

## **Pyrolysis of carbonized Polyvinyl Chloride (PVC) waste to produce hydrochloric acid**

### **ABSTRACT:**

This unique technology converts carbonized PVC waste into hydrochloric acid and uses mixed carbonized plastic waste as an energy source.

This machine is suitable for processing PVC waste which comes from electric cables and construction waste or other sources, like the byproduct of Refuse-derived fuel (RDF) production.

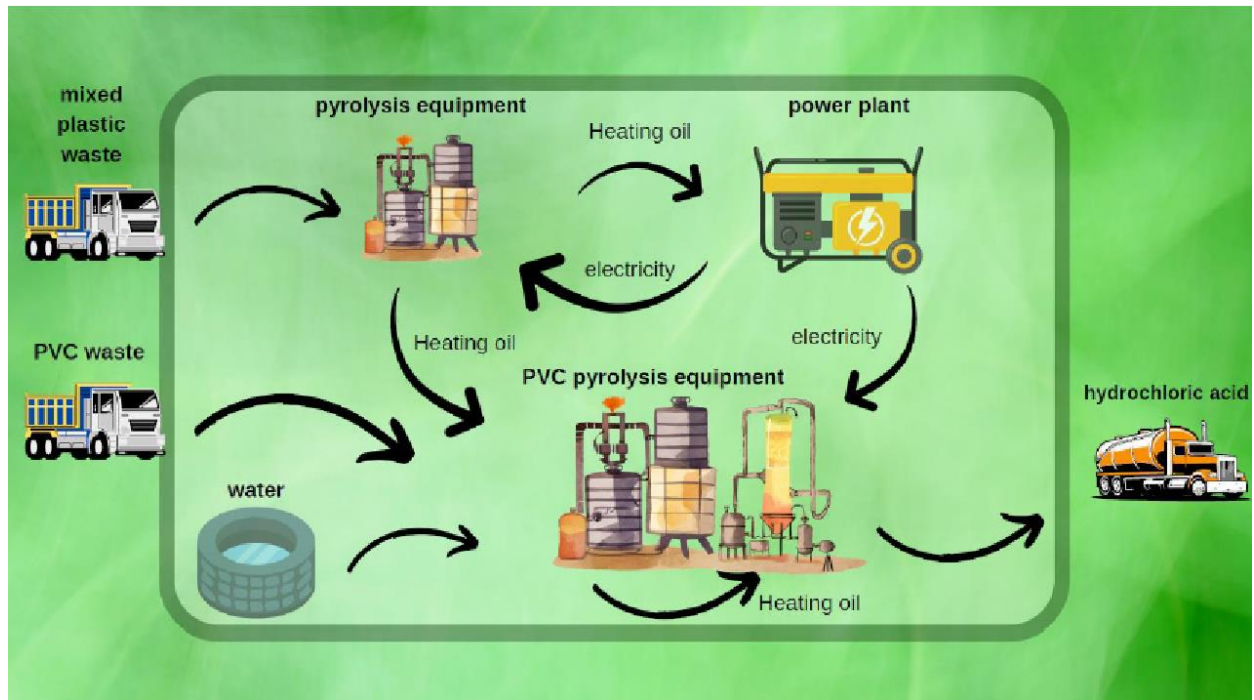
### **BACKGROUND:**

General plastic and PVC waste pose significant challenges for traditional recycling and incineration methods due to the harmful byproducts they produce. When burned, these materials release toxic flue gases that are detrimental to human health, the environment, and even the infrastructure of the burners themselves. The presence of chlorine in PVC, for instance, leads to the release of hydrochloric acid when incinerated, which can corrode equipment and release dioxins that are hazardous pollutants. This makes the disposal of such wastes through conventional methods problematic, underscoring the need for alternative technologies that can safely and effectively manage these materials without contributing to environmental degradation.

### **TECHNOLOGY SPECIFICATIONS:**

The technology of pyrolysis of PVC waste is designed to address the critical issue of plastic waste management and recycling. It targets a diverse array of users and audience groups that require effective solutions for handling and repurposing plastic waste. This includes waste processing facilities, manufacturers who generate substantial plastic waste, waste management companies, and various organizations and institutions aiming to enhance their environmental sustainability practices. The primary goal of this technology is to process plastic waste in an efficient and environmentally friendly manner. By doing so, it not only minimizes the environmental impact associated with plastic waste but also contributes to broader sustainable development objectives. This technology promises to transform plastic waste into valuable byproducts, thereby closing the loop in the lifecycle of plastic materials and supporting the shift towards a circular economy.

Mixed plastic waste and PVC waste is converted into heating oil and HCl by the pyrolysis equipment (See figure below).



#### ADVANTAGES:

- Pyrolysis decomposes ‘addition’ polymers like polyethylene (PP), polypropylene (PE), or polyvinyl chloride (PVC), which make up the majority of the plastic waste streams.
- With chemical recycling, plastic waste is broken down and recycled into new chemicals and plastics that perform like virgin materials. This resulting plastic can therefore be re-used in high-quality applications such as food packaging.
- Reduces the use of fossil resources
- Chemical recycling can eliminate the CO<sub>2</sub> emissions associated with incineration and energy recovery.

#### CUSTOMER BENEFITS:

- Utilization of mixed and contaminated plastic waste
- Utilization of PVC waste
- Recovery and sale of hydrogen chloride

#### TARGET USERS:

- Waste processors
- Public service providers
- Chemical companies
- Agricultural companies (e.g.: processing of agricultural film)
- Large electronics manufacturing plants

**TECHNOLOGY/PRODUCT COMPETENCE LEVEL:**

The technology is currently at TRL 3-4.

**If you are interested, please respond to:**

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