Ostara Delivers a Complete Resource Recovery Solution

Ostara's industry-leading technologies – Pearl® and WASSTRIP® – help wastewater treatment plants achieve their goal of becoming water resource recovery facilities by turning the problem of excess nutrients into a revenue-generating commercial fertiliser.

Water Resource Recovery Facility Employing Ostara Nutrient Recovery Technologies

Ostara's Pearl and WASSTRIP technologies integrate into wastewater treatment plants (WWTPs) that operate enhanced biological phosphorus removal (EBPR), allowing nutrients (phosphorus and nitrogen) to be recovered while simultaneously avoiding operational and maintenance costs associated with uncontrolled struvite precipitation.

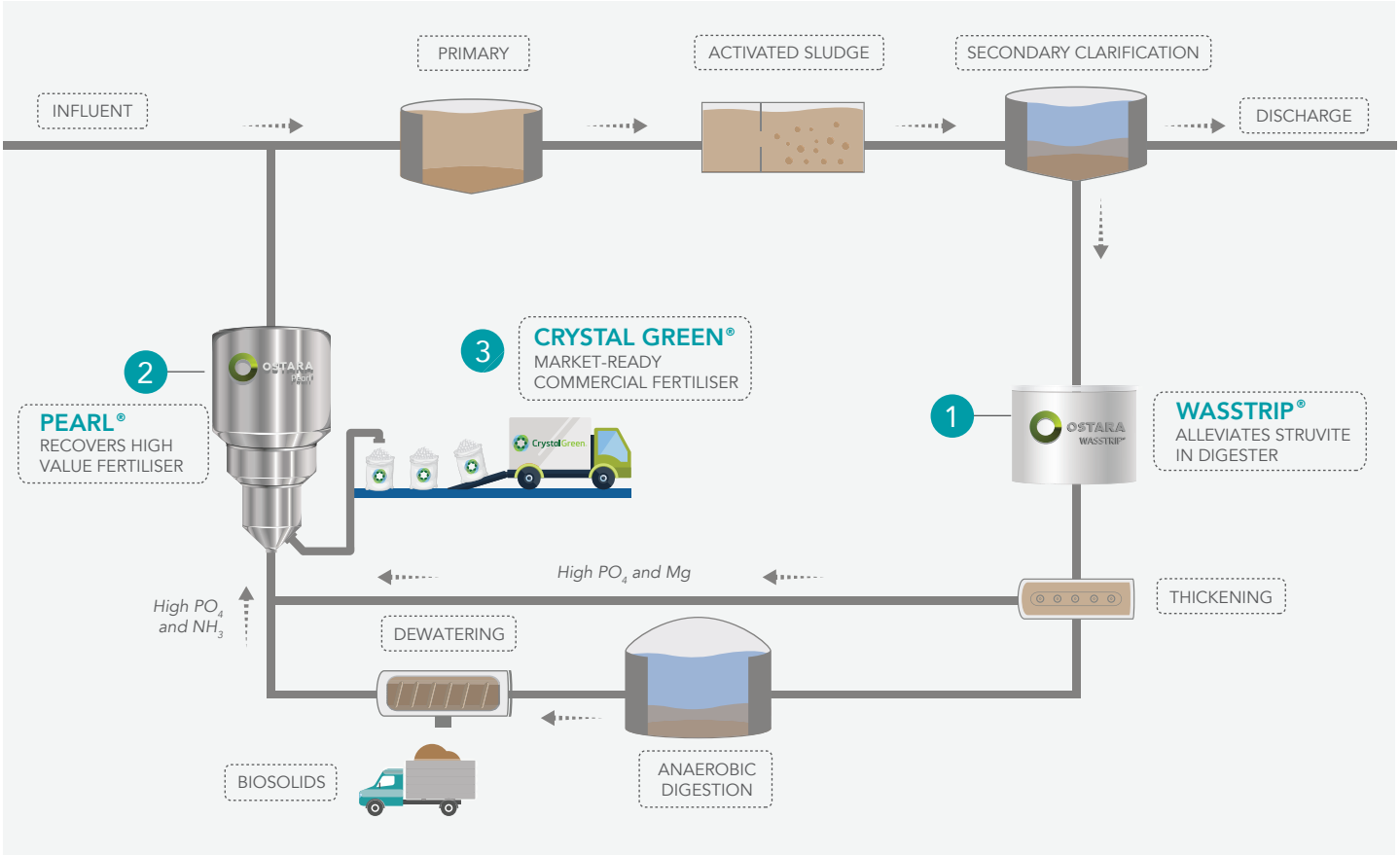

Figure 1 - Pearl® and WASSTRIP® solve operational challenges while optimising phosphorus recovery

1 WASSTRIP®

The WASSTRIP (Waste Activated Sludge Stripping To Recover Internal Phosphate) process releases phosphate from waste activated sludge (WAS) produced in the EBPR process. Subsequent sludge thickening diverts released phosphate into thickening liquor, which is then recovered in the Pearl process. WASSTRIP controls struvite precipitation throughout the sludge treatment stream by reducing the phosphate and magnesium content of the WAS before anaerobic digestion (where ammonia forms creating conditions for struvite to precipitate). This tackles struvite related maintenance in the digester, significantly reduces sludge production, and reverses the negative impact of EBPR on dewaterability.

2 PEARL®

The Pearl process recovers phosphorus and ammonia from high strength nutrient streams such as sludge dewatering liquor and WAS thickening liquors after phosphate release using the WASSTRIP process. Pearl recovers nutrients by growing high purity crystalline granules of struvite under controlled reaction conditions in a fluidised bed reactor. In EBPR plants, Pearl can recover up to 50% of total plant influent phosphorus before it accumulates as struvite in pipes and other assets. By reducing effluent phosphorus levels, Pearl helps WWTPs to consistently meet nutrient regulations while improving the performance of the entire treatment plant.

3 CRYSTAL GREEN®

Crystal Green is produced using the Pearl process by combining phosphorus, nitrogen and magnesium into a high-value, market-ready fertiliser. The Pearl system dries, sorts and bags the Crystal Green fertiliser, which is ready for distribution and sale directly from the WWTP. Ostara purchases back every tonne of Crystal Green produced, and manages all market channel activity to the agriculture and turf industries in Europe and North America. This guaranteed, risk free revenue stream helps to offset capital and operational costs.

OSTARA

CrystalGreen.
5-28-0 with 10%Mg

Ostara Nutrient Recovery Technologies Inc. helps protect precious water resources by changing the way cities around the world manage nutrients in wastewater streams. The company's Pearl® and WASSTRIP® technologies sustainably transform phosphorus and nitrogen recovered from municipal and industrial water treatment facilities into a high-value, eco-friendly fertiliser, sold and marketed by Ostara as Crystal Green®. Crystal Green's unique Root-Activated™ mode-of-action minimises phosphorus tie-up in the soil, thus enhancing crop yield and performance, and significantly reducing nutrient leaching and runoff. For more information, visit **www.ostara.com** and **www.crystalgreen.com**