

Ethanol technology

A high-performance process for beverage and fuel applications



Cargill - Wheat Starch Slurry Distillery, France

Technip Energies' proprietary ethanol technology includes a full scope of services for the design, construction and successful startup of plants. We have hundreds of references in the ethanol industry throughout the world.

Our technology is suitable for both high quality beverage alcohol and fuel ethanol applications.

Our full range of services range from feasibility studies to the execution of lump sum, turnkey projects. This includes the supply of proprietary technology, startup assistance of the ethanol plant, ancillaries and associated off-sites and supporting utilities.

Technip Energies' technology covers the following major process steps:

- Feedstock preparation
- Hydrolysis
- Fermentation
- Distillation
- Dehydration
- Co-products recovery

Our ethanol process may be coupled with our Hummingbird® technology to transform ethanol to ethylene through dehydration or partially adopted to process cellulosic 2G sugars.

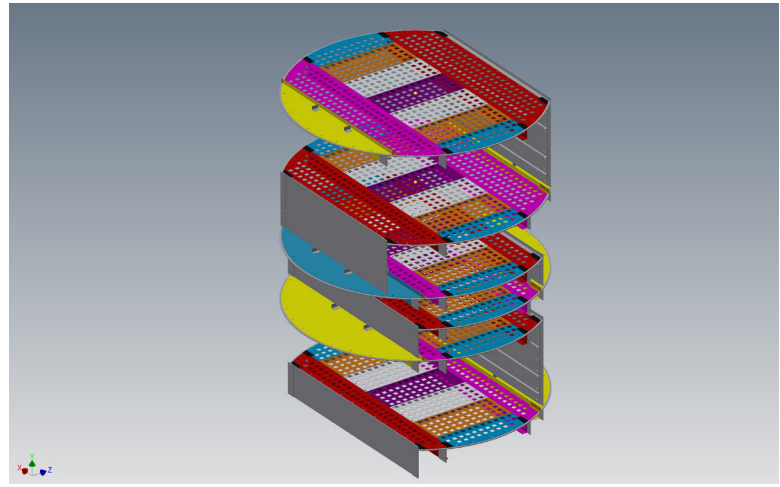
Proven technology

Technip Energies' technology has been implemented worldwide with hundreds of references for greenfield and brownfield projects. We offer a very flexible approach for new grass root plants, as well as revamps and debottlenecking of existing facilities or associated product upgrades.

Technip Energies has optimized design and execution models to propose low-cost solutions to increase the return on investment for our clients. Our proven technology, stemming from our acquisition of Speichim in 2000, has been used in plants for leading manufacturers globally.



Manildra - Extra Neutral Alcohol Unit, Australia



Proprietary static column trays

Major advantages

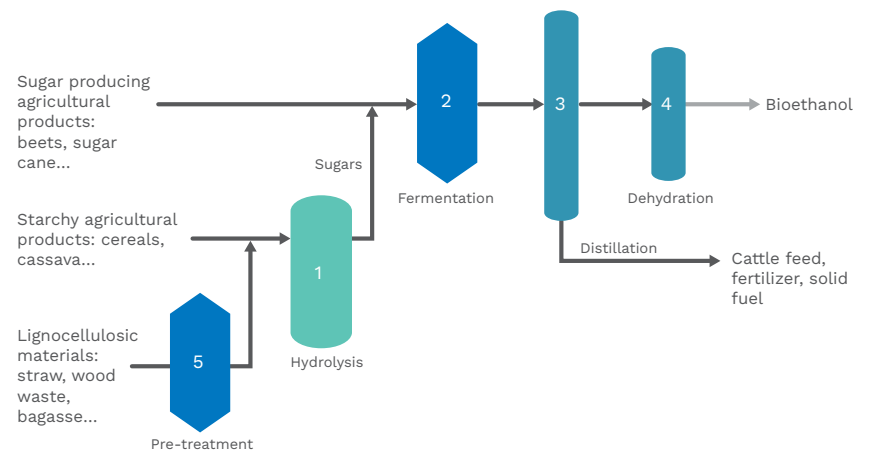
Our ethanol technology can process a complete range of first generation raw materials, including sugar cane, sugar beets, molasses, corn, wheat, rice, and starch effluents. Part of our technology can also be used for second generation cellulosic ethanol production.

Our exclusive design for static column trays enables the production of very high-quality products. Our technology also offers an energy efficient process by optimizing the steam consumption.

Additional benefits include:

- Optimum product yields
- Low energy consumption with a high level of heat integration
- Water recycling and effluent valorization
- High quality beverage alcohol
- By-product recovery

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