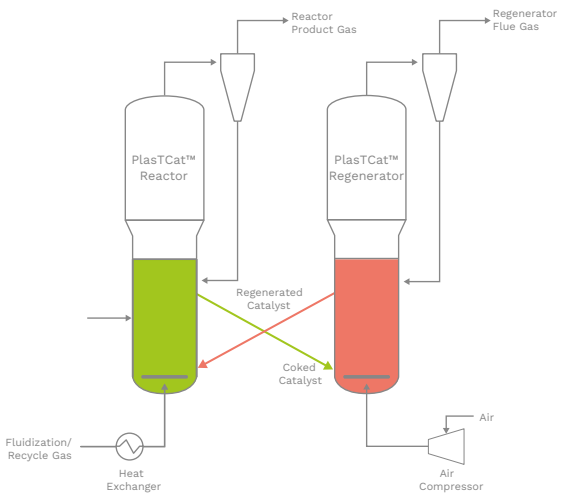
Plas-TCat™

Plas-TCat is a one-step, thermal-catalytic recycling technology that can convert mixed plastic waste feedstocks, including composite films, single-use plastics and other hard-to-recycle plastics, into the same basic chemicals (such as benzene, toluene, xylenes, ethylene and propylene) used today to make most virgin plastics.



Why Catalytic Pyrolysis?

Pyrolysis is a thermal chemical process used to break down complex organic materials into simpler substances through the use of heat. Catalytic Pyrolysis uses a catalyst to increase the yields of desired products, reduce unwanted products and operate at a lower temperature. This more energy efficient method is used to convert materials such as plastics and biomass into valuable chemicals and fuels. Improving the yield of desirable products and reducing the formation of unwanted byproducts, makes for a cleaner, more predictable and effective technology for waste plastic recycling.

Plas-TCat: Recycling Mixed Plastic Waste

The patented Plas-Tcat can be used to recycle a broad range of mixed plastic waste feedstock. For example:

- Single-use plastics
- Flexible packaging
- Flexible films
- Composite plastics
- Plastic containing nitrogen (such as nylon, ABS, polyurethane), oxygen (including PET, polycarbonate) and other heteroatoms
- Other hard-to-recycle plastic materials

ESG Friendly

Displaces fossil resources to meet decarbonization goals. Plas-TCat creates up to:

- 60% less CO_2 emissions compared to thermal pyrolysis
- 70% lower CO_2 emissions compared to incineration
- 50% lower emissions compared to gasification technologies

TCat-8® Pilot Plant

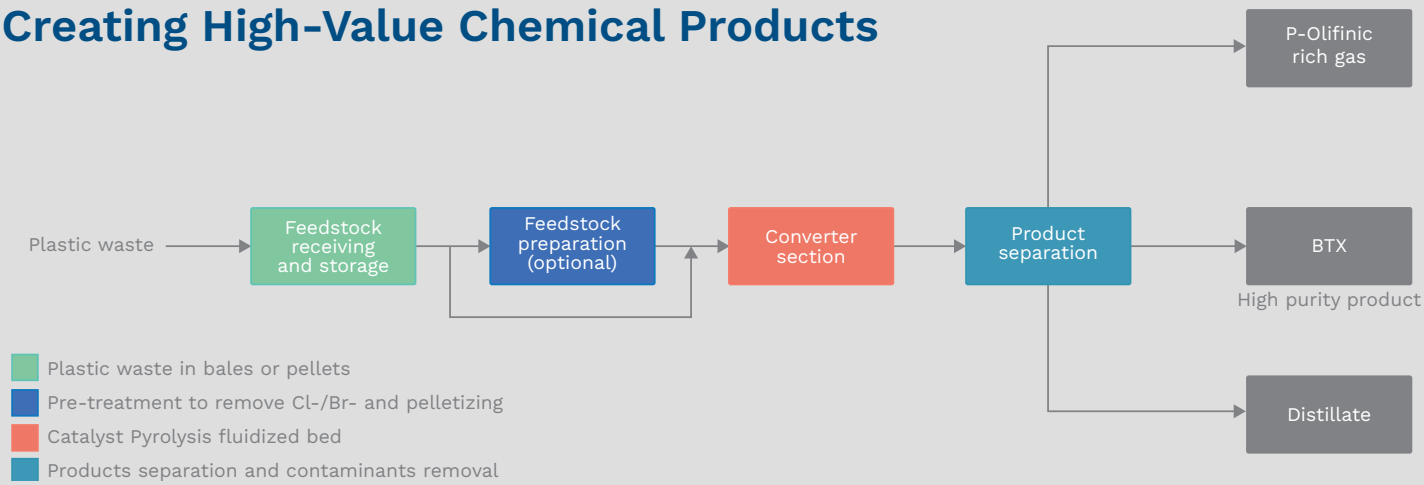
Anellotech's TCat-8 facility is a fully automated, 30 meter tall pilot plant located within Trecora's Silsbee, Texas facility. The unit he unit has a capacity of half a ton per day for recycling waste feedstock. Its primary purpose is to demonstrate the catalytic performance during extended operation and can be used for testing clients' feedstock.

Differentiators

Plas-TCat presents several advantages over traditional waste plastic management methods like thermo-pyrolysis, landfilling, and mechanical recycling, especially in terms of efficiency, environmental impact, and product value.

- **Integration with Aromatics separation units:** The Plas-TCat technology uniquely produces BTX (Benzene, Toluene, Xylene), which is not common in other technologies. This feature enhances the practicality and value of the process by seamlessly integrating with existing aromatics separation units, resulting in a more efficient production of high demand chemicals.
- **Efficiency and Energy Consumption:** Catalytic pyrolysis is more energy efficient compared to normal pyrolysis because the presence of a catalyst lowers the reaction temperature and energy required to break down the plastics.
- **Quality and Variety of Products:** The Plas-TCat method can convert waste plastics into higher value products such as chemicals and fuels more effectively than pyrolysis. The catalyst helps control the reaction pathways, leading to more selective production of desired products and less unwanted byproducts.
- **Environmental Impact:** Compared to landfilling, the Plas-TCat process significantly reduces the volume of waste plastic, preventing environmental contamination and conserving land space. Unlike landfilling, catalytic pyrolysis repurposes it into useful products.

Creating High-Value Chemical Products



Plas-TCat technology consists of 4 sections: Receiver/ Storage, Pretreatment (optional), Catalytic pyrolysis (CP) and separation with post treatment. The CP is the core of the technology to aim to convert low-value plastic waste into high value chemical products. The technology is designed to overcome the limitations of traditional gasification and pyrolysis methods, offering an efficient, scalable solution for chemical recycling.

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