BUSS ChemTech

CHEMICAL RECYCLING

MIXED PLASTIC WASTE RECYCLING

It is not an overstatement to say that the world is facing a mountain-sized challenge!

BUSS ChemTech's innovative pyrolysis process provides a win-win for the environment, consumers, businesses and policy makers!

Our process converts plastic waste – waste that is unfeasible to recycle via other means – and turns it into intermediates that can be used to make new plastic products, thus, truly closing the plastic lifecycle loop.

In addition, the process is energy neutral, which further reduces burdens on the environment.

REDUCE
REUSE
RECYCLE

Chemical Recycling Demo Plant:
Capacity 0.25 t/h, Hungary

THE MOUNTAIN-SIZED CHALLENGE

The demand for plastics is expected to continue to grow significantly over the coming decades. At the same time, the global community is demanding more efficient use of the world's valuable resources.

Plans to resolve these competing demands can only be made after an honest assessment of the current situation, the rational (scientific) evaluation of available technologies, and with realistic predictions of future consumer behavior.

A high-level overview of the generally accepted plan involves reducing the demand for plastics, reusing the plastic when possible, and recycling the plastics at end-of-life.

In short, Reduce – Reuse – Recycle, or R^3.

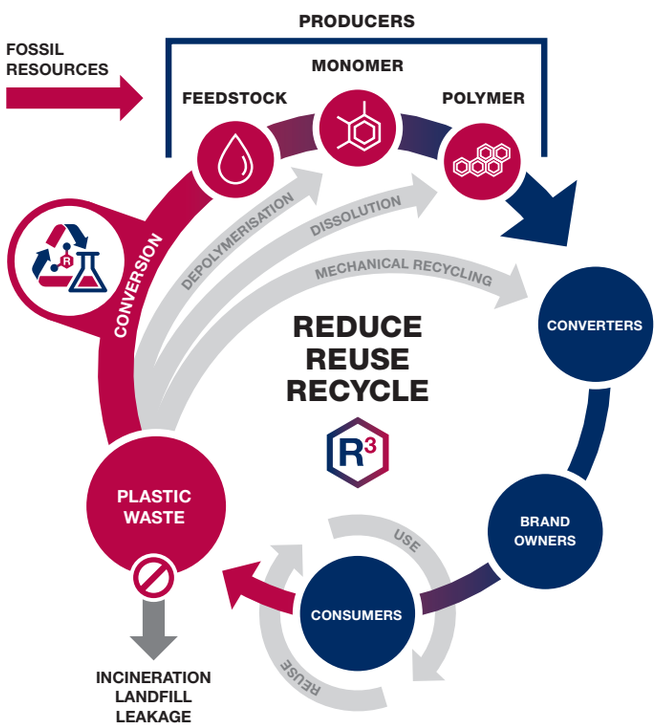
Even within the recycling step, there are many methods: "mechanical", "physical", and "chemical" recycling. Furthermore, chemical recycling can itself be broken down into different types. This can all be very confusing. And trying to determine which method is most appropriate in a particular case is even more difficult to understand, and not just for consumers and policymakers, but even for those in the industry!

