



Manure: a valuable and essential product

Meet the nitrogen cracker and the separators

Gazoo | Dino | Bronto



From organic manure to chemical fertiliser

JOZ has been developing solutions for moving manure for over 75 years. With circular farming, we're taking this a step further. We're going deeper into the chain, using our solutions to convert manure into a valuable product.

Manure contains valuable minerals that are essential for agricultural businesses. With circular farming, we're helping transform organic manure into chemical fertiliser. Our efforts in this respect are making it feasible and workable for you to comply with the rules applicable to farmers.

Manure is a valuable product. It contains more than just ammonia, which is viewed as problematic for the environment and consequently affects the freedom of the farmer. Fortunately, there's an alternative at hand, as JOZ supplies a unique concept for transforming manure. This brochure introduces you to our latest solutions: **The Gazoo nitrogen cracker**, and **the Dino and Bronto manure separators**.



Made in Holland

NEW!

Circular Farming

The future



Separator

Separate your manure
quickly and easily

Gazoo

Reduces nitogren
and methane



Separate manure using our

Separator

To make chemical fertiliser from organic manures, the manure must first be separated. A JOZ separator quickly and easily separates the manure stored in the manure pit or another manure storage space.

How does the separator work?

In the circular farming concept, the separator is the first phase in transforming manure into a chemical fertiliser. Separating slurry results in 2 types of manure: a thick fraction and a thin fraction. The thick fraction contains a high percentage of phosphates, and can be used as



2 types of separators

JOZ separators are suitable for separating cattle, pig and poultry manure. 2 types are available:

➤ **Bronto** (suitable for biobedding)

➤ **Dino** (suitable for stackable manure)

Both separators are available separately or in combination with the nitrogen cracker. JOZ separators feature modular cast-iron housings. The manure separator is easy to operate and maintain thanks to the removable double filter housing with quick-action connector and the inspection openings in the inlet and filter housing.

A unique feature of these separators is the end bearing fitted on the screw press, which reduces wear on the filters. The filter screw press can handle liquids with a solid content of 0.5 to 15% DM.

solid manure. In addition, the period during which it can be spread is often longer. You can also use the thick fraction as biobedding. The amount of solid matter in the thick fraction is very important here: it must be at least 35%.

[Read more about the separators on the following pages.](#)



Bronto

(suitable for biobedding)

The Bronto separator is especially suitable for farms that want to use the solid fraction as biobedding. The Bronto can achieve a dry matter percentage of 30 to 40%, which makes the thick fraction ideal for use as bedding.

Note: it is important to prevent fermentation. Spreading the fresh thick fraction in layers prevents fermentation.

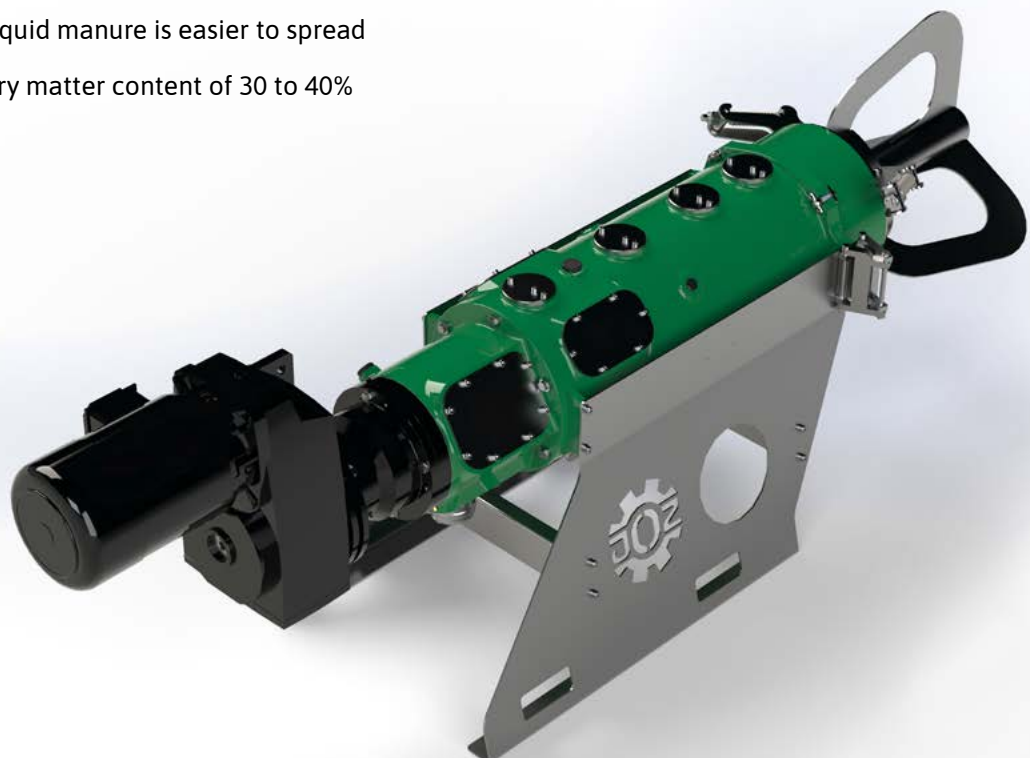
If the Bronto is combined with the JOZ Gazoo nitrogen cracker, the thin fraction is

