Renewable Materials Conference Abstract

Chemical industry, new refinery concept & chemical recycling

2022

Futerro and our product : the PLA

Since 1992, Futerro has been a pioneer and world leader in bioplastics with the development and production of Poly-Lactic Acid. PLA is a well-known bio-based polymer, capable of replacing many traditional petroleum-based plastics. It can also be fully recycled chemically into monomer. It comes from greenhouse gases converted into fermentable sugars through plants. The sugar is then converted into lactic acid and finally into RENEW PLA® by our technology based on non-GMO bacteria.

Production process:

Renewable resource

Sugar extraction

From sugar to lactic acid

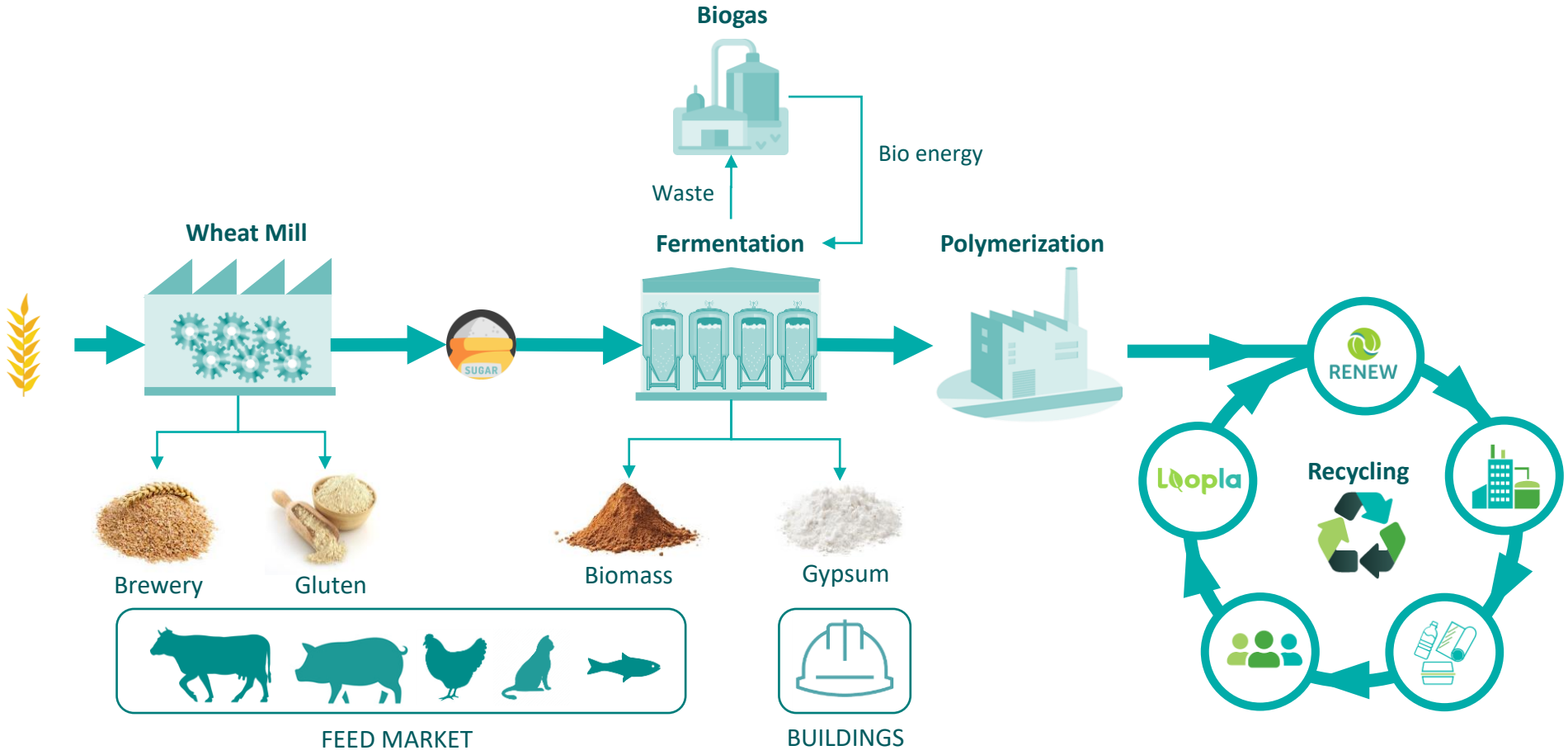
Polymerization into PLA

PLA is a biopolymer with all the advantages that today's industry is looking for:

- It is bio-sourced and therefore does not draw on fossil resources
- It has excellent mechanical properties and can replace many petro-plastics
- It can be chemically recycled ad infinitum without changing its quality
- It is the only polymer whose degradation product, lactic acid, is harmless to human health

New refinery concept

Futerro's ambition is to build a new production unit in Normandy, which would produce 75,000 tons of PLA per year. This will be the first fully integrated biorefinery to produce biopolymers in Europe. The investment involves the construction of several interdependent units for the transformation of agricultural raw material into PLA and its subsequent chemical recycling. This integrated biorefinery will also valorize all its by-products in various sectors such as green energy, construction, agriculture or animal and human food.

