



# Soaring with Vertical Farming

Vertical farming is an exciting and growing development in agriculture. It is designed to optimize crop yields while minimizing space and resource requirements such as water and energy. And as the vertical farming industry continues to expand, growers are turning to Spiral Water's Advanced Automated Self-cleaning Filters to treat, recycle and reuse their wastewater effectively and efficiently.

As the name implies, crops are grown indoors in vertically stacked layers, thus optimizing vertical space, often in hydroponic systems, while using artificial light sources (frequently powered by renewable energy) and precise nutrient solutions. In many cases, vertical farms use advanced irrigation systems that are designed to be highly efficient and minimize water waste. Drip irrigation, hydroponics and aeroponics are effective ways to deliver water to the plants while preventing waste due to runoff or evaporation.

Shifting the production of crops from traditional, land-consuming outdoor farms translates into a greatly reduced land footprint as well as considerably less of an environmental impact. With indoor vertical farming, crops can be grown throughout the year, even in urban settings. Vertical farming also consumes far less water than traditional agriculture, and the water can be recycled and reused. It can also reduce pesticide use.

In addition, vertical farming can also provide a way to grow fresh produce closer to the point of consumption, minimizing the need to haul it over long distances. This reduces the cost of transportation, lowers fossil fuel consumption, and reduces emissions.

## How are Spiral Water filters used?

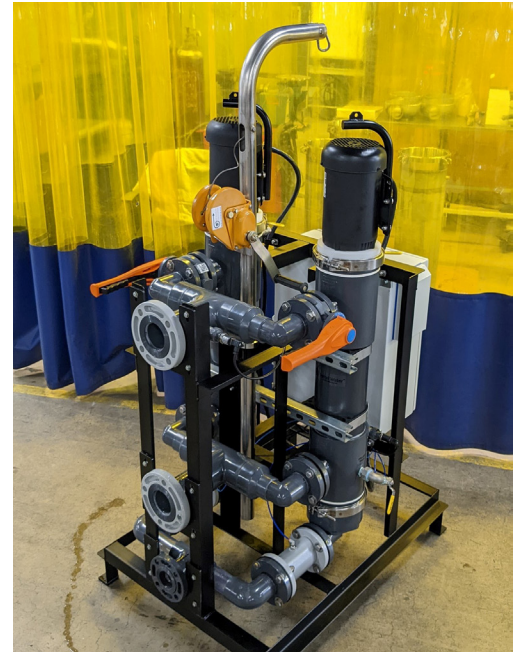
Spiral Water filters provide a key component in any water recovery and reuse approach, and they are very well suited to the requirements of vertical farming. In the case of vertical farming, nutrient-rich water being used in hydroponic drips can pick up particles and other solid debris during this process.

Spiral Water filters can ensure that water is free of these contaminants before being reintroduced into the system so that it does not foul nozzles or disturb the lines. Our filters can also be used to treat wastewater bound for discharge and ensure that it complies with strict community discharge limits.

## 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  $\mu\text{m}$  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!