

Specialty Polymers Technology

An adaptable, customized batch or continuous process

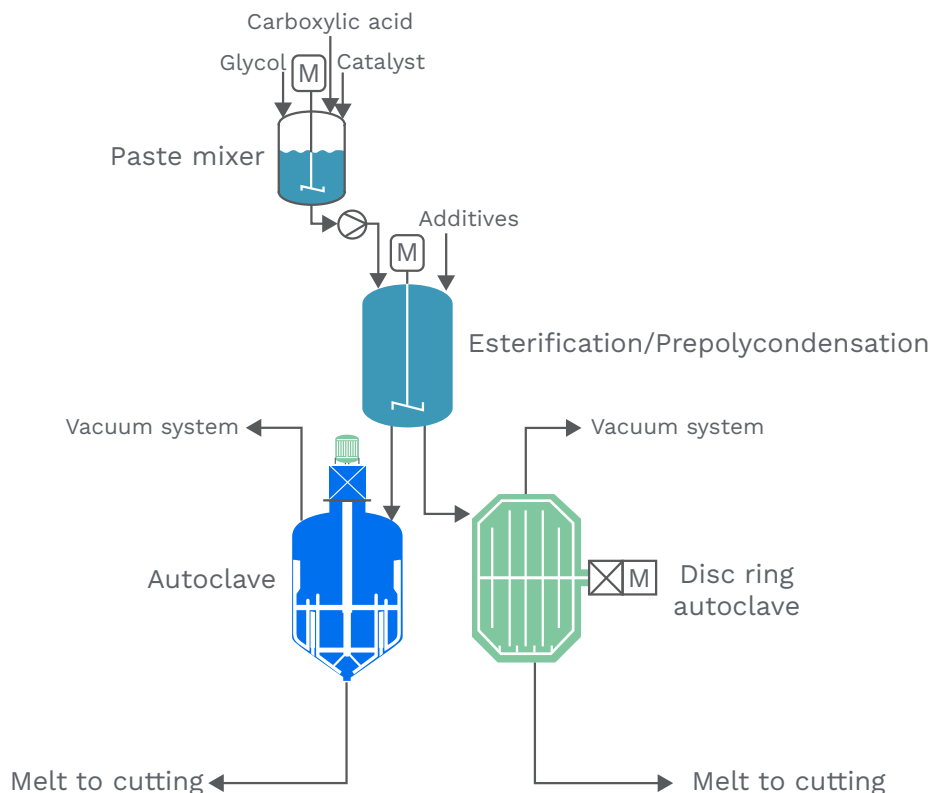
Typical specialty polymers produced with Zimmer's batch process include:

- PET containing various additives and co-monomers
- PCT (Polycyclohexylene dimethylene terephthalate)
- PEN (Polyethylene naphthalate)
- PTT (Polytrimethylene terephthalate)
- PBT (Polybutylene terephthalate)
- Biopolymers (PBAT, PBS)

Cast polyester resin based on carboxylic acids and glycols

The process can be adapted to polymer specific requirements and is tailor made up to a capacity of 12.5 metric tons per batch. In batch production, a repeatable and reproducible operation must be ensured. Batch cycle times vary less than minutes to achieve a consistent product.

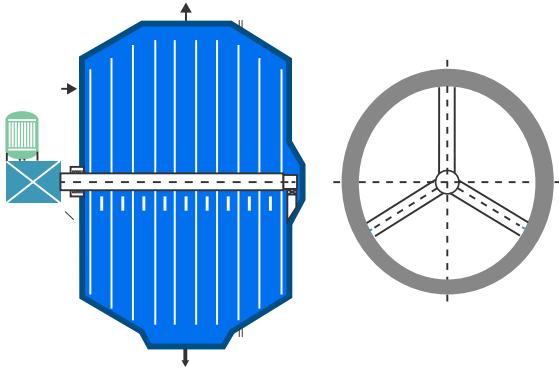
Please note these polymers can also be produced using a continuous process for larger capacities.



Technip Energies Zimmer Specialty Polymer Batch Plant with Standard or Disc ring autoclave

Steps of the batch process

The carboxylic acid and glycol are mixed while adding catalyst/additives in the paste preparation vessel. From there the paste is fed into the Esterification/ Prepolymerization reactor. This step is controlled using a special temperature/pressure regime and additives can be fed as required per recipe. The split-off vapors are released from the esterification stages and fed into the process column for rectification. The intermediate polymer product is then transferred to the Disc Ring Autoclave for final polymerization.



Technip Energies Zimmer's Disc Ring Autoclave

Zimmer's Disc Ring Autoclave - the high performance reactor

Advantages of the Disc Ring Autoclave compared to a conventional autoclave design:

- Higher evaporation surface
- Lower process temperature
- Shorter polycondensation time
- Lower thermal stress
- High surface renewal



Manufacturing of Disc Ring Autoclave

Technip Energies Zimmer Polymer Technology

We provide technology, engineering, project management and procurement services for polyesters (PET, PBT, PTT, PBS, PBAT) and polyamide (PA6, PA6.6) production plants. We are focused on our customers' needs. Over the last 70 years, our engineers have worked to enhance our portfolio of well-proven technologies using in-house research and development facilities. This dedication to quality has helped us to build an outstanding track record of placing our technologies in more than 800 plants.

As part of a global network of centers which manages the company's expanding portfolio of onshore process technologies in petrochemicals, refining, hydrogen and syngas, polymers, gas monetization and renewables, we have access to Technip Energies' leading global engineering, procurement, project management and construction network. Technip Energies operates in 34 countries around the world with more than 15,000 employees.



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