

AirPrex®

Sludge Optimization and
P-Recovery



THE PROBLEM

Struvite Mineral Buildup Leads to **Reduced** Plant Capacity

In wastewater reclamation plants with Biological Phosphorus Removal (BPR), phosphorus accumulates in sludge and releases in a dissolved reactive form (orthophosphate) in an anaerobic condition.

Elevated orthophosphate levels in sludge causes operational challenges, including:

- Deterioration of sludge dewaterability
- Elevated phosphorus load to the wastewater treatment plant due to phosphorus recirculation
- Uncontrolled formation of struvite (or MAP: magnesium ammonium phosphate) inside pipes and other equipment
- Reduced digester capacity by struvite build-up inside the anaerobic digester

THE SOLUTION

AirPrex **Optimizes** the Sludge Treatment Process Like No Other System

AirPrex turns struvite into an opportunity for resource recovery. Struvite, when formed under a controlled environment, can be harvested and utilized as a beneficial fertilizer. AirPrex forms struvite by stripping out CO_2 , elevates the pH and adds MgCl_2 to augment Mg_2^+ . AirPrex installs between the anaerobic digester and the dewatering equipment. The process converts the orthophosphate into struvite crystals, which is harvested from the bottom of the reactor. AirPrex mitigates the unexpected consequence of dewatering Bio-P sludge.

THE BENEFITS

AirPrex Removes Struvite while Significantly **Improving Treatment Efficiency**



Reduce Polymer Consumption up to **30%**



Reduce Disposal Costs up to **20%**



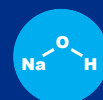
Reduce Phosphate Recycle Load up to **90%**



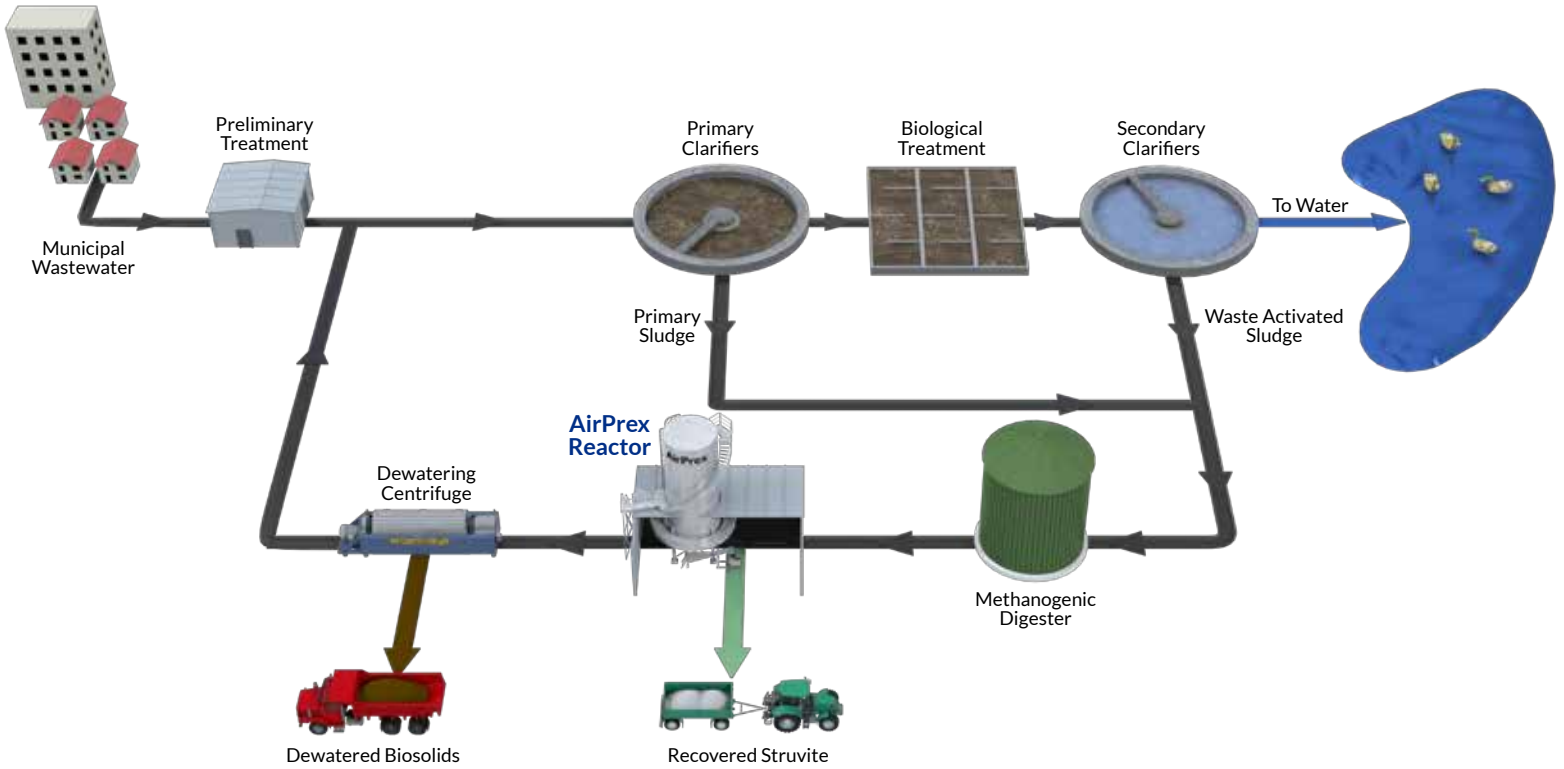
Reduce Maintenance Costs up to **50%**



Increase Revenue from Fertilizer up to **20%**



No Sodium Hydroxide Required



	Centrate Recovery	WAS Fermentation + Centrate Recovery	AirPrex®
Reduce Phosphorus Recycle	✓	✓	✓
Recovery of Marketable Fertilizer	✓	✓	✓
Reduce Struvite Maintenance	✓	✓	✓
Improve Sludge Cake Dryness	✗	?	✓
Reduce Polymer Demand	✗	?	✓
No Recovery Option (Sequestration)	✗	✗	✓
Cost Competitive for Small Utilities	✗	✗	✓