OVIVO Worldwide Experts in Water Treatment

Municipal BIOSOLIDS MANAGEMENT

PHOSPAQ™ PROCESS

SUSTAINABLE PHOSPHORUS REMOVAL AND RECOVERY

HOW WE CREATE VALUE

Cost effective removal or recovery of Phosphorus using Magnesium Ammonium Phosphate (struvite)

Option to implement Phosphorus removal only

Phosphorus recovery produces a coarse slow release fertilizer product, an added revenue stream

No additional alkalinity addition and no excessive sludge production

Free organics and Sulfides removal

THE CHALLENGE

- Sidestreams from anaerobic digestion while representing only about 1% to 3% of the flow to the mainstream, can contain 10% to 25% of the Phosphorus load, with concentrations often in excess of 100 mg/L PO4-P
- Thermal Hydrolysis Process (THP) in biosolids management and Biological Phosphorus (Bio-P) Removal in main treatment works can significantly increase the Phosphorus content in the sidestreams
- Strict BNR Phosphorus limits and struvite issues in the plant due to cycling of Phosphorus between and mainstream and sidestreams
- Conventional Phosphorus removal methods consume large amounts of chemicals while generating high amounts of waste sludge while also severely depleting the alkalinity of the sidestream

THE OVIVO SOLUTION

The PHOSPAQ process addresses a critical need of struvite mitigation at plants with high levels of Phosphorus in their sidestreams (typically due to Biological Phosphorus (Bio-P) Removal or Thermal Hydrolysis Processes (THP) in their treatment schemes). The process can further be enhanced to include Phosphorus recovery in the form of a slow release fertilizer i.e. struvite formed as a byproduct in the process which can be used as an additional source of revenue for the plant. Additionally, the system provides an excellent protective pre-treatment step ahead of deammonification particularly for plants with THP by eliminating inhibitory and competition inducing organic compounds and Sulfides thereby allowing for optimization and uninterrupted operation of the downstream process without the need to add additional chemicals.

The PHOSPAQ ADVANTAGE

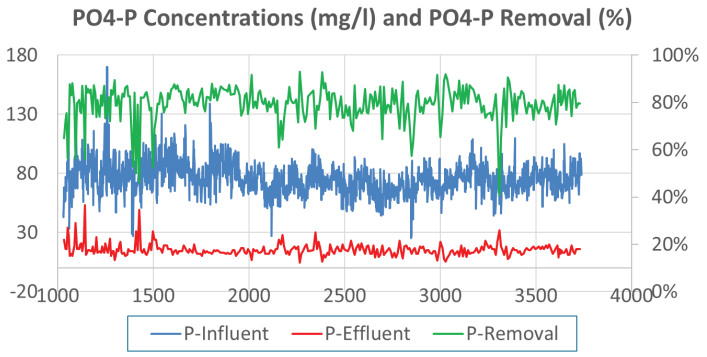
- Flexibility of design – Can do just Phosphorus removal or upgrade to recovery as well
- Low O&M Costs
- Simple and compact construction
- Enhanced Struvite precipitation with free BOD and Sulfides removal
- Longest experience with over 11 references worldwide

ovivowater.com

info@ovivowater.com

OPERATING PRINCIPLE

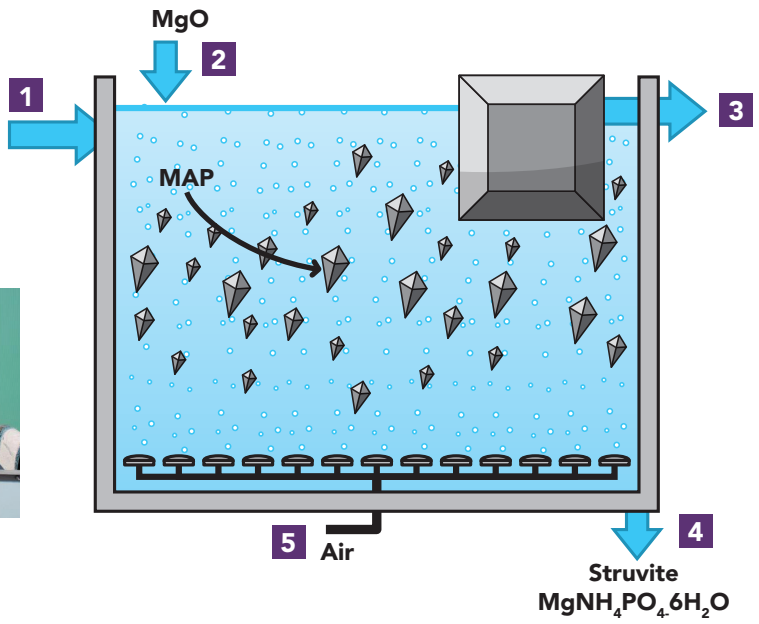
The PHOSPAQ process comprises an aerated tank to which the Nitrogen and Phosphorus rich sidestream is added. Magnesium Oxide or Magnesium Hydroxide is used to provide the Magnesium content to form Magnesium Ammonium Phosphate (MAP) aka Struvite. Air is primarily added to mix the tank but also helps strip out the Carbon Dioxide increasing the pH thereby aiding formation of MAP while also providing free BOD removal. The aeration further helps with the crystallization process and as the crystals grow and become heavier and pass through the specially designed separator, the heavier crystals settle into the tank (to be withdrawn from the bottom), while the cleaned effluent leaves through the top of the separator. The withdrawn struvite can just be dewatered with a drain belt, mixed with biosolids and disposed in case of the removal configuration. Alternately, additional unit processes can be added to further increase the dry matter content of the struvite enabling recovery as a bespoke fertilizer (typically coarse crystals with average diameter 0.7 mm).



10 Years of Operational data for the Olburgen WWTP, Netherlands

HOW IT WORKS

1. Phosphorus rich influent
2. Magnesium Oxide/Hydroxide feed
3. Treated effluent
4. Struvite removal
5. Coarse bubble diffused aeration system



CONTACT
1-855-GO-OVIVO
info@ovivowater.com
www.ovivowater.com