



ASC CO₂ By-Product Recovery (BPR)

The ASCO CO₂ by-product recovery plant (BPR) was developed specifically for processes in which CO₂ is produced in a particularly pure form—for example, in breweries, ethanol, spirits, and wine production, or in the manufacture of ammonia and hydrogen.

The processing, purification, and liquefaction of this CO₂ creates a reliable, cost-effective, and sustainable source of CO₂ that can be used both for internal consumption and for resale.

ASCO BPR plants are characterized by high energy efficiency, low operating costs, and durable construction. Each plant is individually tailored to the customer's process conditions and capacity requirements – for maximum economic efficiency and process reliability.



General process description

	Alcohol sources	Industrial sources	Natural sources
From a raw gas ↓ to 99.998% pure CO ₂	CO ₂ gas is generated as a by-product of the alcoholic fermentation process (e.g. breweries, ethanol operations, distilleries, wineries). This then is collectively reclaimed from the fermentation area through adequately sized collection pipe lines for common feed to the ASCO CO ₂ Gas Recovery System. The gas at this point will be at low pressure and combined purity of >98.5%.	CO ₂ gas can be generated as a by-product of various industrial sources (e.g. ammonia production or hydrogen reforming) and as such can be reclaimed for feed to the ASCO CO ₂ Gas Recovery System	CO ₂ gas can be generated from natural origin (e.g. from natural underground wells). These source gases then can be reclaimed for feed to the ASCO CO ₂ Gas Recovery System.
	The recovery plant compresses CO ₂ gas, elevating the pressure to approximately 18 barg for CO ₂ gas processing that being: washing, purifying, drying and CO ₂ gas condensing. Our selection of specially designed compressors offer the best in energy utilization, dry gas compression and ease of maintenance		
	Once compressed, CO ₂ gas is treated for removal of impurities typical of these sources by high pressure high efficiency CO ₂ gas washing (scrubbing) providing a CO ₂ purity of min 99.9%.		
	ASCO's system design further enhances the gas quality by proper CO ₂ gas purifying. This is accomplished by an activated desiccant bed for gas drying to a dew point of minus 40°C at pressure (-62°C at atmospheric pressure) followed by carbon polish filter, again subject to raw gas and process conditions. Once the operation is completed, the final gas will be odour free, colour free and taste free, preparing for the last stages of purification.		
	As a means of final purification the CO ₂ gas is condensed (separation of non-condensable gases). CO ₂ gas condensing is accomplished by use of an independent refrigeration system that liquefies CO ₂ gas at approximately 18 barg and minus 24°C. The non-condensable gases present in the CO ₂ gas are separated and purged from the system automatically and reused for regeneration gas within the plant		
	Liquid CO ₂ leaving the CO ₂ condenser flows by gravity to a liquid CO ₂ purification system to achieve a final liquid CO ₂ purity of 99.998%. Thereafter, high quality liquid CO ₂ is pumped to a liquid CO ₂ storage tank for handling the liquid CO ₂ such as bulk supply, cylinder supply, dry ice supply for chilling or dry ice supply for blast cleaning		

ASCO By-Product Recovery System: Key features

- ASCO CO₂ Gas Recovery Systems can be applicable to a variety of sources.
- Our advanced technology is strategically positioned offering lowest cost production/ton.
- The environmentally friendly technology – gas scrubbing, purifying, drying – eliminates chemical treatment and handling and offers overall reduced effluent and cost savings/ton.
- Totally automatic process – plant operations and liquid CO₂ tank farm management.
- The ASCO CO₂ Gas Recovery System achieves liquid CO₂ purity of 99.998 % from an inlet CO₂ gas source purity as low as 98.5%.
- For CO₂ sources with a purity of 95 % or higher, we offer recovery systems on request.
- Final liquid CO₂ quality exceeds international food and beverage standards.
- **Capacities available from 500 to 25'000 kg / h (1'100 to 55'100lb/h) (other capacities on request)**

