



PUBLIC SUMMARY

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Description of Business

Through proprietary technology, C₃ BioEnergy will produce bio-propane and bio-propylene from renewable feedstocks, offering the only economically competitive, domestically produced, and environmentally friendly source of these staple commodities.

Description of Technology

C₃'s technology centers around an innovative process by which sugars are treated to produce propane or propylene and a hydrogen by-product. As shown in Figure 1, C₃ intends to manufacture bio-products from corn and sugar in the near to mid term, selling the hydrogen to a co-located third party producer of nitrogen fertilizers. When corn is used, C₃ will also produce distillers dried grain with solubles (DDGS) which will be sold as animal feed.

A provisional patent protecting the C₃ proprietary technology has been filed.

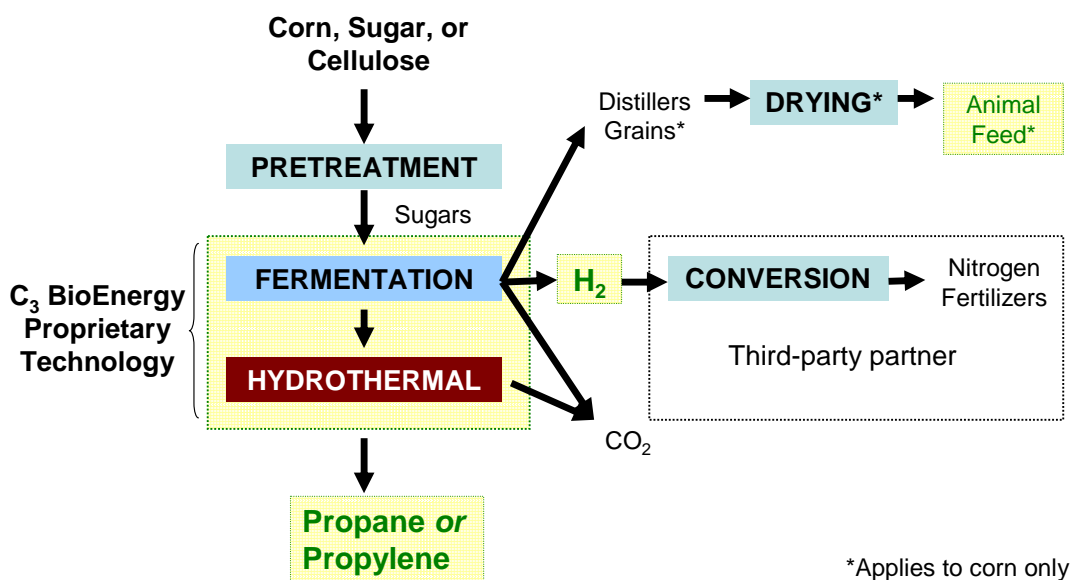


Figure 1: Schematic of the C₃ Manufacturing Process

Team

The founding team is highly motivated and well-qualified to develop and commercialize its sugar to propane technology. C₃ BioEnergy is led by MIT co-inventors Curt Fischer and Andrew Peterson, both of whom are at the leading edge of fermentation (Curt) and hydrothermal (Andrew) biomass conversion research, as well as the Harvard Business School's Tracy Mathews, who brings experience in the scale up of pilot-scale processes as well as biofuels business development.



Products

C₃ will offer domestically produced, renewable, agriculturally based alternatives for existing propane and propylene markets. Like ethanol, the first-generation biofuel leader, bio-propane, bio-propylene, and bio-hydrogen increase energy security, reduce greenhouse gas emissions, and bolster the agricultural sector of the economy. In addition, C₃'s technology uses a manufacturing process that is less energy intensive than ethanol's, and that yields more BTU's of fuel per unit of feedstock. As C₃'s bio-products are chemically identical to the traditional chemicals they are replacing, they integrate seamlessly into the existing distribution infrastructure for propane and propylene and can be blended to any level with traditionally derived products, resulting in predictable demands for the products. On the supply side, C₃'s proprietary technology creates significant barriers to entry as the Company will be able to control capacity expansion using the only known economically viable route to these bio-products.

C₃'s bio-hydrogen stream will be sold to a co-located third party manufacturer of anhydrous ammonia, urea, or other heavily used nitrogen fertilizers.

US demand for propane currently tops 21 billion gpy, while the demand for ammonia fertilizer is enough to consume the hydrogen that would be produced with 19 billion gpy of bio-propane. Propylene demand in North America exceeds 20 million tons per year. Globally, propane demand exceeds 160 billion gpy while the demand for ammonia fertilizer could consume the hydrogen produced with well over 100 billion gpy of propane. Global propylene demand totals more than 75 million tons per year.

Market Entry Strategy

C₃'s technology converts sugars to bio-products, allowing the process to intake corn, sugarcane, and ultimately cellulosic feedstocks. To tap into the existing supplier network for ethanol production, C₃'s first plants will employ corn as a feedstock in the United States and sugarcane in Brazil. These plants will be located in the Midwest region of the United States and the South-Central region in Brazil in order to minimize feedstock and product distribution costs. Given the concentration of propane and ammonia demand in rural areas, C₃ expects to sell these products directly into the local communities where they are being produced. Propylene will be sold into the chemical industry, largely for conversion into polypropylene and other common plastics.

The majority of cellulosic ethanol research is focused on converting cellulose to sugar. As these technologies come online, they will enable the use of cellulose as an additional feedstock for C₃ processes.

Development Path

Provided adequate funding, C₃ BioEnergy's development timeline will be as follows:

- 18-30 months for the development and optimization of a pilot scale operation as well as the design and siting of a demonstration facility capable of 1-5 mmgpy.
- 12-18 months for the construction and optimization of a 1-5 mmgpy demonstration facility as well as the design and siting of the first commercial facility.

Requirements for Success

C₃'s technology is in the early stages of development. As such, a major requirement will be to demonstrate high yields of propane or propylene, and hydrogen production from sugars. Additionally, to compete on a level playing field with ethanol and biodiesel in the US, C₃ will require the extension of government supports to its biofuel products. Finally, given the high transportation costs of hydrogen, the identification of local off-take partners for the hydrogen stream is considered critical.