DORSET GM
GREEN MACHINES

FULL NUTRIENT RECOVERY

LIQUID MANURE PROCESSING FROM CATTLE, PIGS OR BIOGASPLANTS

- Clean water
- Organic fertilizer pellets

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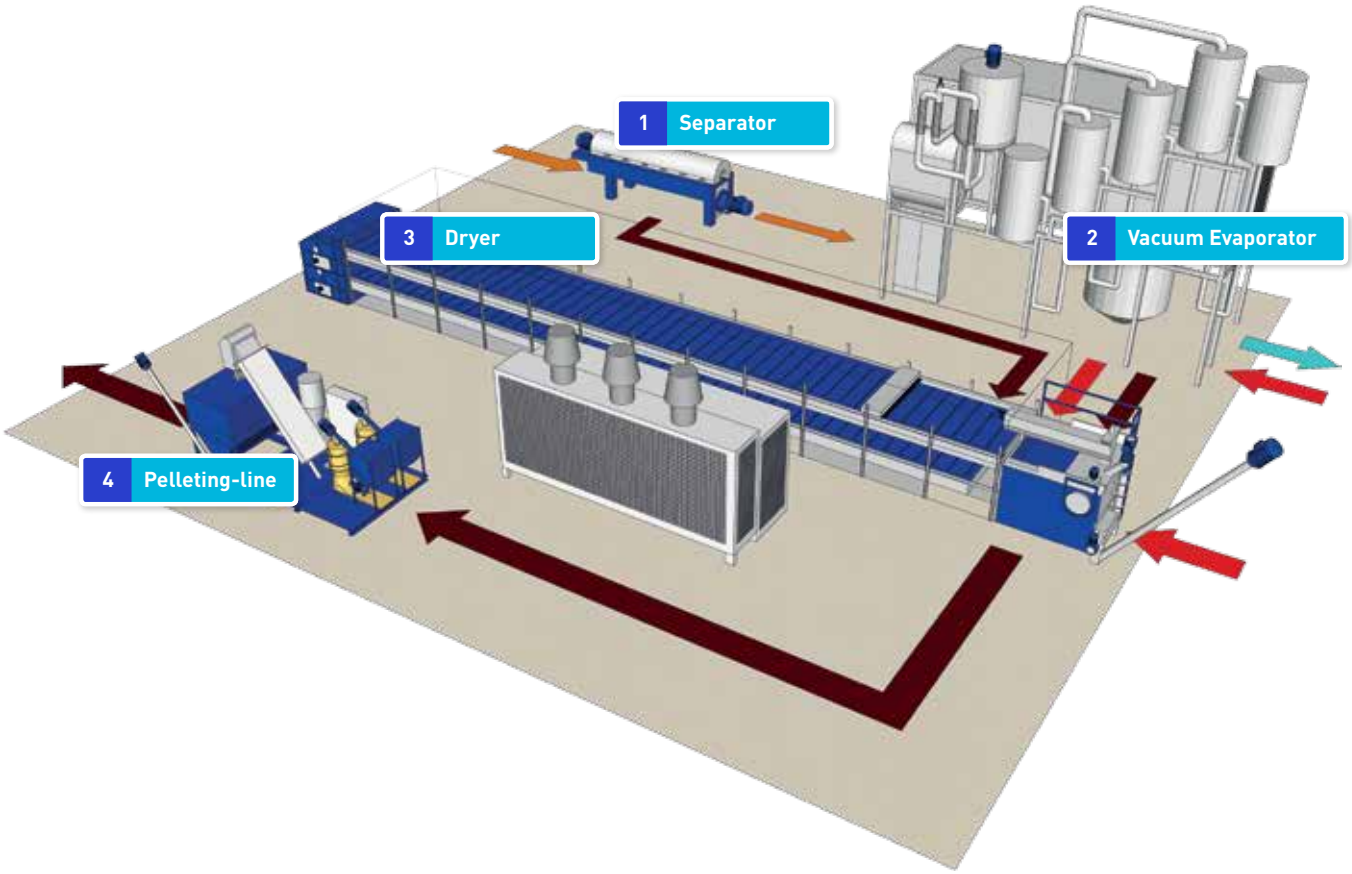
Full Nutrient Recovery System

An economic solution for processing liquid slurry

This is a complete solution for processing of liquid slurry in 4 steps.
The system is modular based for lower investment costs.



