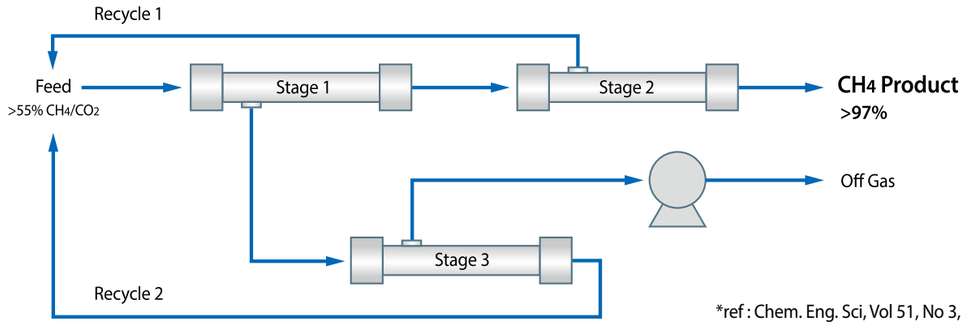
Meritair® Biogas Upgrading Membrane

Schematic Diagram



*ref : Chem. Eng. Sci, Vol 51, No 3, 1996

Biogas, which has recently been attracting attention as a next-generation eco-friendly fuel, is a clean renewable energy source and is recognized as a resource that can replace natural gas in power generation and vehicle fuels. Biogas is generated from food waste, manure, sewage treatment facilities, and landfills. Biogas is generally composed of 60% methane (CH_4) and 40% carbon dioxide (CO_2). Biogas can be converted into biomethane with a methane purity over 97% through a gas separation membrane and injected into a gas grid or fueled in CNG vehicles.Recently, the Korean government is promoting the production of hydrogen from biomethane, which is additional business opportunity for gas separation membrane industry. Airrane has already supplied several biogas upgrading facilities using the membrane system to Chungju, Uijeongbu, Paju, and Asan in Korea through collaboration with the government, and is currently participating in many future biogas upgrading projects in major cities.

Key Applications

Food Waste Processing Plant

Landfill Site

Wastewater Processing Plant

Waste Management Facility at Brewery

Slurry & Manure Processing at Farms

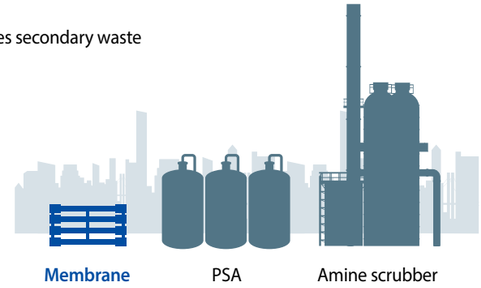
Crops and Residue from Agricultural Production

AIRRANE Product Specifications

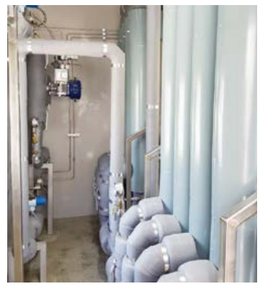
Model Number	Dimension (mm)			Connection (inch)			Weight
	L	OD	ID	Feed	Retentate	Permeate	
MCH-3032A	856	110	85	1/2"	1/2"	1/2"	6.0kg
MCH-4040A	1080	150	114	1"	1"	1"	15kg
MCH-4160A	1564	160	125	1”	1”	1”	19kg
MCH-6160A	1580	200	157.5	1.5”	1.5”	1.5”	26kg
MCH-8140A	1080	280	220	1.5"	1.5"	2"	44kg
MCH-8160A	1580	280	220	1.5"	1.5"	2"	55kg

Why Membrane for Biogas?

- Does not require frequent replacement of chemical ingredients that causes secondary waste
- Can operate in wide range of operational pressure
- Less pressure loss for biogas upgrading
- Simple operation and low maintenance requirements
- Flexible operation depending on generated gas amount
- Possible to install for small-scale operation
- Compact size only requires minimal space
- Easy up-scaling



Installation size between competing technologies

Technology Comparison

Method	Scrubber	PSA	Membrane
CH_4 concentration	95% +	95% +	95% +
CH_4 recovery	95-98%	90-99%	>95%
Moisture Processing	After Separation	Before Separation	Before Separation
Secondary pollution and waste	High	High	Low
H_2S co-removal	Possible	Not possible	Possible
H_2O vapor co-removal	Not possible	Partially possible	Possible
N_2 and O_2 co-removal	Not possible	Partially possible	Partially possible