

Laminated Packaging Recycling:
Process description and plant datasheet

Features

- Aluminium recycling from flexible laminate packaging.
- Compact, modular design allowing local treatment.
- Minimal emissions.
- Advanced thermal treatment based on Microwave Induced Pyrolysis.



Laminated Packaging

Flexible laminated packaging consists of layers of aluminium and plastic and/or paper and is widely used in food pouches, toothpaste and cosmetic tubes, drink cartons and many other products.

The waste material generated from the use of this packaging is currently not recycled and, with volumes constantly increasing, a solution is needed.

The Enval Process for Laminated Packaging

Developed from research carried out at the University of Cambridge, Enval's proprietary process for treating laminated packaging is a proven technology based on a concept known as Microwave Induced Pyrolysis.

The process involves mixing shredded waste with carbon, a highly microwave-absorbent material. The energy from the microwaves is transferred to the waste by thermal conduction from the carbon, providing both a very efficient energy transfer mechanism and a highly reducing chemical environment.

The process recovers 100% of the aluminium present in the laminate clean and ready to recycle, and produces oils and gases suitable for fuel for steam/electricity generation or for use as chemical feedstock in other processes.



Recovered aluminium from the Enval Process

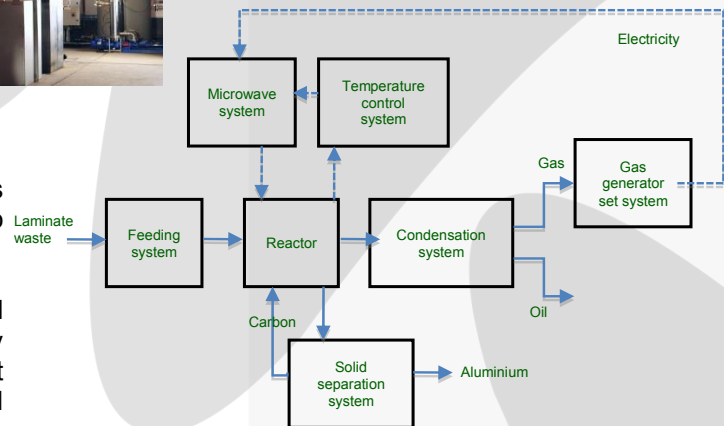
The Enval Process enables the recycling of laminated packaging, recovering valuable resources that would otherwise end up in landfill.



The Enval Process is a robust technology, capable of handling both relatively clean production scrap (from the manufacture and filling of the packaging) and also the contamination challenges presented by post-consumer waste.

The pyrolysis gas generated by the process is used to produce the electricity required to operate the plant.

Its compact size and small capacity matched to local needs, coupled with its high efficiency and minimal emissions mean that the plant requires minimum Planning and Environmental Permitting.



Typical process flow diagram

| Operational Parameters: | Operational Requirements: |
|---|--|
| Capacity: 350 kg/h dry weight (ca. 500 kg/h wet feed) | 100kW electrical supply (420V, 3 Phase) as backup |
| Process operating temperature: 450 - 550 °C | Air: 40 m ³ /h (compressor may be supplied as part of the system) |
| Process operating pressure: atmospheric | Natural gas (or propane): 200 m ³ /h during startup |
| Time to reach operating temperature: 2 hours | Access to water: For filling tanks only |
| Continuous operation: 24/7 or 16/5 according to need. | Nitrogen: 10 m ³ /h (generator may be supplied as part of the system) |
| Feed contamination tolerance: up to 15% in weight | Personnel: 1 operator per shift |
| | Operational Area : 250 m ² |