



European Sustainable
Phosphorus Platform



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



SMART-Plant

ECOMONDO
THE GREEN TECHNOLOGIES EXPO

22^a Fiera Internazionale
del recupero di materia ed energia
e dello sviluppo sostenibile

Green & Circular Economy
6-9 Novembre 2018
Rimini Italy

IN CONTEMPORANEA CON
KEY ENERGY

Ostara Nutrient Recovery Solutions in Europe & the Mediterranean



OSTARA


3rd EUROPEAN NUTRIENT EVENT @ ECOMONDO 2018





8 - 9 November 2018, Rimini, Italy

www.smart-plant.eu/ENE3

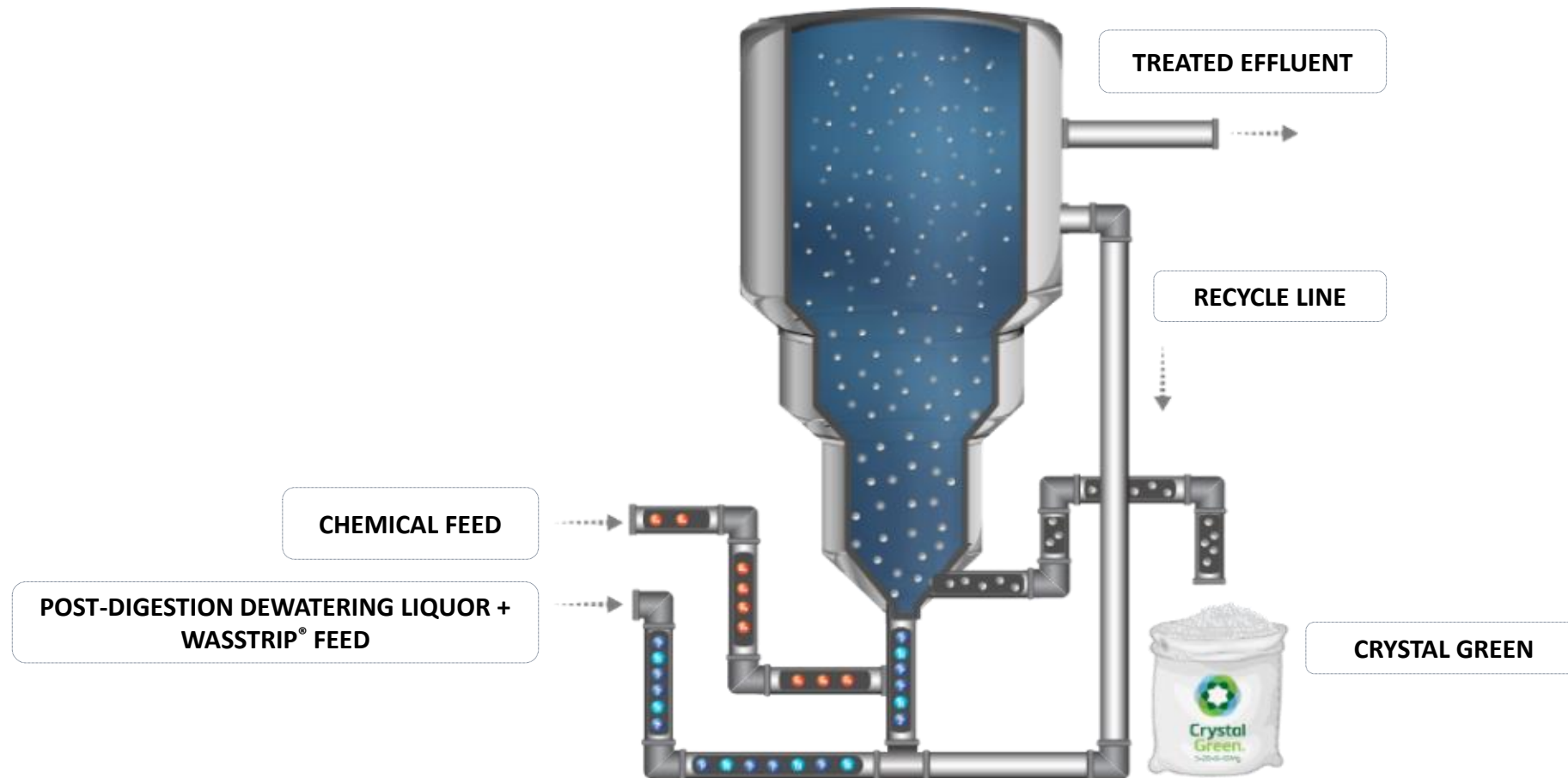


Operating Experience



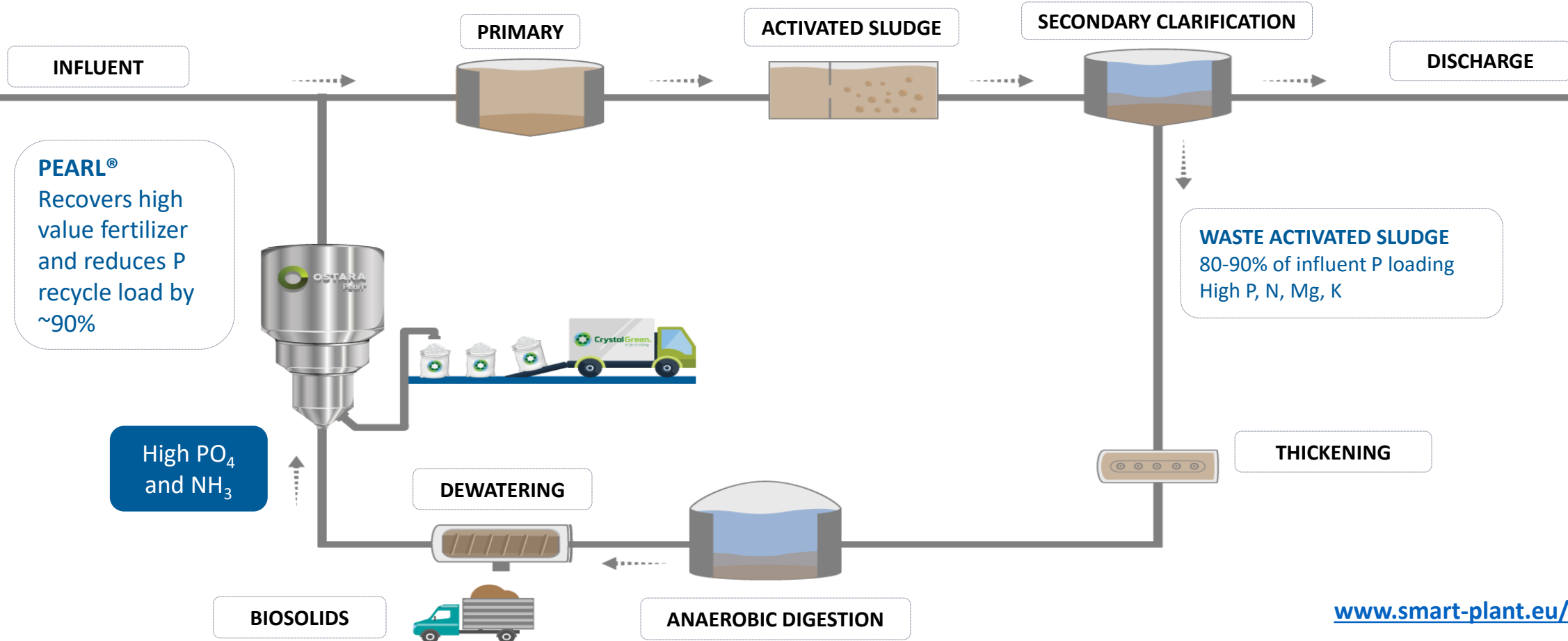
   				
2005 Year Ostara founded	25,000 + Tons annual fertilizer production capacity	14 Operational Pearl [®] systems worldwide	7.3 Million Total treatment capacity (population equivalent)	50 Years of Pearl [®] operational experience

