Industrial Water Evaporators

#savewater

#reusewater

Waste Management Europe

Exhibition & Conference

The European exhibition and conference for Waste Management and the Circular Economy

21 – 23 JUNE 2022 • Bergamo, ITALY

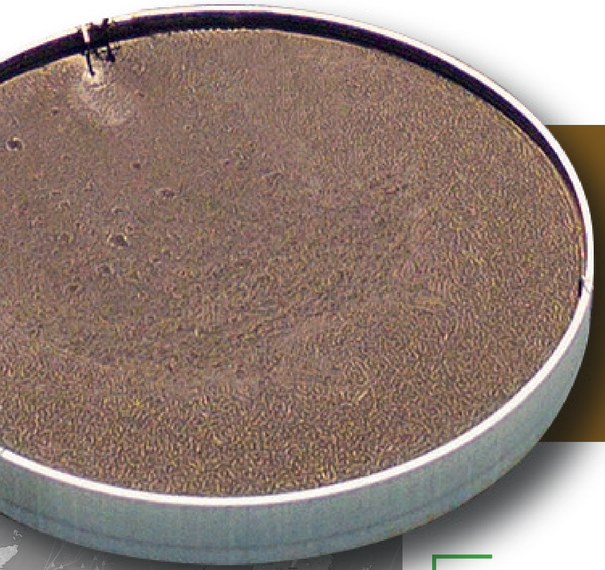
Disposal of the liquid fraction of digestate and valorisation with ammonia nitrogen reduction, nutrients and water recovery.

THE OPPORTUNITY

Biogas and Biomethane are the perfect solution to our need of energy.

The recent energy crisis has highlighted the urgent need to find alternative sources of gas supply.

Biogas and Biomethane, already known as "Renewable Natural Gas", *are the perfect answer to this need.*



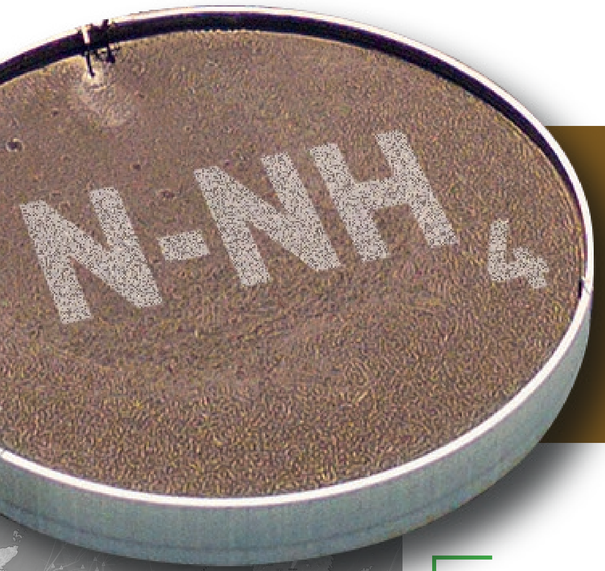
OPPORTUNITY OR PROBLEM?

Anaerobic Digestion generates a huge amount of liquid digestate.

According to the "European Biogas Association", the trend of the construction of biogas and biomethane plants is growing year by year.

But this also means that the volume of digestate to be treated is increasing, too. ***And this is the big problem that we must solve now.***

THE NITROGEN LOAD IN THE DIGESTATE



The main problem with digestate is with the high load of ammonia nitrogen.

***European Directives restrict the spreading of these substances on the soil**, being considered high concentration pollutants.*

*The main problem with digestate is the high load of ammonia nitrogen, in fact various technologies have been developed trying **to carry out an effective nitrogen removal treatment**.*

