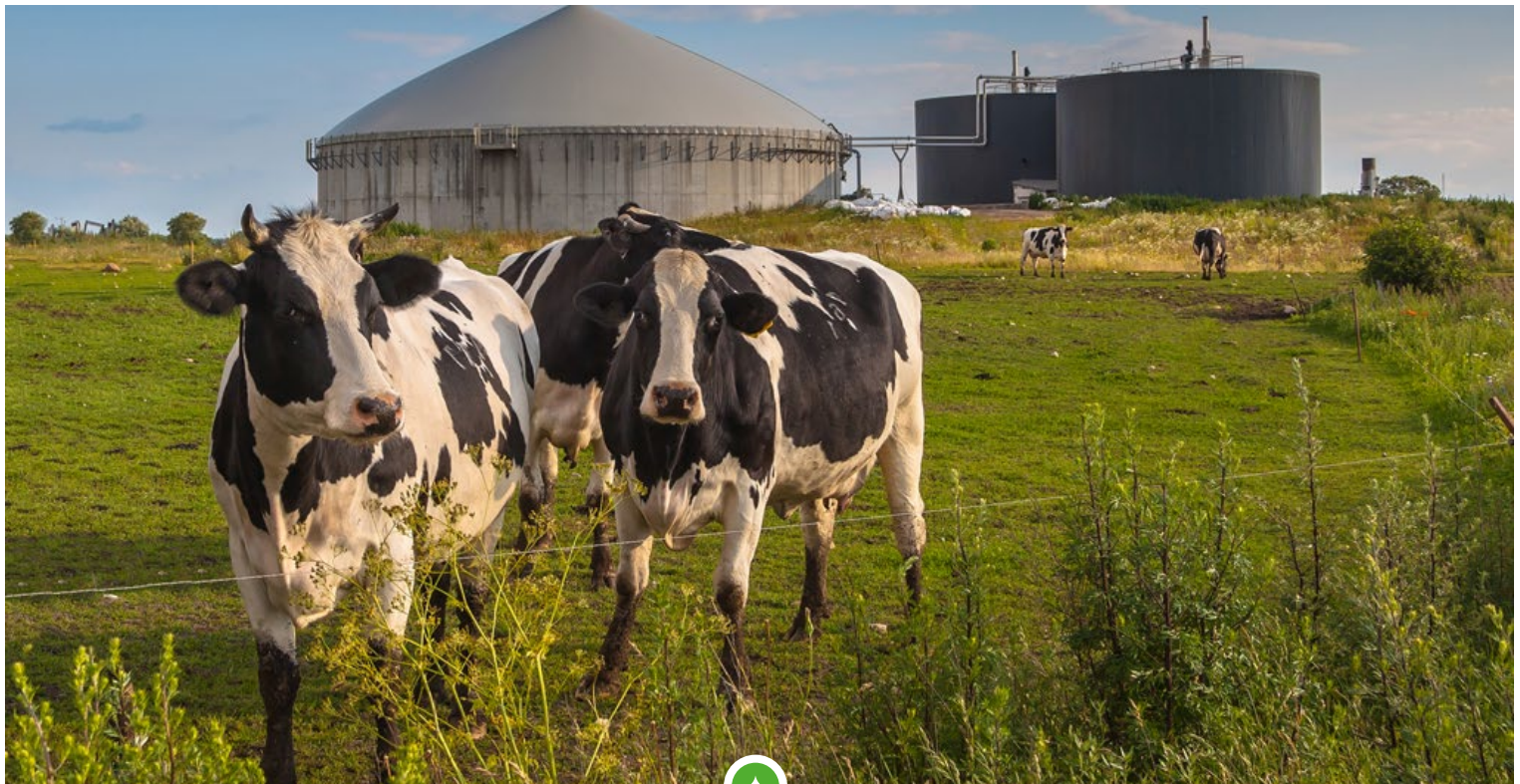


# MANURE AND DIGESTATE TREATMENT

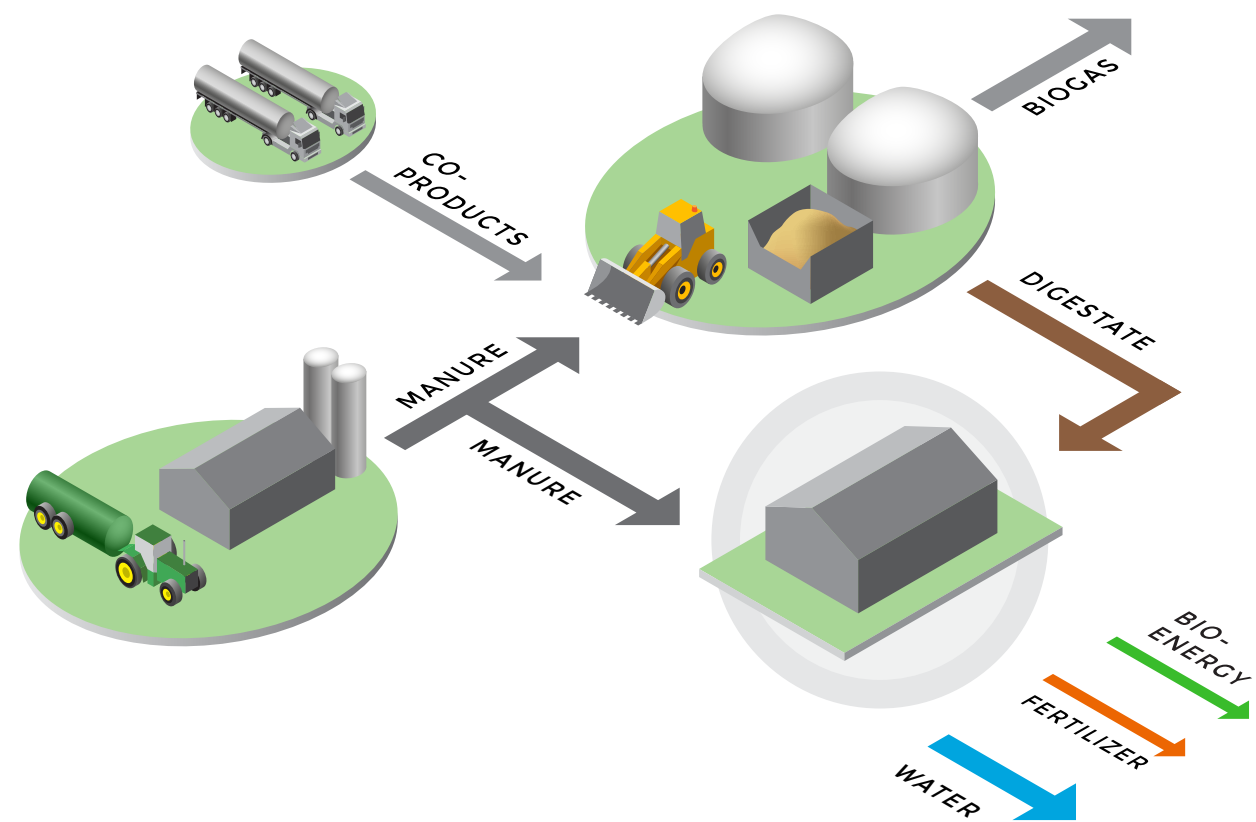
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Efficient use of resources

