



This project has received funding from the EU Horizon 2020 research and innovation programme under grant agreement No. 690323







22ª Fiera internazionale del recupero di materia ed energia e dello sviluppo sostenibile Green & Circular Economy 6-9 Novembre 2018 Rimini Italy

IN CONTEMPORANEA CON

Ostara Nutrient Recovery Solutions in Europe & the Mediterranean



3rd EUROPEAN NUTRIENT EVENT @ ECOMONDO 2018

8 - 9 November 2018, Rimini, Italy



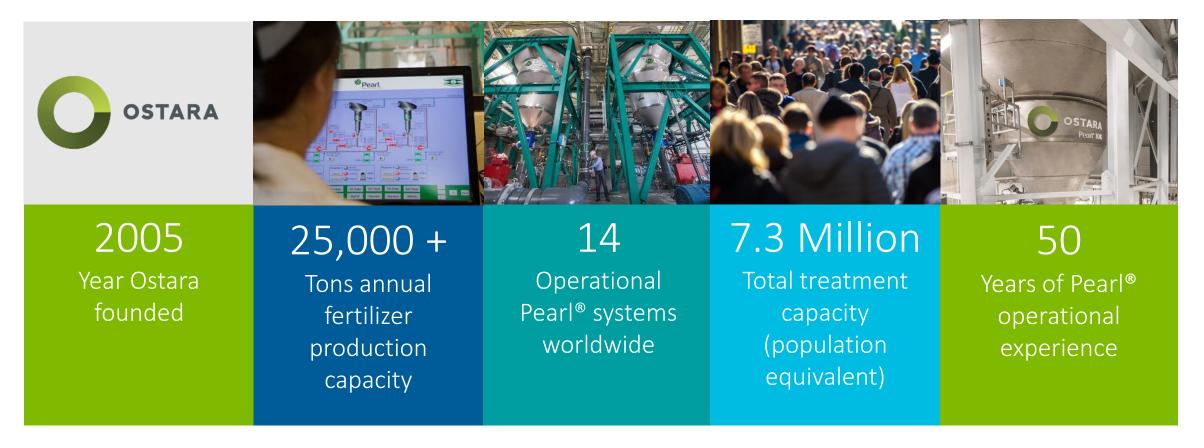






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Operating Experience



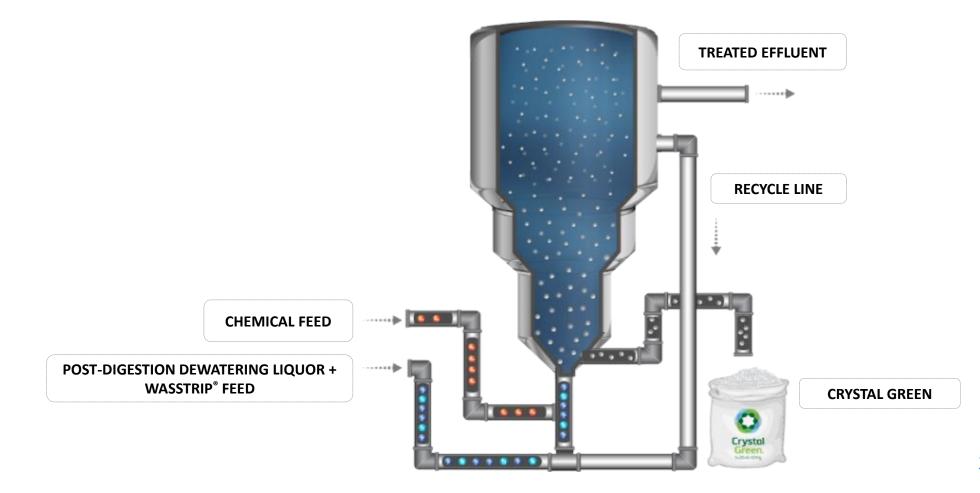






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Core Technology: The Pearl[®] Reactor