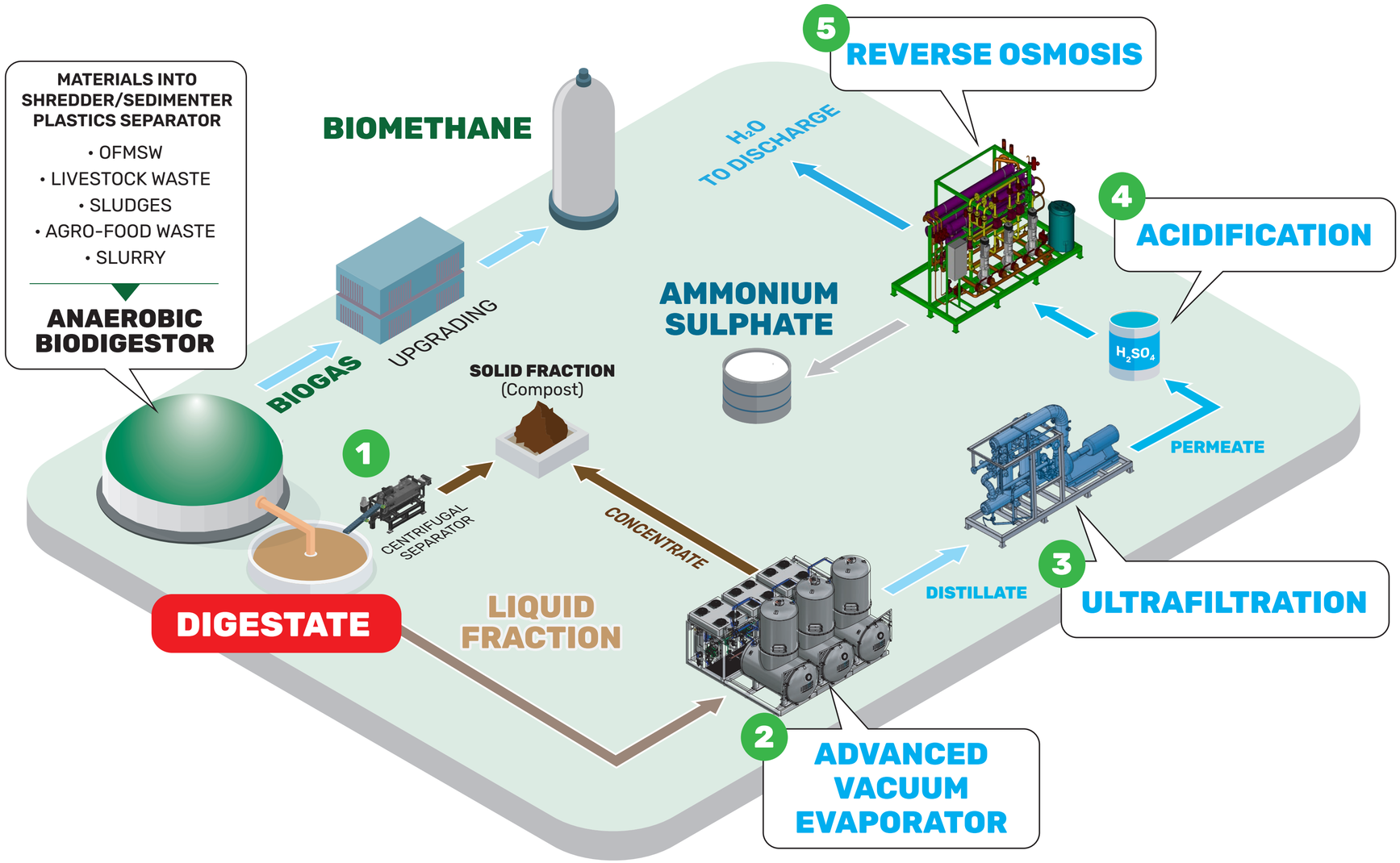
THE SOLUTION

Multi-process systems based on ADVANCED VACUUM EVAPORATORS.

IWE have found a really effective solution: it is a multi-process system based on the use of advanced vacuum evaporators. According to the specific nature of the liquid digestate, and of energy quantity and availability, the configuration of the processes involved in the system may be different: we can use biological treatments, combined with membrane systems such as ultra or nano filtration and reverse osmosis, possible pre-acidification or ammonia stripping.

- ***EVOLUTED VACUUM EVAPORATION***
- ***Acidification***
- ***Ultra/Micro Filtration***
- ***Reverse Osmosis***
- ***Ammonia Stripping***
- ***H_2S removal***