Inputs

Outputs

Key Features

No loss of valuables
In contrast to composting or other processing methods the valuable nutrients remain in the end product.

Clean water
The water extracted from the manure is sufficiently clean for use or discharge: ← 5 mg NH4/kg.

Non-biological steps
The system does not rely on any biological process and is therefore consistent and reliable.

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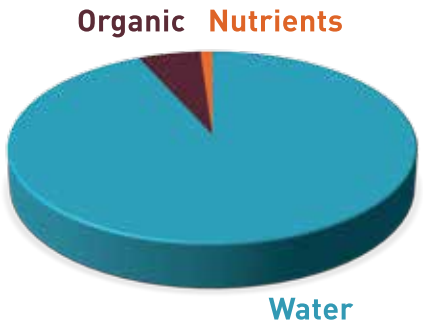
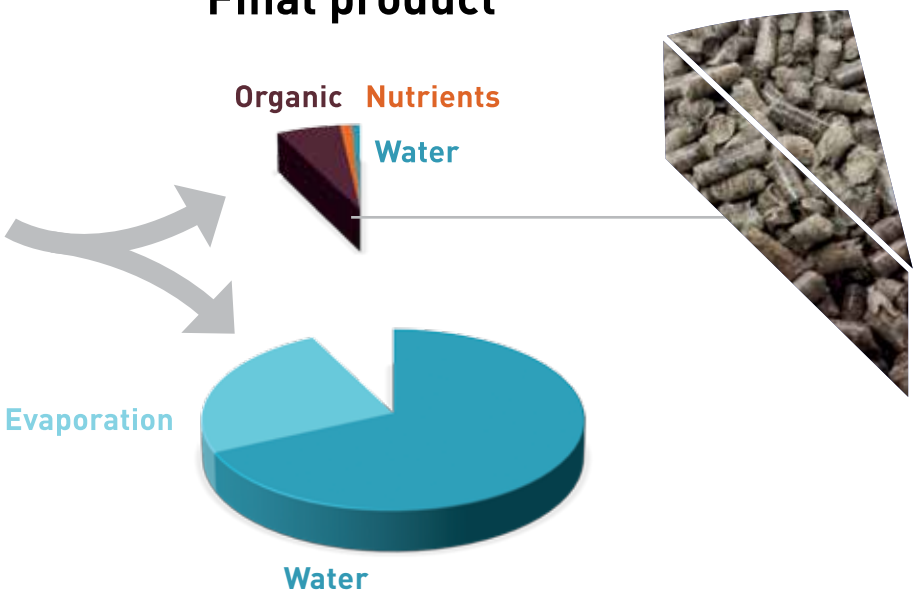
Remove water – Produce Organic fertilizer

Input slurry



Final product



Removing the water results in:

- Reduced storage costs
- Reduced transport cost
- A high value saleable end product

Full Nutrient Recovery System compared to alternative solutions

This solutions differs from other solutions

- **Nutrients recovery:**
  The nutrient N-P-K are not lost while processing but remain in the end product
- **Reliable and consistent:**
  The process does not rely on biology and is therefore consistent and reliable
- **Modular:**
  The system is modular, which result in lower investment costs and less vulnerability to interruptions
- **Lowest energy consumption:**
  The system relies on the use and reuse of low cost heat and requires very little electricity

	Nutrient recovery	Water treatment plant	RO/UF Membranes
Electricity use	🟩	🟥	🟥
Heat use	🟥	🟩	🟩
Water output quality	🟩	🟥	🟥
Process reliability	🟩	🟥	🟥
Nutrient recovery	🟩	🟥	🟩
Maintenance	🟩	🟥	🟥
Space requirements	🟩	🟥	🟥

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1 Separator

1 Separator
The separator can be any choice of system.
Further advantage is that flocculants are not required.
The solids go to the drier, the liquid to the vacuum evaporator. The vacuum evaporator allows up to 5% of dry matter, but for an efficient process 2,0 – 3,5% of dry matter is preferred.
Maker: Customer choice

2 Vacuum Evaporator

2 Arnold Vacuum Evaporator
Clean water <5 mg NH3/liter) and concentrate (pumpable;1 – 25 % dry matter) are produced in different steps. More steps are used for increased efficiency in energy requirement.

