



Maximizing Biogas Production

The global market for Renewable Natural Gas (RNG) – also called biogas – continues to grow, with some experts predicting a sharp increase in its size to more than US\$ 130 billion by 2033. An increasingly important and environmentally responsible source of energy, biogas results from decomposition of organic matter in anaerobic conditions. This organic matter comes from various sources, including farm animal waste products (e.g., manure).

As the market grows, so does the opportunity for superior water filtration and separation technology to positively impact the sustainability and economic vitality of biogas production systems. Water filtration and separation play critical roles in ensuring efficient operations, maintaining the quality of the biogas, and managing the byproducts effectively. These key roles include:

- **Substrate Pretreatment for Gas Quality Improvement and Reduced OpEx.** Proper water filtration and separation are essential to remove solid impurities such as organic matter and non-digestible materials like sand, stones, and plastics, before they enter the digester. Filtration also helps prevent clogging of pipes and equipment, which can disrupt the digestion process and increase maintenance costs.
- **Digestate Management.** Digestate is a nutrient-rich byproduct produced after anaerobic digestion. Separation of water from digestate helps manage its consistency and nutrient content. Separated water can be reused in the process or discharged, while the solid digestate can be used as a valuable organic fertilizer.
- **Preventing Corrosion and Contamination.** Water in biogas can lead to equipment corrosion and contamination issues. Effective separation prevents these problems, prolonging the life of the equipment and ensuring the quality of the biogas.
- **Environmental Compliance.** Water filtration and separation help confirm compliance with environmental standards by treating and managing water used in the biogas production process.

How are Spiral Water filters used?

Our high solids conditioning/filtration takes soft and deformable 500 μm + volatile suspended solids (VSS) particles and shears/conditions them, creating more particles in the proper size range and making a more nutrient-rich influent liquor to the digester. In addition, our ability to concentrate solids enables us to remove larger, unwanted “non-digestible” particles with minimum process liquor loss.

Our filters offer numerous benefits to RNG:

- Production of more methane from 10%-30% on existing anaerobic digester systems.
- Potentially smaller digester footprint on future systems.
- Less dwell time required.
- No chemicals.
- Less energy than a DAF with electro flotation.
- Less maintenance and labor cost to run than centrifuges, meaning lower OpEx.
- Green energy or carbon credits/rebates/incentives.

About Spiral Water Advanced Automatic Self-cleaning Filters

Our next-generation automatic self-cleaning filters are widely used for industrial and organic wastewater treatment, pretreatment for microfiltration, ultrafiltration and reverse osmosis, water recycling and reuse across a variety of industries. Engineered with our patented high solids filtration and concentration technologies, they can be used as a pre-filter, primary filter or for reclamation from existing filter backwash of centrifuge overflow.

They are known for their ability to handle wastewater TSS removal and to process bulk solids removal up to 15,000 mg/l TSS (15% by volume), providing continuous 15 to 1500 micron filtration. (Removal of TSS typically also removes a percentage of BOD and COD.) In addition, our proprietary one-pass filtration process eliminates backwash of cross flow, thus conserving water, increasing uptime, and reducing Capex.



The Spiral Water Difference

Spiral Water's patented automated filtration systems provide security for process systems that require finer than 75 μm filtration that are also affected by variable TSS and high solids loading (i.e., unexpected increases in normal TSS solids caused by storms and/or system upsets). What differentiates us from other "self-cleaning backwash filters" is our ability to manage TSS above 500+ ppm. Our patented internal mechanical cleaning mechanism spins off tip vortices, creating a unique hydrodynamic agitation

that more effectively keeps the filter clean while maintaining a constant differential pressure across the filter. This keeps our filters online and working where other filters would overload and fail. Spiral Water filters automatically manage upset conditions as high as 10,000 ppm without the need of operator assistance. In multi-filter processes, Spiral Water Filter Systems are the best first line of defense. Our innovative filters and control systems provide end-users' peace of mind.



Free Filtration Audit

Ask us about how Spiral Water's next generation filters can solve your filtration and separation challenges – and we'll provide a free filtration audit!