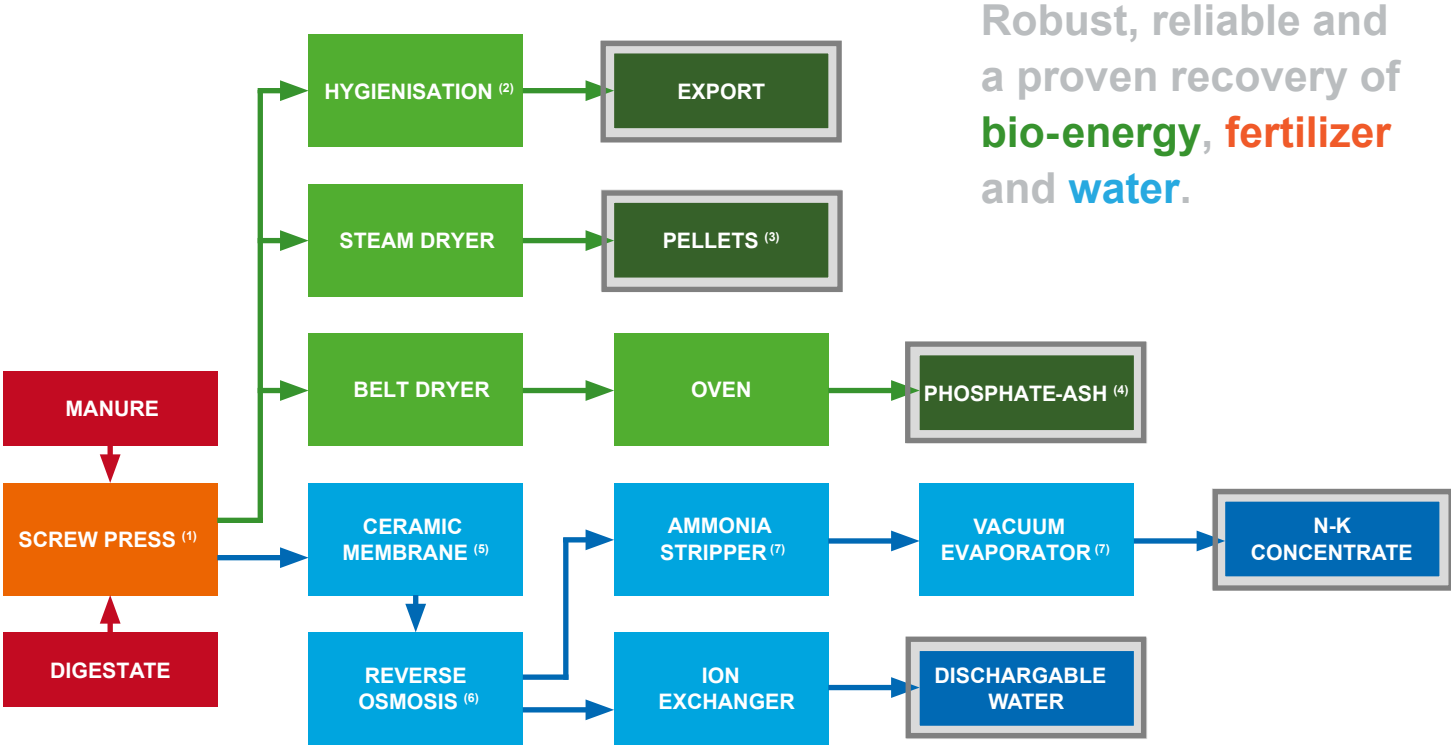




# MANURE AND DIGESTATE TREATMENT



# Efficient use of resources



## MANURE AND DIGESTATE



### MANURE

Manure is organic matter derived from animals which can be used as organic fertilizer in the agriculture industry. An overload of manure, with high concentrates of phosphate and nitrogen, leads to contaminated soils. EU regulations about obliged manure treatment are in place to prevent contamination.



### DIGESTATE

Fermented manure as a waste product of biogas production is called digestate. Digestate contains water, organisms and valuable minerals. To obtain these valuable minerals, digestate should be treated.



### SCREW PRESS (1)

As a first treatment handling the manure is separated into a solid fraction and into a thin fraction with a screw press. The screw press has a separation efficiency of >90% phosphate. The solid fraction has a 25% dry matter content.

## TREATMENT SOLID FRACTION



### HYGIENISATION (2)

Hygienisation is the heating of the solid fraction derived from the screw press for a certain period of time and a certain temperature. During this process germs and unwanted bacteria are demolished.



### PELLETS (3)

Through a high temperature drying installation, in combination with steam, the solid fraction is dried up to >90% dry matter and potentially converted into bioenergy pellets or fertilizer pellets.



### PHOSPAHTE-ASH (4)

After drying the solid fraction with a belt dryer, the solid fraction is burned into ashes. The hatching substance contains a large amount of phosphate. In the end, due to major volume decrease, large cost savings can be made on transportation

## TREATMENT THIN FRACTION



### CERAMIC MEMBRANE (5)

Unique within this total treatment process is the pre-filtration with ceramic membranes. Pre-filtering with ceramic membranes leads to a more efficient last filtering process (reverse osmosis). The use of ceramic membranes ensures a maximum volume in dischargeable water.

### REVERSE OSMOSIS (6)



To recover all fertilizer from the solid fraction, a reverse osmosis system is used. This last treatment step produces dischargeable water and a concentrate of minerals (N and K).

### AMMONIA STRIPPER AND EVAPORATOR (7)



To separate the nitrogen from the mineral concentrate, a stripper is used. The permeate of this process is a nitrogen-rich ammonium sulphate of 30%. As a last handling, a vacuum evaporator is used to produce valuable potash fertilizer (k2O >12%).

## Benefits

- 0% waste
- Recovery of P, N and K
- Proven technology
- Water reuse
- Energy efficient (<20kW/m<sup>3</sup>)
- Simple operation and requires little maintenance
- Long cleaning intervals (6 months)





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Solutions and systems within the potable water, waste water and process water industry.

RWB differentiates itself by supplying standard systems on the one hand and by developing custom made solutions on the otherhand. By keeping all disciplines, like engineering, process management

assembly, commissioning and maintenance in-house and also because of a 24/7 service, RWB can offer a complete package in water treatment. That is our added value!

### RWB's services

-  Process technology
-  Engineering
-  Project management
-  Service

