BRIGHT

Technology /

CO2 liquefaction: natural refrigerant

CO2 liquefaction technology using a natural refrigerant results in high-quality, pure liquid CO2 production for a wide range of industrial uses.

Solutions / Renewable gas systems /

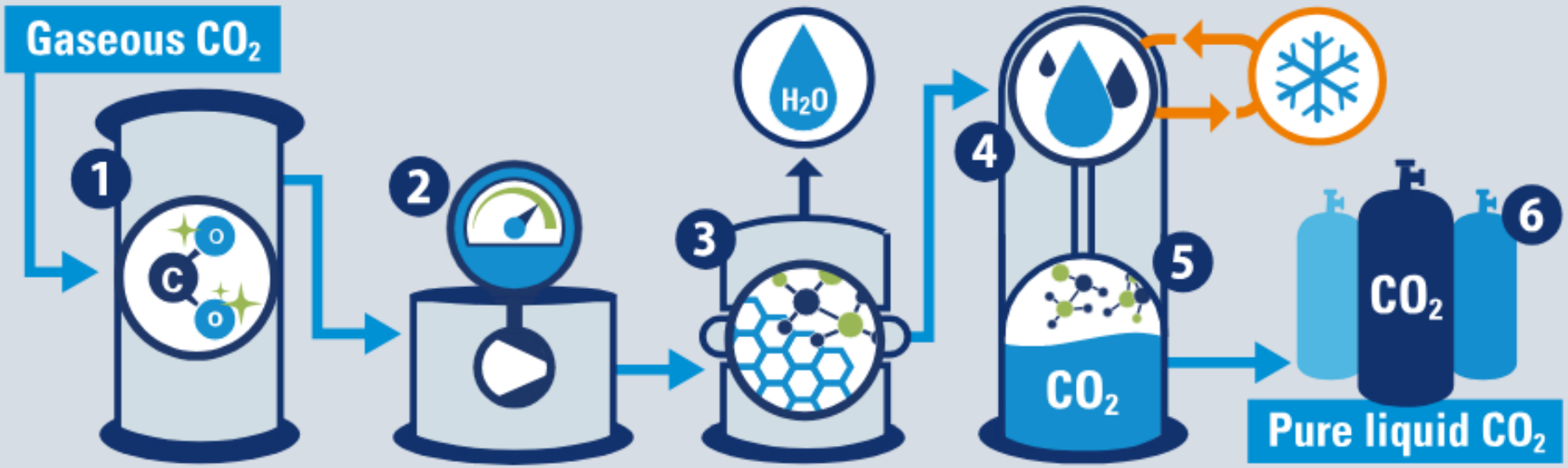
CO2 Liquefaction: CarboPac-L

CO2 liquefaction systems to recover CO2 from the process, produce food-grade liquid bio-CO2, and improve your carbon intensity (CI) score. Compatible with biogas upgraders and carbon capture systems.

Natural refrigerant

By utilizing CO2 as a refrigerant during the CO2 liquefaction process, traditional synthetic refrigerants such as Freon or Ammonia are replaced. The different approach with CO2 as a refrigerant brings several benefits. Carbon dioxide is a natural refrigerant that is environmentally friendly as well as safe. Furthermore, this technology enhances the liquefaction efficiency, reducing operational expenses and increasing (bio)CO2 production capabilities. Additionally, the use of clean carbon dioxide also optimizes energy consumption, making it a more sustainable and cost-effective solution.

How does it work?



The process in 6 steps

1. Removal of impurities from the CO2 using an activated carbon filter.
2. The CO2 is compressed with an oil-free, multistage compressor.
3. Any moisture is removed via an automatic molecular sieve dryer.
4. Entering the liquefier; non-condensables remain gaseous as CO2 condenses
5. Non-condensables are extracted as the CO2 is liquefied.
6. Purified, liquid CO2 is stored in an insulated tank for various uses.

Process liquefaction

The CO2 liquefaction process starts with the purification of the carbon dioxide gas via an activated carbon filter, the CO2 is then compressed using an oil-free compressor. After moisture removal by a molecular sieve dryer, meticulously removing any moisture, the carbon dioxide is liquefied. In the liquefier, CO2 is separated from non-condensables such as oxygen, methane, and nitrogen. The purified, liquid CO2 is stored in an insulated tank for multiple applications, while non-condensables are recycled to enhance methane recovery up to 99%.

CarboPac-L Mini

Perfect for small-scale CO2 production with a seamless integration into existing operations.

Capacity
300 - 600 kg/hr

CO2 purity
> 99.9% (food-grade)

Setup
1 x 40 ft. container
1 x 20 ft. container (optional)
1 x reboiler skid
Storage tank(s)

CarboPac-L Compact

For the delivery of food-grade quality bio-CO2 without compromising on efficiency or sustainability.

Capacity
800 - 1,200 kg/hr

CO2 purity
99.9% (food-grade)

Setup
1 x 45 ft. container
1 x 20 ft. container (optional)
1 x reboiler skid
Storage tank(s)

CarboPac-L Medium

The system offers a vast capacity for bio-CO2 production without an extensive footprint.

Capacity
1,500 - 4,000 kg/hr

CO2 purity
99.9% (food-grade)

Setup
1 x 40 ft. container
1 x 20 ft. container
1 x 20 ft. container (optional)
1 x reboiler skid
Storage tanks

Carbo[

Request information

Ideal for large operations, the plant enables bio-CO2 production of a substantial size.

Capacity
4,500 - 8,000 kg/hr

CO2 purity
99.9% (food-grade)

Setup
1 x 40 ft. container
1 x 20 ft. container / 1 x 40 ft. container
1 x 20 ft. container (optional)
1 x reboiler skid
Storage tanks

Key features & benefits

- Clean substitute for CO2 from natural gas (by-product of fertilizer plants)
- Improvement of carbon intensity (CI) score
- Increased independence of CO2 buyers / consumers
- Create an extra source of revenue
- Natural CO2 as a refrigerant
- Food-grade purity
- Compact & modular design
- Heat from the liquefier compressor can be recovered

	CarboPac-L Mini	CarboPac-L Compact	CarboPac-L Medium	CarboPac-L Gr
Capacity	300-600 kg/hr	800-1,200 kg/hr	1,500-4,000 kg/hr	4,500-8,000 kg/hr
End-product	Liquid bioCO2	Liquid bioCO2	Liquid bioCO2	Liquid bioCO2
CO2 purity	99.9% (food-grade)	99.9% (food-grade)	99.9% (food-grade)	99.9% (food-grade)
Footprint	40 ft. container + reboiler skid	45 ft. container + reboiler skid	40 ft. container + 20 ft. container + reboiler skid	40 ft. container + 2 x 20 ft. / 40 ft. container + reboiler skid
Optional liquid CO2 analyzer (20 ft. container)	✓	✓	✓	✓
Improvement CI score	✓	✓	✓	✓
CO2 as refrigerant	✓	✓	✓	✓
ptional heat recovery	✓	✓	✓	✓

Request information