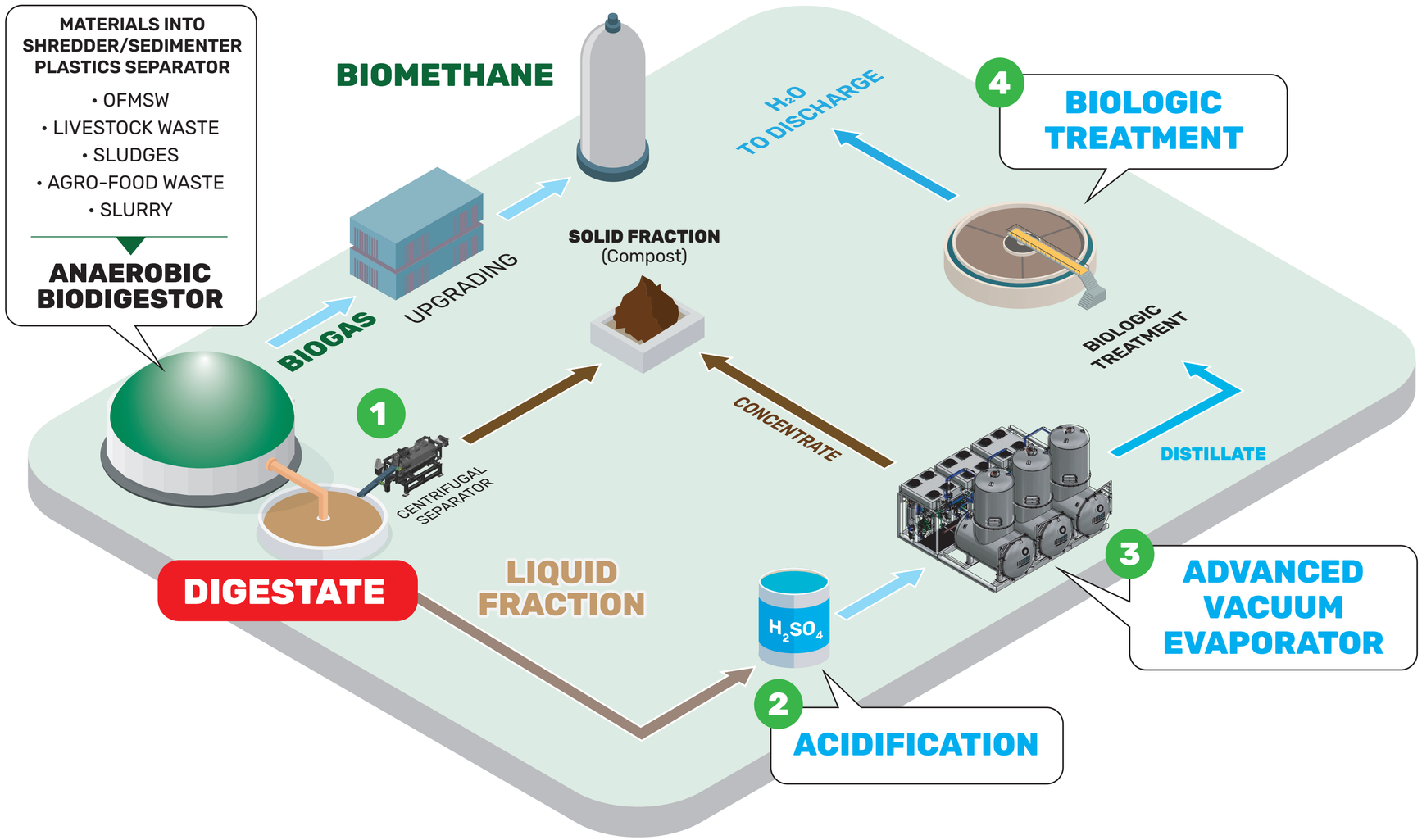
Valorisation of digestate from methanation processes with ammonia reduction and nutrient recovery.



RESULTS FROM CASE-STUDY #1 TREATMENT OF ZOO-TECHNICAL DIGESTATE

STATE	DIGESTATE	DISTILLATE	CONCENTRATE
VOLUME (mc/day)	100	75	25
SOLID SUBSTANCE (%)	5	< 0,1	20
pH	8,20	9,50	8,80
AMMONIA g/mc	3.400	2.950	450
PHOSPHATES g/mc	105	< 0,1	420
COD mg/l O_2	38.000	130	145.000

Valorisation of digestate from methanation processes with ammonia reduction and nutrient recovery.



RESULTS FROM CASE-STUDY #2 TREATMENT DIGESTATE AFTER ACIDIFICATION

STATE	DIGESTATE	DISTILLATE	CONCENTRATE
VOLUME (mc/day)	100	75	25
SOLID SUBSTANCE (%)	5	< 0,1	20
pH	8,20	8,55	6,10
AMMONIA g/mc	3.400	65	10.500 (ammonium sulphate)
PHOSPHATES g/mc	105	< 0,1	420
COD mg/l O_2	38.000	160	162.000

THE ADVANCED EVOLUTION

Vacuum evaporators with "Easy Opening" system to access boilers, Innovative Heat-Exchangers with "Immersed Plates" to avoid encrusting, and Automatic Cleaning to improve maintenance.

STANDARD HEAT-EXCHANGERS

Tube bundle - Immersed coil

IWE HEAT-EXCHANGERS

Immersed Plates

HEAT EXCHANGERS WITH FULLY AUTOMATIC CLEANING SYSTEM

Valorisation of digestate from methanation processes with ammonia reduction and nutrient recovery.

HIGH QUALITY DISTILLATE

EXCLUSIVE AUTOMATIC CLEANING SYSTEM

INNOVATIVE HEAT EXCHANGERS

EASY OPENING SYSTEM

Valorisation of digestate from methanation processes with ammonia reduction and nutrient recovery.

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