

The Impact of Evolution Membranes at Solugen

Dive into the details to see how we contributed to **400% savings in just 9 months** at a Houston bioprocessing facility and learn about the transformative impact of ZwitterCo's solutions.

Fast Facts

Industry:	Bioprocessing
Application:	Enzyme processing
Location:	Houston, Texas
Technology:	Evolution Superfiltration (SF) Membranes
Year of installation:	2021

The Opportunity

Solugen, a cutting-edge manufacturer of bio-based chemicals, has transformed the industry with its groundbreaking chemi-enzymatic processes. By employing water-based chemical production, Solugen deviates from conventional petrochemical methods that depend on metal catalysts and solvents.

Determined to achieve zero liquid discharge through water reuse and recycling, Solugen's Houston facility turned to ZwitterCo, an advanced membrane technology company, whose innovative membrane technology provided an unparalleled solution to Solugen's complex challenges.

Solugen's unique water-based process relies on the need to retain and preserve enzymes from water and other impurities. Before joining forces with ZwitterCo, Solugen was primarily using hollow fiber membranes that rapidly fouled, leading to frequent replacements and increased operational costs. This unsustainable approach created a challenge that threatened Solugen's innovative business model, creating a need for a more efficient and reliable solution to maintain their commitment to sustainable chemical production.

Key Highlights

- **Over 400% Cost Savings**
Solugen achieved more than 400% cost savings in just nine months by switching to Evolution membranes.
- **Cycle Time Improvement of 100%+**
Over 100% improvement in cycle times, boosting system throughput and productivity.
- **Drastic Reduction in Maintenance Needs**
Significantly reduced membrane element replacements, eliminating a major source of downtime and expense.
- **Full Flux Recovery**
Achieved full flux recovery with just a warm rinse and caustic wash.

“

*Installation is
very simple.
It really is just
plug and play.*

Sarah Tutt, Senior Process
Engineer, Solugen

“

*Our process would not be **profitable or possible** without ZwitterCo membranes.*

Konrad Miller, VP, Manufacturing, Science, & Technology, Solugen

The Solution

Faced with the challenge of finding a sustainable replacement for their hollow fiber membranes that fouled quickly, Solugen turned to ZwitterCo for a solution that would transform their approach to water treatment and enzyme preservation. Evolution membranes feature a unique zwitterionic chemistry which serves as a permanent barrier to irreversible organic fouling, making them ideal for bioprocessing applications like Solugen's. This proprietary anti-fouling chemistry is extremely hydrophilic while actively displacing or repelling organic compounds so they cannot adhere to and foul the membrane. These features allow bioprocessors to benefit from reliable operations, simpler cleanings, and more.

The Results

Evolution membranes resulted in several key improvements at Solugen's processes such as:



Enhanced Efficiency

After implementing Evolution membranes, Solugen **improved cycle times by over 100%**, ensuring consistent performance and boosting productivity.



Reduced Maintenance

Evolution membranes maintain performance for years. This significantly reduced element replacements, with Solugen estimating over **400% savings in just nine months**.



Streamlined Cleaning

Zwitterionic technology allows **95-100% restoration of original membrane performance** with a simple warm water flush, caustic wash, and rinse, reducing downtime and harsh chemical use.



Seamless Integration

Installing Evolution membranes was straightforward and seamless, allowing Solugen to **quickly integrate them and reap the benefits** of the new technology right away.

The partnership between Solugen and ZwitterCo shows how collaboration and innovation can solve complex challenges for bioprocessors. ZwitterCo Evolution anti-fouling membranes have transformed Solugen's operational efficiency, reduced costs, and ensured sustainability in chemical production. This collaboration continues to benefit both companies, significantly impacting sustainability and efficiency in the industry.



ZwitterCo is the global leader in membrane solutions for challenging separations, helping industries treat complex wastewater, purify water for reuse, and maximize efficiency in food processing applications. The company leverages its breakthrough zwitterionic chemistry to build membranes with unprecedented fouling resistance, overcoming the longest-standing limitation with conventional filtration. Manufacturers in more than 20 countries across food and beverage, agricultural, and industrial sectors rely on ZwitterCo's membrane solutions to achieve their most ambitious sustainability and growth targets.

ZwitterCo
12 Cabot Rd, Suite B
Woburn, MA 01801

Contact Us
[zwitterco.com](https://www.zwitterco.com)
sales@zwitterco.com

