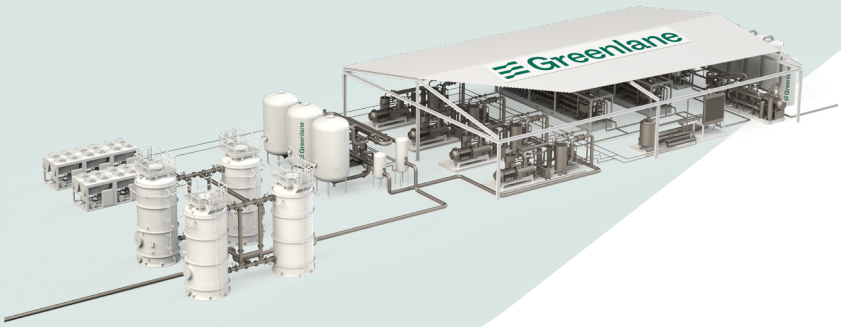
Greenlane™

Cascade LF

Next-Generation Landfill Gas Upgrading



Higher Performance at a Lower Cost

Designed to achieve maximum methane recovery with minimum capital expenditure.

Proven, reliable and established technology elements integrated in patent-pending process.

Modular system design that is configurable and adapts to rapidly changing inlet gas flow and composition.

Cascade LF Flow Range

Typical Flows (scfm)	Typical Flows (Nm^3/h)	Typical nitrogen levels
1,100-1,550	1,750-2,500	up to 16%
2,200-3,100*	3,500-5,000*	

**Higher flow rates can be accommodated with multiple trains.*

Please contact us to size your system. Modular packages available.

Upgrading Technology Elements

Membrane Separation

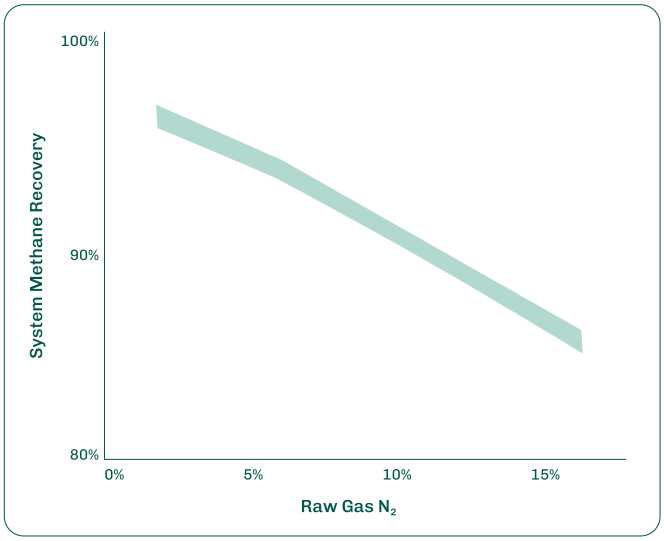
Featuring permeate sweep technology for near-complete CO_2 removal at very high methane recovery.

Catalytic Deoxygenation

Patent-pending integrated process eliminates O_2 using a simple design and avoids a dedicated dryer.

Equilibrium Pressure Swing Adsorption

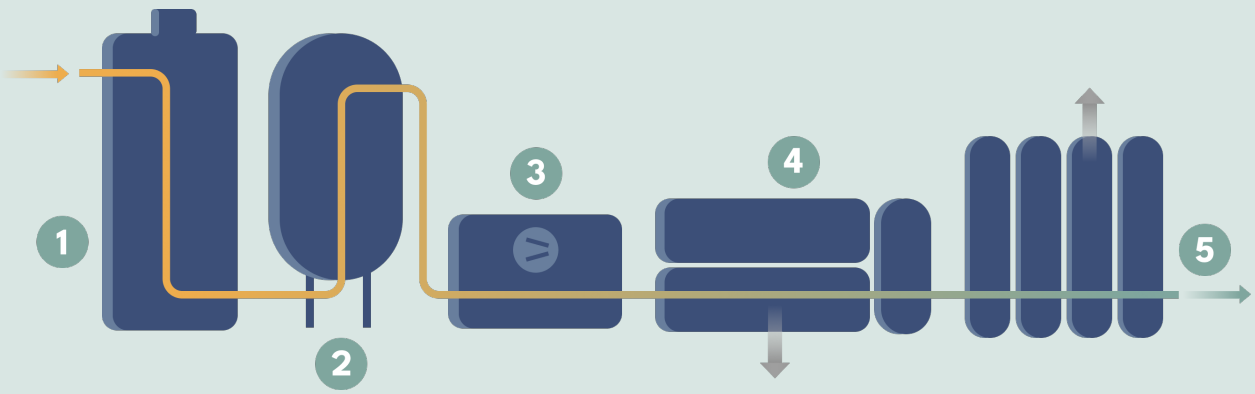
With CO_2 and O_2 pre-removed, high methane recovery achieved as only minimal N_2 needs to be removed to meet product gas specification.



Performance trend depends on O_2 level and product gas requirements.

How Cascade LF works

1. Raw landfill gas passes through activated carbon pre-treatment removing Hydrogen Sulfide (H_2S). For higher H_2S and flow applications, optional Cascade H_2S (regenerative bulk H_2S removal) is available for lower OPEX.
2. Subsequent pre-treatment removes VOCs and Siloxanes using formulated activated carbon. For high levels of contaminants, a proprietary regenerative temperature swing adsorption (TSA) module is used.
3. Pre-treated gas is compressed, dewatered and temperature-controlled.
4. A patent-pending integrated upgrading process using membrane separation with permeate sweep and catalytic deoxygenation effectively eliminates CO_2 and O_2 with no need for a dedicated dryer. Elimination of CO_2, O_2 and H_2O creates the conditions for optimal subsequent N_2 removal. The separated CO_2 stream can be sequestered or used for other value-add purposes. At lower O_2 levels, catalytic deoxygenation is not required.
5. In the final upgrading step, only enough N_2 is removed using a proprietary equilibrium pressure swing adsorption (PSA) module to meet the final biomethane / RNG product specification.



The Greenlane Advantage

Solving the industry's most challenging problems for over 35 years with more than 355 systems supplied into 28 countries.

- 24/7/365 expert technical support
- Remote monitoring and management
- Priority spare parts incl. warehousing/logistics
- Proprietary software and equipment upgrades
- Commissioning, training & performance optimization
- Service contract options

Contact us

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