The Special design of the heat exchanger prevent clogging and allows easy operation.
The energy can be waste heat (hot water from 70 °C or more, but an electric-only version is also available.

3 Drying system

3 Dorset Drying system
Dorset plate belt dryers are used worldwide for processing biomass for more then 15 years. The solids from separation and the concentrate from evaporation can be dried separately or together.

Aircleaning is usually added for a good neighbor relationship and the environment.

4 Pelleting-line

4 Dorset organic fertilizer factory
Pelleting and sanitation in one plug and play package: Dorset fertilizer factory.
The system turns the product in a compact good-looking organic fertilizer pellet suitable for storage, long distance transport and export certification procedures.

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Refining

- **Organic material**
- **Phosphate**
- **Potassium**
- **Nitrogen**

for blending

Custom Made Organic Fertilizer Production

The market price of organic fertilizers increase if the properties of the product fully meets the specification of the demand.

Biogas from Poultry Manure

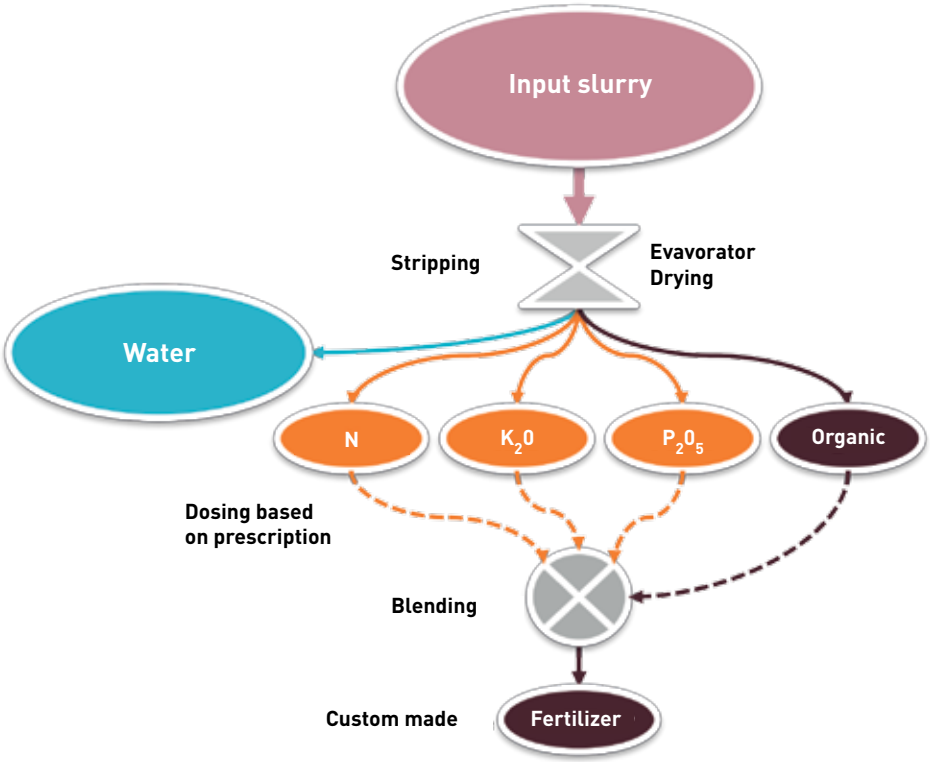
When producing biogas from poultry manure, the level of ammonia is a challenge.
To lower the level it is necessary to add water.

Vacuum evaporation is the excellent way to produce recycling water. The solids and concentrates can be combined to process the organic fertilizer.

A part of the heat for the vacuum evaporation is re-used in the dryer for maximum performance.

Nutrient Refining

Optional next step



Ammonia stripping

Alternative use of the evaporator

A simple version of the evaporation-system can be used to strip the ammonia from liquids.
The endproduct can be ammonium-sulphate (crystals) or ammoniawater (25%). The stripping version is also available as stand alone product.

Dorset Green Machines is developer and producer of drying equipment, air cleaning systems and control panels.

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IDENTIFICATION
RFID-Technology, electronic identification

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GREEN MACHINES
Equipment for the treatment of biomass

DORSET FS
FARM SYSTEMS
Farm air cleaning