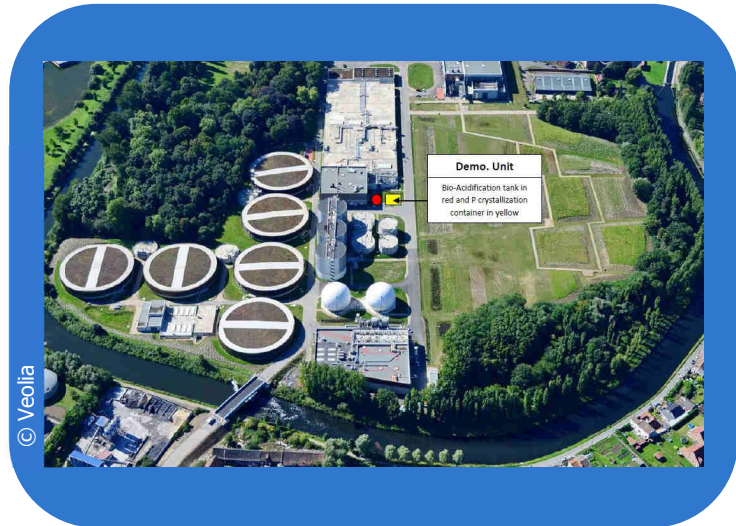


# Biological phosphorus dissolution before P precipitation from sludge liquor

Piloted by: IRSTEA and Véolia  
 P-source: Sludge liquor  
 P-product: Struvite ( $MgNH_4PO_4 \cdot 6H_2O$ ) or "Phosphate salts" based products



## The process

The process combines the bio-acidification of sludge to solubilize phosphorus with the precipitation of struvite (with Struvia™). The combination of both reactors is expected to significantly increase the P recovery yield from sewage sludge liquor (up to 75% of the total P entering in the wwtp).

The bioacidification is induced by adding easily degradable carbohydrate source in the sludge in strict anaerobic conditions. Two mechanisms are induced:

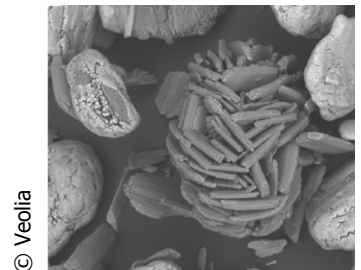
- 1) P release by the microorganisms which have accumulated the P during wastewater treatment.
- 2) Maintaining the P released by the bacteria in solution and dissolving the mineral P combined with cations by developing bacteria producing lactic acid *in situ*, decreasing the pH down to 4-5.

## The product

The struvite produced can be directly used as fertilisers or as Phosphorus materials for secondary compounds.

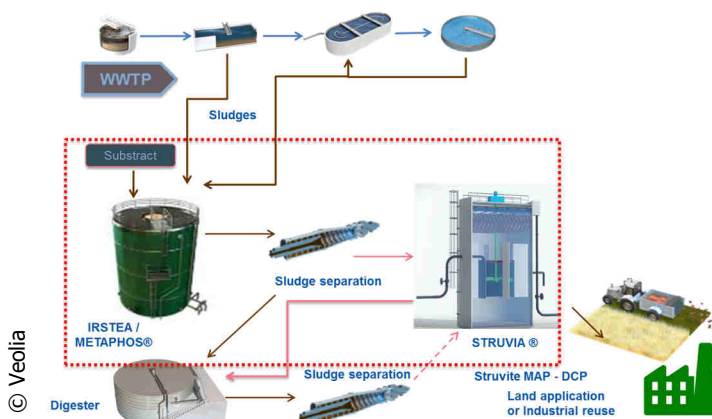
Granular product of 200-500 µm particles size, easy to dewater by gravity up to 90%.

Product can be reused as fertiliser (direct or by blending), with low TOC (<1-2%) and metal contents.



## The demonstrator

Location: Lille (France)  
 Commissioning: around May 2018  
 Input material: Biological thickened sludge  
 Input mass: approx. 4 tons/day  
 Output: Struvite (MAP) or "phosphate salts" products  
 Output mass: approx. 9-10 kg/day as P product



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