organic material (e.g. bromo-chloro-floro-organic).
- > Chemical waste from the production processes in the chemical, pharmaceutical and psimdeanicide industries.
- > Heavy fraction from refinery processes

OPERATION AND SAFETY

The system is user-friendly, easy to operate and maintain, and safe according to hazop resume:

- > Interlocks for safety operation.
- > The system is sealed against surrounding environment, and is constantly over pressurized.
- > The system operates continuously in accordance with customers specific needs – provides full control of process parameters by state of the art touch panel.
- > Operation on demand – inertia free system.
- > Designed in compliance with European Standards (CE), including power supply and PLC control.

Simdean Envirotec Limited

20 Brookfield Drive, Holmes Chapel, Cheshire CW4 7DT, United Kingdom

T: +44 (0)1477 537553 / F: +44 (0)1477 537553

E: info@simdean.co.uk / www.simdean.co.uk