YaREN

Understanding the Carbon Capture and Storage Process

Project YaREN™ is a proposed low-carbon ammonia production and export facility in Ingleside, Texas, being developed by joint partners Enbridge and Yara. This project prioritizes employee and community safety, invests in the local economy, and creates a significant number of jobs in the Ingleside area.

What is carbon capture and storage?

Carbon capture and storage (CCS) is a way of reducing carbon dioxide (CO_2) emissions. It's a three-step process involving capture, transport, and permanent storage of CO_2 emissions from industrial processes.

Is this a new process?

Each aspect of Project YaREN's carbon capture and storage process is based on highly tested and proven industry methods. Carbon has been captured, injected, and stored underground in the U.S. for over 50 years. The transport of captured carbon for sequestration rather than to other industrial facilities is a newer process, but there are several U.S. facilities using this process that will be live before Project YaREN.

Will the facility be producing gray ammonia?

Project YaREN will produce blue ammonia. As a contingency in our air permit application, we have outlined the possibility for gray ammonia production for up to 180 days after the initial startup of each of the two production units and for up to 90 days per year. This is to account for third-party CCS infrastructure having service unavailability. We will know well in advance of startup if we need to use the 180-day provision.

CO_2 & CCS facts

- Carbon capture and storage (CCS) is a safe and effective technology that reduces CO_2 emissions from industrial operations, allowing industries to continue sustainable practices while providing jobs for the community
- Project YaREN will produce blue ammonia, a low-carbon ammonia production process that captures up to 95% of CO_2 emissions created in the production process
- CO_2 emissions captured from the project's ammonia production will be transported and stored off-site, out of San Patricio county
- Every aspect of carbon capture and storage planned for Project YaREN is proven and tested, from segregating CO_2 from hydrogen to sequestering it in geologic formations.

Want to learn more about carbon capture and storage? Visit these resources:

https://www.iea.org/

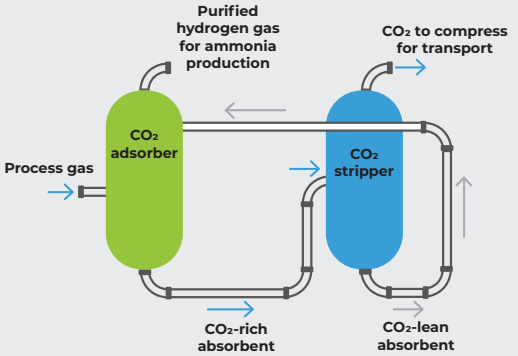
https://www.energy.gov/fecm

https://ingaa.org

The carbon capture and storage process

Capture technology

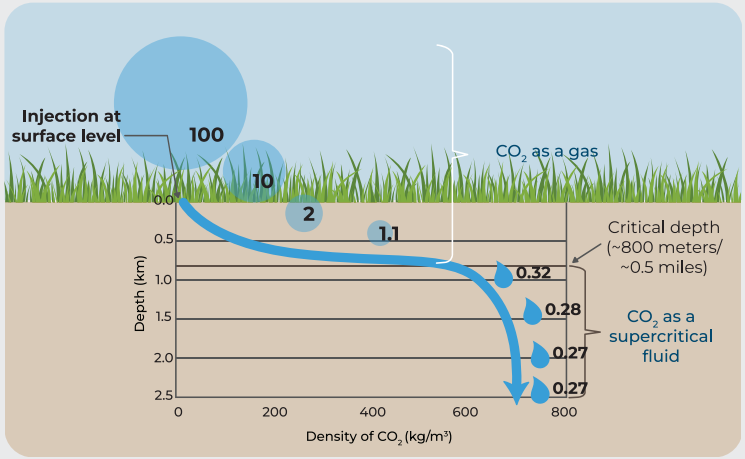
The process, used by hydrogen manufacturers for decades, begins by using organic compounds that absorb carbon dioxide from process gas. The CO_2-rich solution is then sent to a stripper to remove the solvent so the CO_2 can be compressed and transported.



We are here to answer your questions and listen to your feedback.

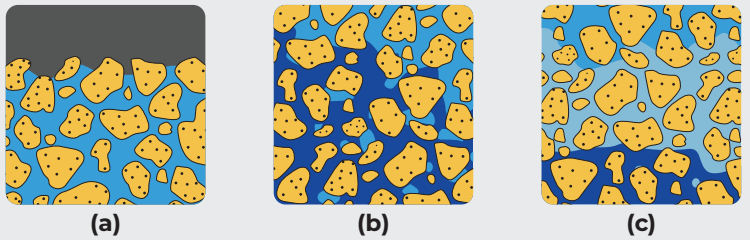
Contact us at **361-461-0995** or email **inquiries@projectyaren.com**

projectyaren.com



Compression and transport

CO_2 is compressed to make transportation and storage more efficient. When compressed, CO_2 becomes a supercritical fluid, which means it behaves like both a liquid and a gas. This allows it to be transported and stored more efficiently in pipelines and underground storage sites.



Storage and trapping

CO_2 is injected deep underground and permanently stored in tiny pores within rock formations, like sandstone. Layers of thick, impermeable rocks, such as shale, act as barriers that trap the CO_2 underground, preventing it from escaping to the surface (a). Once CO_2 is stored in the rock, some of it is trapped in the tiny spaces between the rocks (residual trapping) and some dissolves into the fluid within the formation (b). Additionally, some of the CO_2 reacts with the surrounding minerals and forms stable new minerals over time (c).

YaREN

The content developed on this factsheet is related to the project's scope as of August 2024 and may change as the project evolves.