Sulfothane™
Technology that puts biogas to work
Biogas is a valuable renewable energy source. Sulfothane™ is a low-maintenance, low operational cost technology that cleans biogas for use while recovering elemental sulfur for reuse.

Biogas is generated by the anaerobic digestion of industrial wastewaters, manure and municipal solids, as well as by covered landfill sites. Before the biogas can be utilized, it is essential to remove odorous sulfur compounds, which are mainly present in the biogas as hydrogen sulfide (H₂S). Sulfur can cause severe corrosion in boilers and engines utilizing biogas.

Sulfothane is environmentally safe, has minimal power requirements and uses a clog-free scrubber that requires no maintenance. The process operates at ambient temperature and pressure, and requires almost no chemicals since only the chemicals lost in the small sulfur bleed stream have to be replaced. The recovered sulfur can easily be reused as a fertilizer or further purified for sulfuric acid production.

**Benefits of Sulfothane**

- Widely applied, proven technology
- Very high (>99%) H₂S removal efficiencies can be obtained
- Removes all odorous compounds
- Reduces corrosiveness of the biogas
- Suitable for gas streams with up to 25,000 ppm H₂S
- Does not dilute the biogas with air, preserving its energy recovery value
- Recovers elemental sulfur for reuse
- No clogging or cleaning; easy maintenance
- Very low operational costs
- Short start-up time
- Robust process handles peak loads and fluctuating flows
- Very compact, small footprint
- Fully automated controls; little to no operator attention required
- Small requirements of caustic, water and nutrients
- Operates at ambient temperature and pressure
- Robust and highly reliable; uptime >98%
- Units are pre-assembled and tested
Standard Designs or Custom Systems

Standard design units are offered for biogas flows ranging from 125 to 1500 SCFM and H₂S concentrations of 10,000 to 25,000 ppmV, but custom designs are also available. The units are factory-tested, pre-commissioned and designed for easy transportation, installation and maintenance. Materials of construction are selected for long life and durability. For large capacities, multiple units can be placed in parallel.

Process Validation in our Laboratory

Veolia offers process validation at our new facility in Pennsauken, New Jersey, to ensure that our anaerobic system designs are the best solution for your application. Laboratory capabilities include:
> Basic wastewater characterization
> Gas chromatography for volatile fatty acids testing
> Treatability and bio-methane potential (BMP) testing
> Biomass activity
> Anaerobic chemical toxicity testing
> Long-term laboratory pilot testing
> Maceration equipment
> Solids separation with centrifuge or microfiltration membranes

Veolia is committed to Resourcing the World: developing access to resources, preserving resources and replenishing resources. Veolia has vast experience in operating biological H₂S removal systems for numerous industrial and municipal clients around the world to recover the energy in biogas and reclaim the elemental sulfur.

Similar to a Chemical Scrubber - but with a Distinct Advantage

Sulfur is an essential nutrient for living organisms and is found in proteins. During the production of biogas, the sulfur is converted biologically to H₂S. Fortunately, biological processes can also be used to remove the H₂S from the biogas.

The Sulfothane process consists of two steps and resembles a chemical alkaline scrubber for H₂S, but with a distinct advantage. The alkaline solution in the Sulfothane process is continuously regenerated in a biological process using aerobic sulfur bacteria.

The first step consists of a scrubber column, in which the H₂S present in the biogas is transferred to the slightly alkaline washing liquid and is dissolved as sodium sulfide. In the second step, the sodium sulfide is biologically oxidized to elemental sulfur. In this biological process, the washing liquid is regenerated by producing sodium hydroxide and elemental sulfur.

The scrubber column is operated in counter-current mode, which results in efficient removal of H₂S, achieving concentrations less than 10 ppm. With this process, H₂S removal efficiencies exceeding 99% can be obtained.

This high removal efficiency is achieved without diluting the biogas with air, which preserves its energy value and reduces its corrosiveness to the downstream equipment that puts the biogas to work for you. As an added bonus, the reduced corrosiveness minimizes maintenance and extends the life of your systems.
Resourcing the world