CHEMICAL RECYCLING: (PART OF) THE SOLUTION

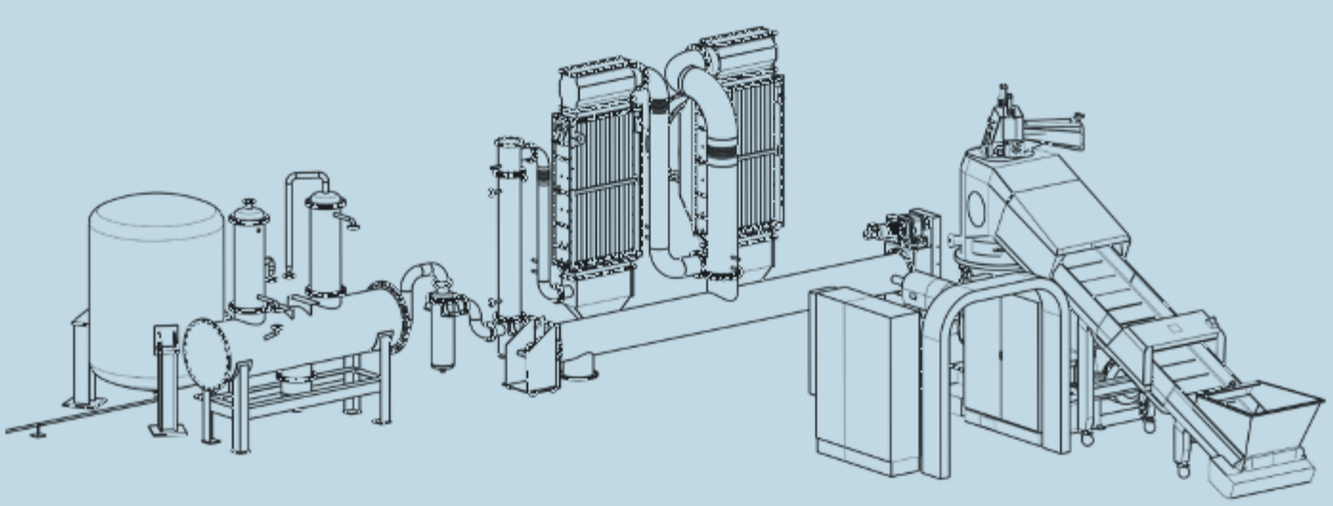
Put simply, once a plastic product is put into circulation, it should be reused if possible. Once it arrives at end-of-life, the product should be recycled using the method with the least burden to the environment. This is illustrated through the size of the loops in the illustration to the left, i.e., reuse before recycling and mechanical recycling methods before chemical recycling methods.

Exceptions arise due to recyclability and intended use of the recycled material. Some products cannot be effectively recycled with mechanical methods (i.e., some multi-layer packaging, flexible films, and certain polymers to name a few) or their intended use does not allow it, i.e., food-contact and sterile uses.

This is why the concept of complementarity has been gaining attention. The combined use of mechanical and chemical recycling methods is the best way to recycle the highest percentage of plastic waste with the least environmental impact. Several recent life-cycle assessments (LCAs) produced by independent bodies have reached the same conclusion.



Chemical Recycling Plant with Pre-Treatment



SCOPE OF SUPPLY

We can provide a package with the Basic Engineering and Key Equipment or deliver a full plant, including the following sections:

- Pre-treatment of plastic waste (shredding, washing, granulation, drying)
- Material transfer (conveying to chemical recycling plant)
- Feeding/extrusion
- Flash pyrolysis
- Pyrolysis oil fractionation
- Solids removal
- Gas treatment
- Energy recovery

THE TECHNOLOGY

The core of our chemical recycling technology is the patented Flash Pyrolysis Reactor. Its innovative design optimizes heat transfer, resulting in high quality product while achieving fast residence times. For specific client requirements, the process can be tuned to modify product characteristics. And with BUSS ChemTech's safety and automation concept, a plant can be operated by a single person.

Our technology is robust. It is able to accept truly mixed plastic waste and a significant portion of impurities (see table on the right). Naturally, the "cleaner" the plastic waste, the higher the yield of product, but for cases where sufficient sorting and washing are simply not feasible, our process can still be employed.

There are three outputs from the plant:

- pyrolysis oil – sold to make new plastics (70–80 %)
- pyrolysis gas – which can be sold or used within the process to make it energy self-sufficient (15–20 %)
- solid char which can also be sold/re-used in a variety of industrial processes.

RAW MATERIAL SPECIFICATIONS

CONTENT	VALUE
Polymers	PE, PP, PA, PS, PC, ABS
Paper, textiles, wood	max. 5–7 %
PVC	< 3 %
Organics	max. 7–10 %
Moisture	max. 7–10 %

**Learn more about our technology.
Scan the QR code now!**

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