Core Technology: The Pearl[®] Reactor



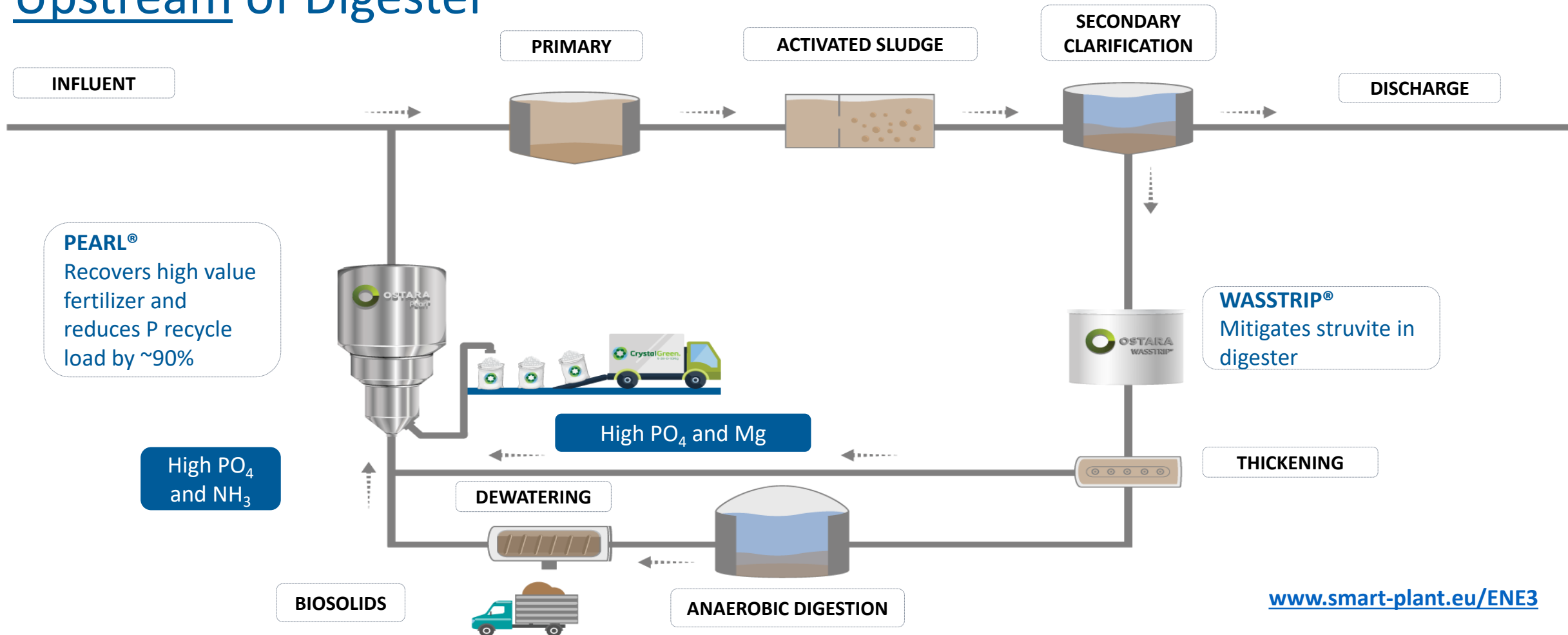


Pearl[®] Solves Operational Challenges while Optimizing P Recovery





Pearl[®] + WASSTRIP[®] Solves Operational Challenges by Intercepting Upstream 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

99.6%
PURE



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Italian Phosphorus
Platform

75
ANNI

GRUPPO
HERA



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KEY ENERGY



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



www.smart-plant.eu/ENE3



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

14
Operating

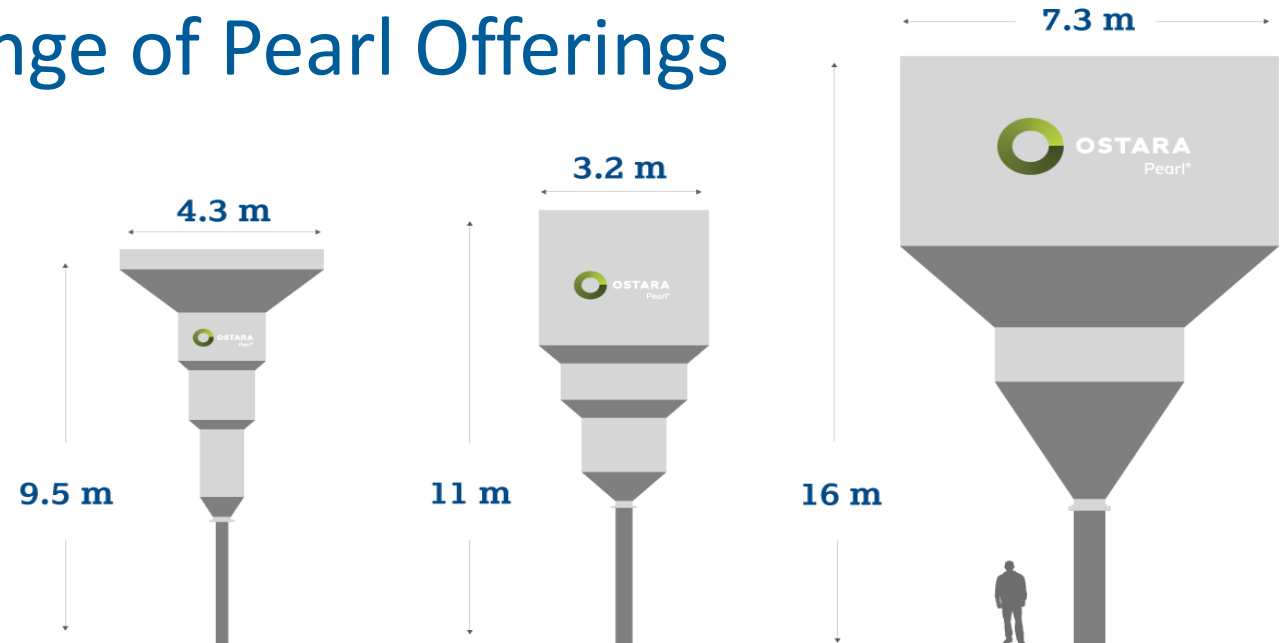
4
Construction

1
In Design





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

Slough Wastewater Treatment Plant

Slough, United Kingdom



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



Amersfoort Wastewater Treatment Plant

Amersfoort, Netherlands



PARAMETER	VALUE
Design Capacity	60 MLD
Population Served	315,000
Pearl Model	2K
# 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:



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



Madrid SUR Wastewater Treatment Plant

Madrid, Spain



PARAMETER	VALUE
Site Design Flow	400 MLD
Population Served	2,900,000
Pearl Model	2K
# 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	2K
# of Reactors	1
Installation Year	2019
WASSTRIP	Under construction





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

Creating a Circular Economy