pumped to the Gazoo, where the next stage of the transformation process takes place.

If the manure cracker is not used, the thin fraction is returned to the manure pit, or stored in another manure storage space before being spread.

Advantages of Bronto

- ✓ Inexpensive bedding: no expensive straw or sawdust required
- ✓ More comfortable for cows (especially with deep litter boxes)
- ✓ Animals stay cleaner
- ✓ Liquid manure is easier to spread
- ✓ Dry matter content of 30 to 40%



Dino

(suitable for stackable manure)

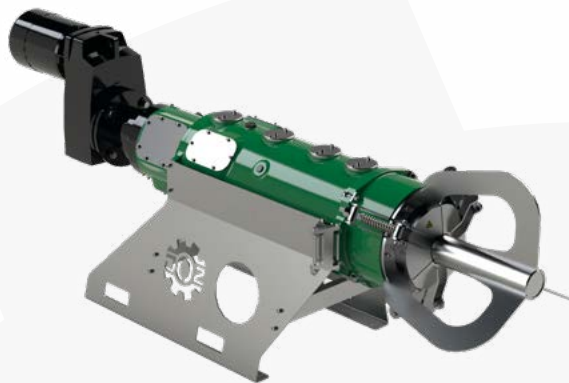
The Dino separator separates slurry into a thin fraction and a thick fraction. The Dino doesn't achieve such a high dry matter content as the Bronto, so the thick fraction can't be used as biobedding.

The stackable manure created is very rich in phosphates, so this product is ideal for spreading over the land as solid manure. Does your farm actually have a manure surplus? The Dino can make life easier even in this case, because the phosphate-rich thick fraction can be transported more easily, resulting in considerable savings in transport costs. You dispose of the same amount of phosphate in a smaller volume.

The thin fraction is returned to the manure pit or spread on the land via another storage place. Since it's a liquid, this thin fraction is easier to spread. There's less necessity to mix the manure pit or dilute the manure by separating it.

Advantages of the Dino

- ✓ Lower transport costs
- ✓ Stackable manure
- ✓ More space in the manure pit
(approx. 20% more storage space)
- ✓ Easier spreading of the separated manure
(liquid state)



The fresh manure is collected, and separated into a thin fraction and a thick fraction by the separator (Bronto). This is the next stage of transforming the manure. The thin fraction is pumped to JOZ's nitrogen cracker: [the Gazoo](#).

Curious? Read on quick!





