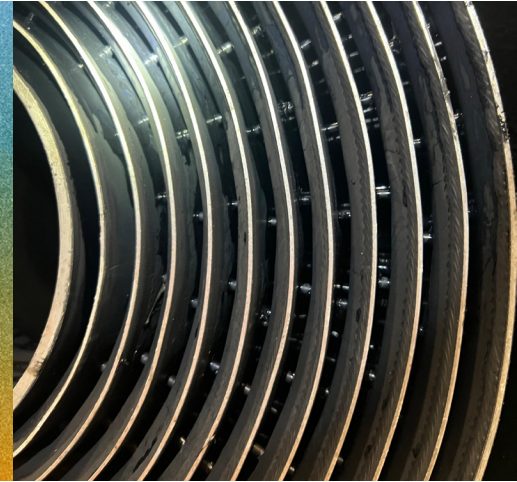


# Soltellus 2400L: An Effective Biodegradable Scaling Solution for Biogas Plants

## Heat Exchangers Case Study



### Background

Biogas plants convert wastewater into renewable energy. This process operates at high temperatures and a high pH—ideal conditions for calcium carbonate scale formation. The heat exchangers that preheat the wastewater before it enters the stripping unit are particularly affected, experiencing constant scaling that necessitates costly cleanings almost every week. Traditional acid cleanings are labor-intensive, costly, and environmentally hazardous, making them unsustainable for long-term operations.

### Challenges of Scale Formation

- **Frequent Blockages:** Calcium carbonate scaling disrupts heat transfer and causes pressure buildup, leading to frequent shutdowns.
- **High Maintenance Costs:** Cleaning often requires strong acids, significant labor, and costly downtime.
- **Environmental Impact:** Acid cleanings contribute to chemical waste and can affect downstream biological processes.

### Objective

An industrial partner sought a solution to reduce downtime due to heat-exchanger cleanings by preventing scale formation while being biodegradable and safe for downstream processes. The goal was to match the effectiveness of traditional inhibitors while improving environmental performance.

### Solution

An industrial partner piloted Soltellus™ 2400L as a stand-alone solution at 20 ppm in heat exchangers. Its non-toxic and biodegradable properties ensured compatibility with the plant's processes while effectively preventing scaling.

### Results

- **Extended Cleaning Intervals:** Scaling prevention increased cleaning intervals from 3–7 days. Since the implementation of Soltellus in October 2024, the heat exchangers have not required any cleanings.
- **Cost Savings:** Initial estimations projected 50–70% reduction in maintenance and cleaning costs. Since the heat exchanger have not required any additional cleanings, the product has out-paid for itself.
- **Energy Efficiency:** Heat exchangers maintained optimal performance, lowering energy consumption.

### Impact

By reducing downtime and chemical use, Soltellus enables biogas plants to achieve operational efficiency and sustainability goals. The pilot's success highlights opportunities for further testing to optimize performance and explore derivative solutions.

### Next Steps

Future studies will assess improving the scale inhibiting properties of Soltellus in high stress conditions and long-term impacts on biogas heat exchanger performance.