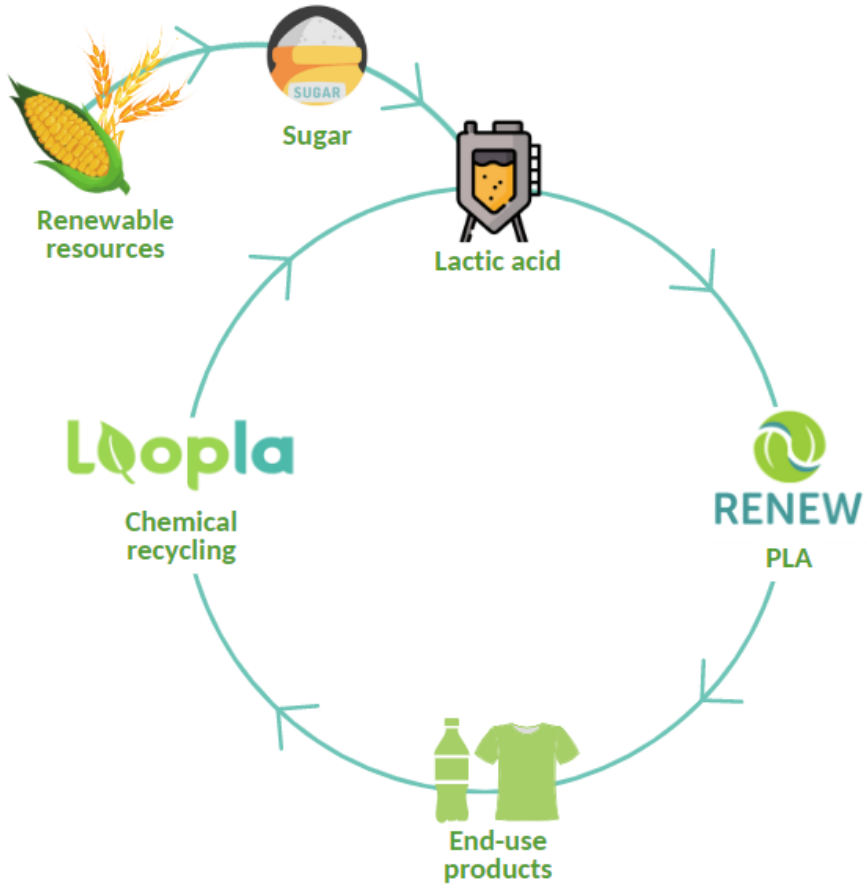


PLA Chemical Recycling : A natural and easy way to protect our planet

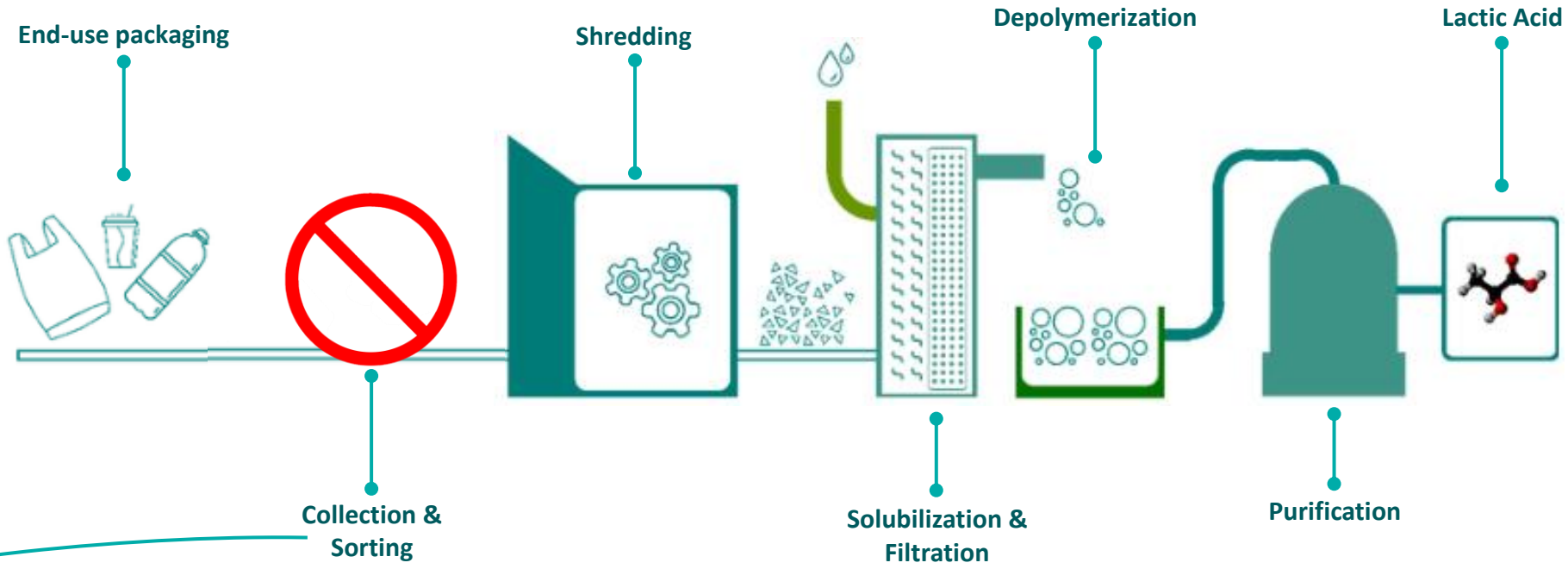
In addition to producing RENEW PLA®, Futerro is now able to offer a fully circular economy principle thanks to its own patented chemical and most selective recycling technology: LOOPLA®.
This technology enables the company to reconvert PLA waste into lactic acid and use it to reproduce virgin RENEW PLA®, retaining the same properties as that produced from renewable carbon.

Many advantages:

- **Low energy** consumption
- **Low chemicals** need
- **High recovery** of PLA content (+96%)
- Remove the **contaminants**
- **Endless** recycling process
- **Shorter recycling loop means:**
  - Lower CO2 foot-print
  - Cheaper process



PLA Chemical Recycling : a focus on Loopla



However, at a large scale, the PLA waste sorting channel does not exist. It is not a matter of sorting technologies, but a matter of volume. PLA can be effectively sorted out from PMD waste stream via NIR technology. If no incentive policy is put in place by EU to support the implementation of bio-based solutions like PLA and their recycling, EU will never stop using petro-polymers and achieve its carbon neutral goals.