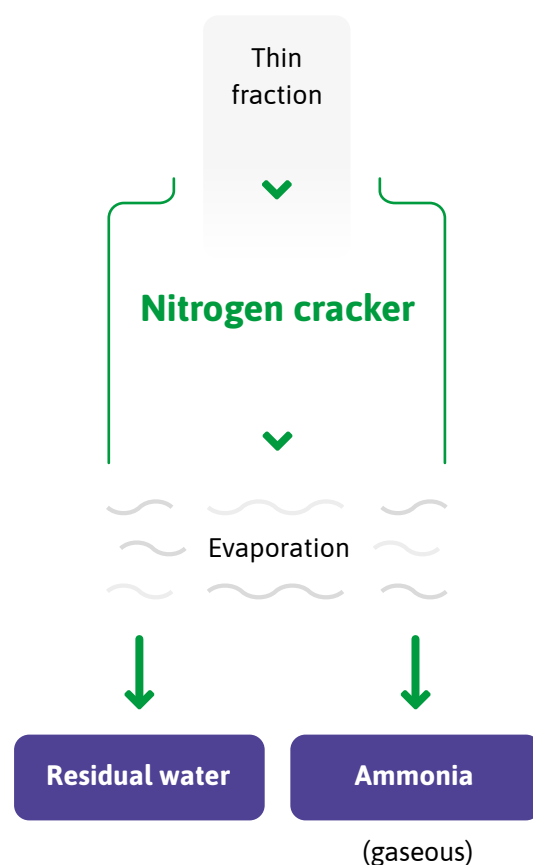
Reduce nitrogen with the

Nitrogen cracker

The Gazoo nitrogen cracker is a circular manure processing solution. As an added bonus, it doesn't just reduce nitrogen, but methane too!

How does the nitrogen cracker work?

The Gazoo nitrogen cracker reduces nitrogen in a 2-stage process. First, the ammonia is extracted from the thin fraction through evaporation and the application of a base or heat. Evaporation creates two products: ammonia and residual water.





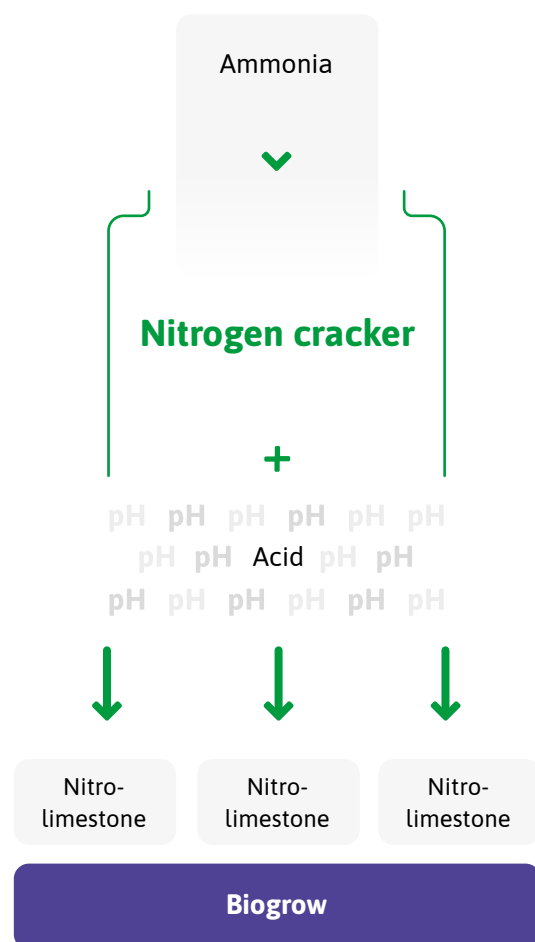
Residual water

Residual water can be spread over the land or pumped back to the barn. If it is pumped back to the barn, it should be sprayed over the slats to clean the stained surfaces.

Spraying residual water over the slats reduces ammonia emissions from the barn. This concerns an emission reduction of 62% with a slatted floor compared to a traditional dairy barn with a slatted floor with an emission factor of 13 kg ammonia per year per animal accommodated. The reduction with a solid floor is 63%.

Ammonia

In the second stage of the treatment, the ammonia gas released during evaporation is collected in the nitrogen cracker and processed. Ammonia is an important semi-finished product for the chemical fertiliser industry. Nitric acid is added to the ammonia to produce nitro-limestone, a liquid chemical fertiliser, Biogrow.