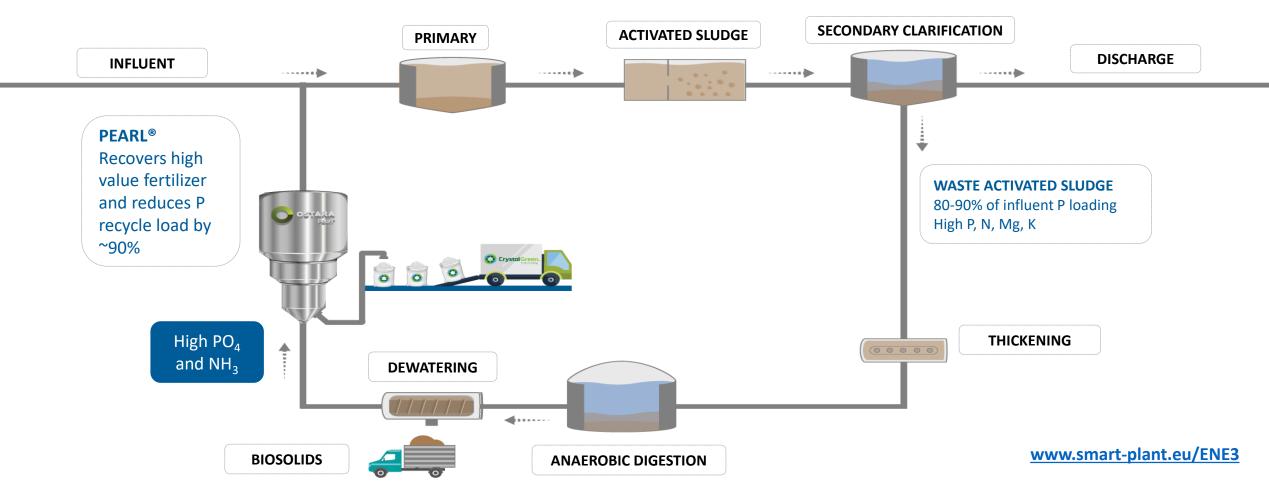








Pearl[®] Solves Operational Challenges while Optimizing P Recovery



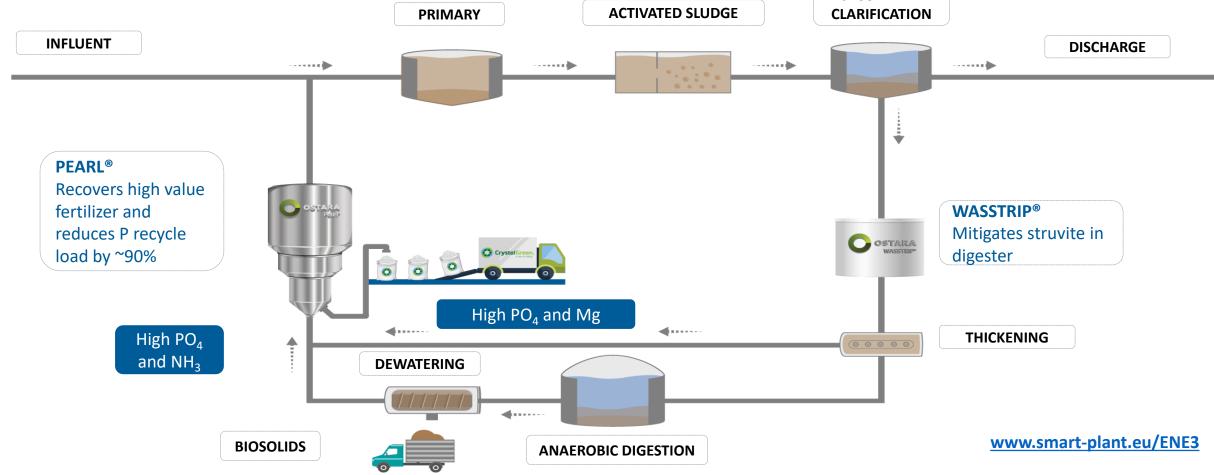








Pearl[®] + WASSTRIP[®] Solves Operational Challenges by Intercepting <u>Upstream</u> of Digester

