

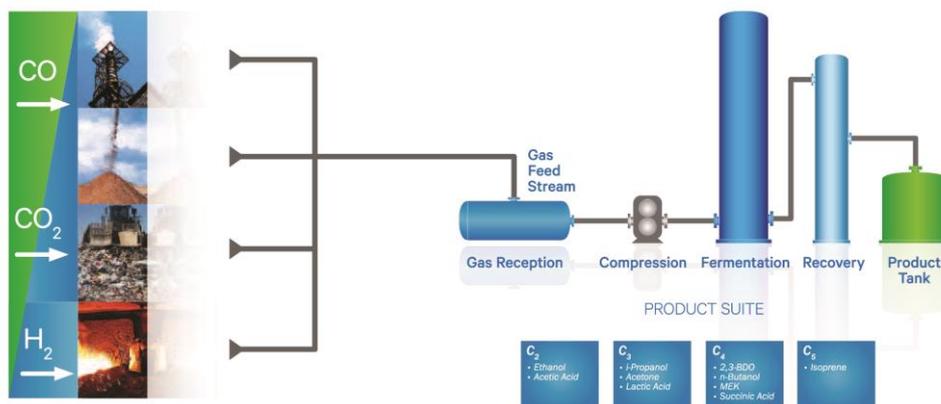
CEO: Dr. Jennifer Holmgren
Board: Andrew Chung; Nigel Gormly, New Zealand Superannuation Fund; Jennifer Holmgren, LanzaTech; Jim Messina, The Messina Group; Datuk Abdul Rahim Hashim, Petronas; Gary Rieschel, Qiming Ventures; Toru Ryoso, Mitsui; Sean Simpson (founder), LanzaTech; Tamara Tompkins, Khosla Ventures; Roger Wyse, Malaysian Life Sciences Capital Fund
140+ Staff Globally: HQ, Laboratories: Chicago
 Offices in: London; Shanghai; New Delhi;
Funding: US \$200M+
IP Portfolio: Over 331 Patents pending; 176 granted

Founded in 2005, LanzaTech is commercializing a pioneering carbon capture and reuse technology that recycles carbon-rich waste gases (containing carbon monoxide, carbon dioxide, and/or hydrogen) into high-quality, useful everyday products such as fuel ethanol, jet fuel or chemicals used for production of nylons and plastics.

By utilizing waste streams, LanzaTech’s fuels and chemicals are wholly outside the food value chain, with no impact on land or water. LanzaTech provides a pathway to keep our fossil reserves in the ground by recycling existing resources and turning waste carbon from a liability into an opportunity.

The LanzaTech Process

Carbon-rich waste or residue gas streams enter a fermentation bioreactor. Proprietary microbes consume the gas and grow biomass, producing ethanol as a byproduct. Valuable products are then separated from the fermentation broth and used directly downstream or as chemical intermediates for products such as plastics, nylons, rubbers, and "drop-in" fuels. LanzaTech ethanol offers a 70% reduction in GHG compared to fossil alternatives.



LanzaTech ARPA-E REMOTE Project

Innovative Bioreactor Designs for Process Intensification in Biological Natural Gas Conversion

This Project combines methane fermentation expertise, experimental bioreactor characterization, as well as advanced simulation and modeling to develop a novel gas fermentation system to significantly improve gas to liquid mass transfer. This unique bioreactor concept seeks to efficiently transfer methane to microbial biocatalysts by reducing the energy demand required for high transfer rates. This bioreactor design would significantly reduce capital and operating costs, enabling small-scale deployment of fuel production from remote natural gas sources. <http://arpa-e.energy.gov/?q=slick-sheet-project/bioreactor-improved-methane-transfer>

Process Scale-up and Commercialization

LanzaTech has successfully operated multiple demonstration plants globally with 40,000 combined hours on stream providing thousands of data points covering different key aspects of the process. Today we have three commercial facilities under construction, in Taiwan with China Steel; in China with Capital Steel and in Belgium with the world's largest steel producer, ArcelorMittal.



2008

Blue Scope
New Zealand
Pilot
(15,000 gal/yr)



2012

Baosteel
China
Pre-commercial
(100,000 gal/yr)



2013

Capital Steel
China
Pre-commercial
(100,000 gal/yr)

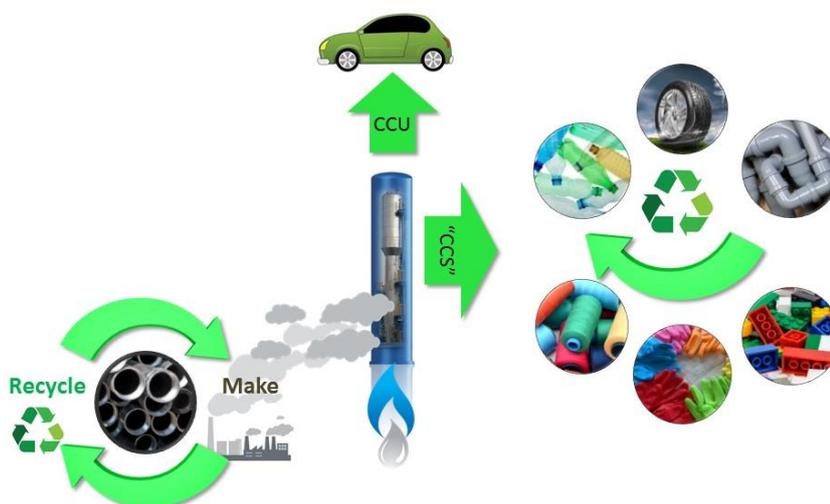


2017

3X Commercial
(10 - 30M gal/yr)
ArcelorMittal, Belgium
China Steel, Taiwan
Capital Steel, China

Fixing Carbon into Products. A Carbon Smart Future

Across the supply chain, LanzaTech promotes a 'carbon smart' circular economy, where both gas providers and end users can choose to be resource efficient by recycling or "sequestering" carbon into new products rather than making them from new fossil resources. For example 2,3-Butanediol produced from waste steel mill gases can be converted to butadiene a precursor in the production of nylon and rubber.



A gas stream cannot be easily traded and therefore the utilization of a gas stream as a feedstock will result in decoupling the production of commodity chemicals from commodity feedstocks. This will have a game changing impact on the chemical industry and its supply chain - a trillion dollar industry shifting the way it thinks about commodity sourcing and supply; an impact that can only be derived through embracing the circular economy

A Carbon Smart Future for a Circular Economy

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