Chemical fertiliser can therefore be made from animal manure by separating the manure and using the Gazoo. This has a favourable effect on barn emissions, manure spreading emissions, and the nitrogen produced by cows. All are significantly reduced by removing ammonia from manure.





Methane reduction

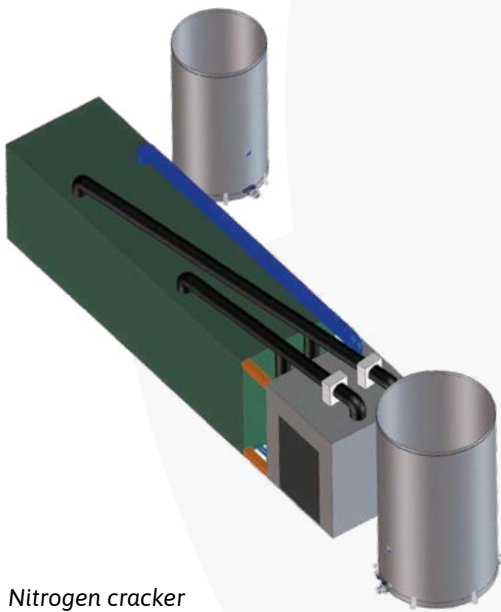
After CO₂, methane is considered the main culprit among greenhouse gases. The effect of methane as a greenhouse gas is 23 times that of CO₂. Methane emissions can be reduced by converting the gas to CO₂ with the help of the Gazoo.

Methane is created in the organic part of slurry and manure. Residual water is created by separating the manure and busting the nitrogen. The amount of organic manure in the pit is reduced by pumping the residual water back and spraying it over the floor surface. This reduces methane emissions in the barn.

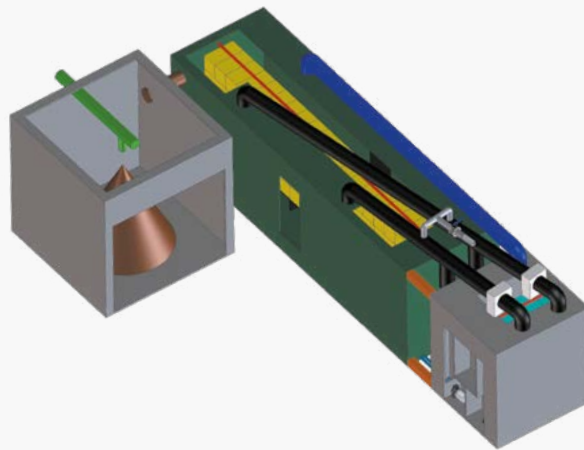
The capacity of the Gazoo
nitrogen cracker is 20 tonnes
per day

Separating the manure results in a thick fraction and a thin fraction. If the thick fraction is collected in a covered space, the methane that is released as greenhouse gas can be captured and sent to the Gazoo. The Gazoo contains a filament that flares the methane and converts it into CO₂.

The capacity of the Gazoo nitrogen cracker is 20 tonnes per day, so it can handle the manure produced by around 350 cows. This nitrogen cracker reduces both nitrogen and methane emissions.



Nitrogen cracker



Nitrogen cracker with methane reduction

Advantages of the Gazoo nitrogen cracker

- ✓ Less ammonia
- ✓ Converts organic nitrogen into inorganic nitrogen
- ✓ Better and faster absorption of the nitrogen in liquid form
- ✓ Save expenditure on chemical fertiliser
- ✓ Approx. 20% more space in the manure pit
- ✓ More nitrogen space, no shrinkage
- ✓ It is cheaper to sell manure in the event of a manure surplus



Calculation example

A cow produces **120 kg** of nitrogen per year:

- **60 kg** of this is in organic manure (does not evaporate and does not wash out)
- **60 kg** is in ammonium (liquid ammonia)

The Gazoo nitrogen cracker can reduce the **60 kg** of nitrogen in the ammonium to **12 kg**. **That represents a reduction of 80%!**



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