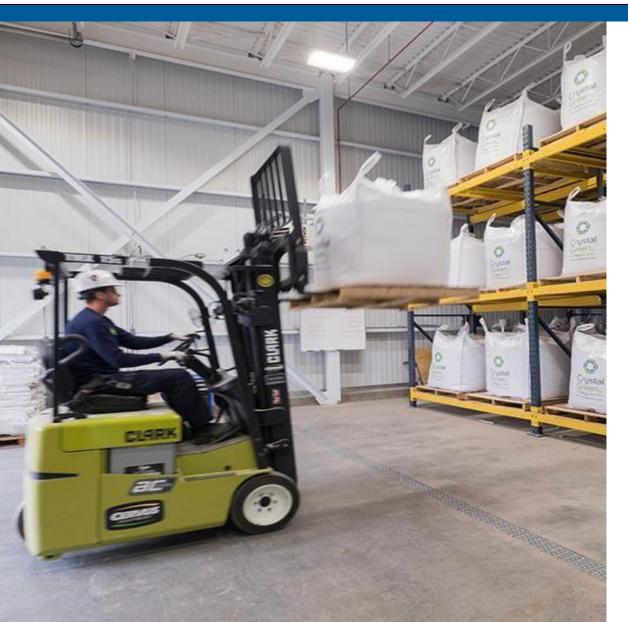












Guaranteed Fertilizer Purchase Optimizes Investment

- Long-term purchase agreement
- Sales price tied to global fertilizer market value
- Established sales channel in North America and Europe









Nothing but Nutrients





- Long-term purchase agreement
- Sales price tied to global fertilizer market value
- Established sales channel in North America and Europe











Crystal Green[®] is Simply a Natural Slow Release, Granular Fertilizer

- Proven to reduce non-point source runoff
- Registered commercial fertilizer in the US and Canada
- Established market

utrient

stewardship

- AAPFCO approved source of slow release nutrients
 - USDA CSP Approved input









Pearl[®] Nutrient Recovery has a Rapidly Growing Installation Base









COMPOSITION AND A COMPARENT AN

7.3 m

Customized Solution: Range of Pearl Offerings



	Pearl [®] 500	Pearl [®] 2K	Pearl [®] 10K
LOAD CAPACITY (kg PO4-d)	65	250	1,250
AVERAGE PRODUCTION CAPACITY (kg CG/d)	355	1,250	6,350
INSTALLATION BASE (2016)	8	12	4







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Slough Wastewater Treatment Plant

Slough, United Kingdom





PARAMETER	VALUE
Design Capacity	60 MLD
Population Served	315,000
Pearl Model	2К
# of Reactors	1
Installation	Greenfield
Installation Year	2015
WASSTRIP	Yes







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Amersfoort Wastewater Treatment Plant

Amersfoort, Netherlands



PARAMETER	VALUE
Design Capacity	60 MLD
Population Served	315,000
Pearl Model	2К
# of Reactors	1
Installation	Greenfield
Installation Year	2015
WASSTRIP	Yes











1x Pearl 2K & WASSTRIP Installed at Amersfoort Energy and Nutrient Factory

Achieves Vallei en Veluwe's Project Goals:

	\checkmark	Integrated with THP (improves energy capture and reduces biosolids production)
	\checkmark	Reduced P return loads and struvite in the digester
	\checkmark	Successfully integrated with Deammonification
	\checkmark	WASSTRIP improves sludge dewaterability by up to 4%
Green Contraction of the Contrac	✓	Capacity to produce 500 tons/year of Crystal Green
	\checkmark	Cost recovery in 5-7 years







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Madrid SUR Wastewater Treatment Plant

Madrid, Spain



PARAMETER	VALUE
Site Design Flow	400 MLD
Population Served	2,900,000
Pearl Model	2К
# of Reactors	1
Installation Year	2016









Cielcza Wastewater Treatment Plant

Jarocin, Poland



PARAMETER	VALUE
Site Design Flow	30 MLD
Population Served	50,000
Pearl Model	2К
# of Reactors	1
Installation Year	2019
WASSTRIP	Under construction









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Shafdan Wastewater Treatment Plant

Tel Aviv, Israel





PARAMETER	VALUE
Site Design Flow	1200 MLD
Population Served	2,000,000
Pearl Model	10K
# of Reactors	2
Installation Year	2019
WASSTRIP	In Design





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Italian Phosphorus Platform

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Creating a Circular Economy

FERTILIZER PRODUCTION

The Pearl process harvests nutrients from wastewater and transforms them into a pure, eco-friendly fertilizer.

1 RENEWABLE PHOSPHOROUS SOURCE

Wastewater streams from treatment facilities rich in phosphorous and nitrogen.

AGRICULTURE

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P

Crystal Green minimizes phosphorous tie-up and significantly reduces the risk of leaching and runoff to local waterways

ENVIRONMENTAL IMPACT

Helping cities win the battle against nutrient pollution by removing phosphorous from where it shouldn't be – in our waterways – and upcycling it into a safe, pure, environmentally responsible fertilizer.

GROWING POPULATION

Positive global impact on issues of water health, resource scarcity and sustainably feeding a growing population