



# Complete Contaminant Removal

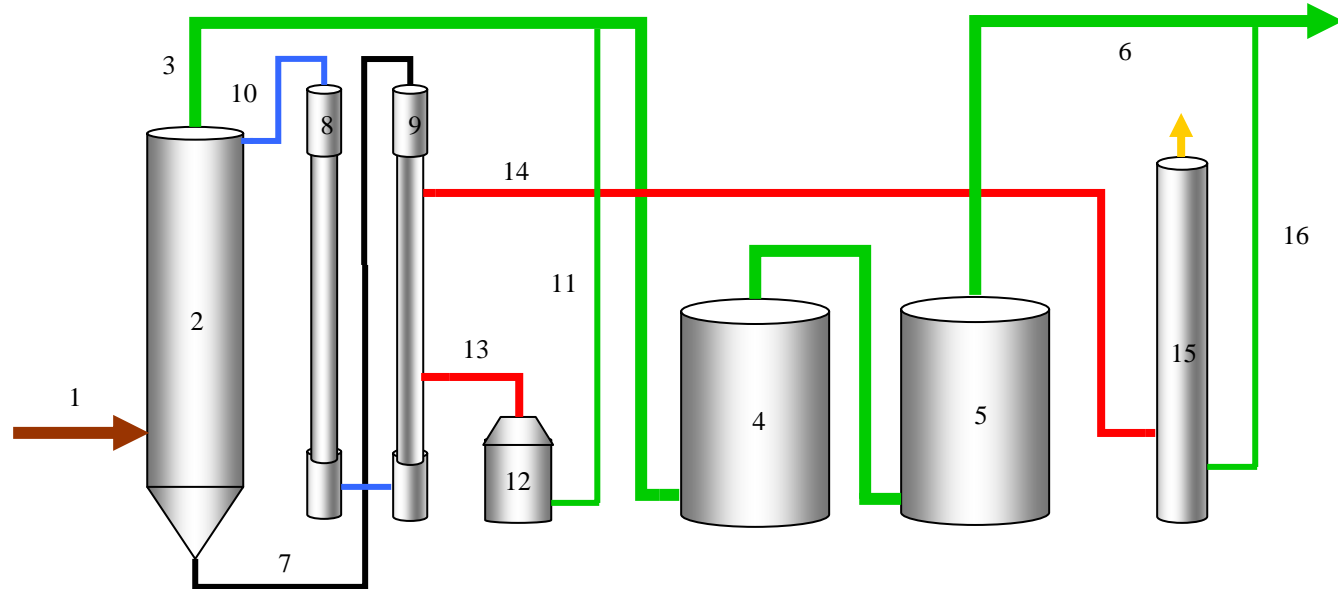
*Biogas Conditioning  
Complete Gas Testing  
Siloxane Removal  
Moisture Removal  
Sulfur Removal  
System Maintenance*

- **SAGPack™** Systems for complete biogas conditioning
- **SAG™** and **SWOP™** Siloxane Removal Systems
- **SULFRPack™** Systems for Hydrogen Sulfide removal
- **SAG™ AirWedge™** media handling with zero dust
- **SAGAssure™** Performance:
  - “Pay as you Go” Option Clean gas without upfront capital cost.
  - **BioGMS™** Ongoing gas quality management
- **Field Technical Services** Expert “hands on” assistance for maintenance and troubleshooting

## APPLIED FILTER TECHNOLOGY

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In early 2004, AFT introduced the SWOP™ Process for heavily contaminated biogas. Biogas is considered heavily contaminated when the VOC (Volatile Organic Contaminant) loading exceeds 50 ppmv, or in some cases lower, depending on what makes up the bulk of the VOCs. The SWOP™ Process utilizes media that is regenerated on a continuous basis to prevent siloxanes, halogenated VOCs and other harmful VOCs from entering combustion equipment or released to the atmosphere. The SWOP™ Process has very low pressure drop (a few inches of water column) and has just a few moving parts—3 small blowers and motor-actuated valves. It is compact, small, inexpensive to use, easy to operate, (fully automated) and can remove virtually all organosilicons and VOCs that can foul boilers, IC engines, turbines, microturbines and emission catalysts.



Operation of a SWOP™ unit is quite simple. Contaminated gas (1) enters the Concentrator vessel (2). As the gas passes through special media, siloxanes and VOCs are removed and the clean gas exits at the top of the vessel (3). Cleaned gas is “polished” by 1 or 2 SAG™ vessels (4, 5) before the gas is used by the power generation equipment (6). The spent media falls to the bottom of the vessel, is removed, and conveyed (7) to the top of the Stripper (9). Here the media is purged of the siloxanes and VOCs, cooled (8) and sent back to the Concentrator vessel (10).

The siloxane and VOC removal media in the SWOP™ Process is continuously regenerated by hot inert gas. The regenerant gas (13) is produced in a small inert gas generator (12) from a small slipstream (11) of the treated gas itself. The stripped VOCs (14) are destroyed by a small enclosed ground flare (15) which utilizes the fuel in the VOCs and supplemental purified gas for > 95% destruction. The total treated gas required to operate the SWOP™ Process is around 0.5% to 1.0% of the total gas flow.

SWOP™ units can handle flows as low as 0.25 MMSCFD up to 25 MMSCFD. They have a smaller footprint than other technologies and can produce a gas that is virtually free of even the most difficult to remove VOCs. O&M costs are very low since there are only a few moving parts and a very low parasitic electrical draw (about 8 kw). The payback on a SWOP™ unit can be less than one year.

Call AFT today to learn more about how we can help you get the most out of your biogas at the lowest cost. We will evaluate your gas from several critical perspectives and tell you what your best approach is. Additional information on our systems can be found at our web site:

[www.appliedfiltertechnology.com](http://www.appliedfiltertechnology.com)