



# A Better Way to Manage Digestate

## Thinking Beyond RNG



New membrane technology is at the heart of a new concentration option to decrease digestate treatment costs while increasing sustainability.

### Challenges in Digestate

#### High Cost of Offsite Hauling

- Paying to dispose of excess digestate
- Fuel costs increasing



#### Strict Nutrient Regulations

- Agricultural runoff causing polluted waterways
- Increasing nitrogen and phosphorus application regulations



#### Frustrating Land Application Practices

- Large volume of digestate to land spread
- Solids in digestate clog rotary pivots
- Odorous material on land



### ZwitterCo-Enabled Solution

#### Reduce Offsite Hauling

- Digestate volume reduced up to **50%**
- Enable concentration of NPK for organic fertilizer
- Lower CI score

#### Concentrated Nutrients

- Small volume of concentrate allows for easy storage
- **Saleable product** from excess nutrients

#### Easy Land Application

- Concentrated fertilizer requires **less volume to be spread**
- Won't clog pivots
- Reduced odor on land

# ZwitterCo Enabling Technology

ZwitterCo's breakthrough membrane technology enables filtration for the most challenging separations. The membrane can handle streams with over 25,000 ppm chemical oxygen demand (COD) and total solids (TS). It offers **full performance recovery** after a mild maintenance wash, and lasts for years in streams that would ruin standard membranes in days. See the difference in this manure digestate example:

## Original Process

- \$3M/year hauling manure digestate
- Facing regulatory pressure on soil and groundwater contamination from land application

## New Solution

- RO concentrate captures ammonia-based nitrogen as a saleable organic liquid fertilizer
- ZwitterCo SF rejects all RO foulants, protecting the downstream RO process and enabling consistent, sustainable generation of a concentrated nutrient stream and a reusable or dischargeable clean water stream

## Outcome

- Treatment costs reduced by \$1.5M/year
- Commercial installation based on pilot results



ZwitterCo superfiltration (permeate in the center) enables this treatment process by protecting the RO from small molecule, heavy foulants. The result is the consistent generation of a highly concentrated nutrient stream (second from the right) and a reusable or dischargeable clean water stream (far right).

## Ready to see the difference at your facility?

Contact us to learn more about our solutions or to try our products in your facility.