



## Biogas Refining for Transport Application



Photo by: Joan Sullivan

Biogas from landfill or Anaerobic Digestion

TERIX-Envirogaz provides the equipments and engineering services necessary to the anaerobic digestion of organic material and biomethane refining. TERIX-Envirogaz's rugged industrial approach can process both landfill and anaerobic digestion plant biomethane, and transform it in fuel appropriate for transport and injection in gas distribution lines.

### TERIX-Envirogaz's unique solution

- Only one step to transform contaminated methane into liquified biomethane (LBM) used in tractor semi-trailers
- Unique energy recovery system that reduces power consumption by 30% while producing 99.99%-pure methane
- Unique gas ( $O_2$ ,  $N_2$ ) and siloxane elimination
- All contaminants are eliminated in one rugged and efficient industrial process

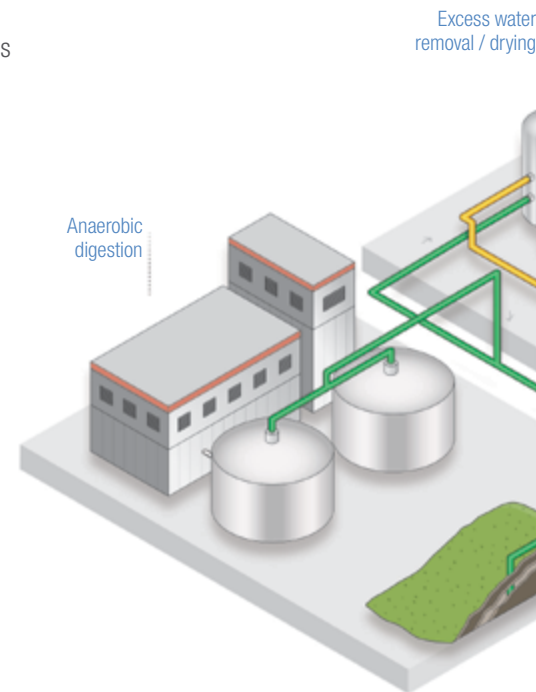
# BIOMETHANE REFINING

The process developed by TERIX-Envirogaz transforms biomethane coming in from landfills and digesters into fuel for tractor semi-trailers or natural gas for injection in gas distribution lines.

The solution allows processing of all contaminants in only one step, is very rugged and minimizes power consumption.

## The process is divided into four steps:

1. Conditioning phase, when biomethane is dehydrated and contaminants (such as BTX [benzene-toluene-xylene], siloxanes, C<sub>2</sub>-C<sub>6</sub> and C<sub>6</sub>+) are eliminated.
2. Compression phase, when biomethane is compressed between 20 and 25 bars.
3. Refining phase, an absorption-desorption process based on a methanol-cooled liquid. At this stage, CO<sub>2</sub> and H<sub>2</sub>S are separated from the biogas to become biomethane. This phase can also contain two optional systems. One is for CO<sub>2</sub> polishing (98% to 99.99% CH) and the other is for eliminating inert gases, a step necessary to the production of liquified biomethane (LBM).
4. Liquefaction phase (for the production of LBM), that uses the compression-expansion phases of nitrogen during a cryogenic process in a perlite-sealed box.

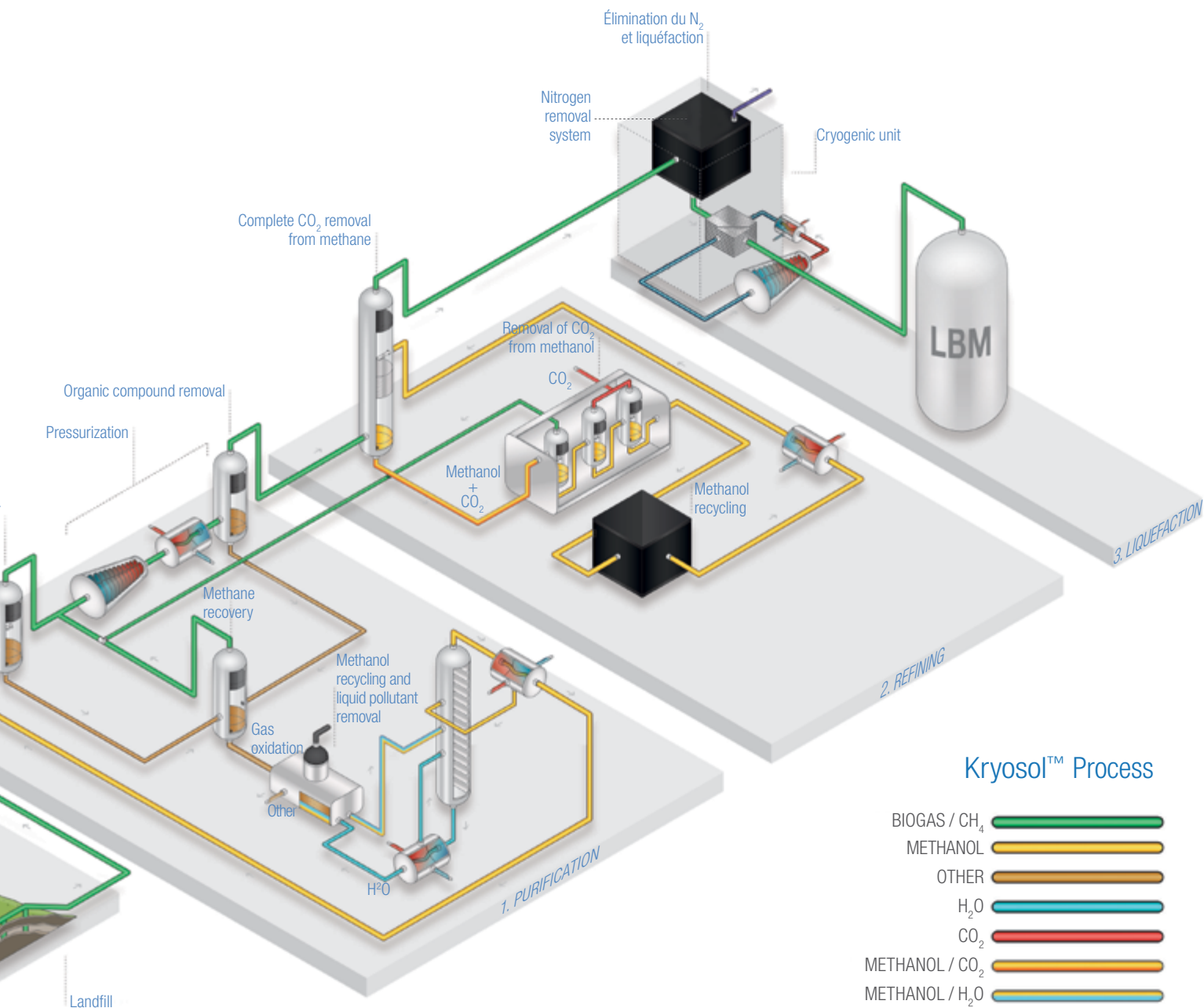


Process	Methane	Recovery	H <sub>2</sub> O	H <sub>2</sub> S	BTX	Silo.	VOC	Inert	CO <sub>2</sub>
Kryosol - LNG	99,99%	98%	■	■	■	■	■	■	■
Kryosol	98%	99%	■	■	■	■	■	●	■
Absorption amines	98%	99%	●	■	◆	■	◆	●	◆
Absorption water	97%	98%	●	◆	●	●	◆	●	◆
PSA Adsorption	96%	96%	■	◆	◆	●	◆	◆	■
Membrane	95%	80%	●	●	●	●	◆	●	◆

Purification : Low = ● Medium = ◆ High = ■

## Key Factors

- Unique integrated process for transforming contaminated biomethane in liquified biomethane (LBM)
- from both bioanaerobic digestion and landfills
- Very high energy value (98% to 99.99% CH<sub>4</sub>)
- Minimal methane loss (less than 2%)
- All contaminants removed in one integrated process
- Processes inert gases from landfills



## Advantages

- **Efficient** – Product with better commercial value
- **Sustainable** – Replaces fossil fuel in transport applications
- **Simple** – Easy-to-install modular approach
- **Rugged** – Allows for a wide array of contaminants and loads



## On-site assistance

TERIX-Envirogaz offers assistance during and after installation, and supports pre-operational, start-up, process optimization and operator training.

Moreover, we offer continuous support from qualified engineers that can evaluate, manage and troubleshoot remotely. All remote control connection equipment is installed.

## After-sales service

Our team of engineers and technicians is supported by our network of six (6) North American parts and services offices.

## Also a promoter

At TERIX-Envirogaz, we firmly believe in our technology, our expertise and in long-term relationships. That is why we act not only as an equipment and engineering service provider, but also as a project promoter. We can help you secure financing for your project, manage your operations, and distribute fuel.

Do not hesitate to contact us for more information.



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