<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the Hanskamp CowToilet?</td>
<td>The voluntary urination system for dairy cattle that collects urine separately from faeces. Through this source separation, we can use urine separately as a fertilizer substitute and take a big step towards sustainable agriculture. We store the nitrogen (N) so that it does not emit (emission) but is retained in the manure. Because we collect urine separately, less ammonia is produced, which is good for both nature and biodiversity.</td>
</tr>
<tr>
<td>How it works?</td>
<td>The CowToilet is a free-standing cubicle which cows can visit and leave voluntarily. The cow is conditioned by rewarding each visit with a portion of feed. After eating, the cow is stimulated to urinate in the Cow Toilet. A natural nerve reflex is used which causes the cow to urinate. The collection container of the CowToilet gently touches the nerves of the cow that run between the udder and her vulva. This causes a peeing reflex. The collected urine is immediately pumped away and stored separately. Because the urine is separated from the faeces, no ammonia can form.</td>
</tr>
</tbody>
</table>
| What is the public benefit of the CowToilet? | Through separating manure at the source, the CowToilet prevents ammonia formation and also contributes to animal welfare and sustainable dairy farming. Ammonia emission is seen as one of the biggest environmental problems of dairy farming because:  
- Ammonia evaporates from the barn and settles in the environment, the so-called nitrogen deposition. This makes the soil rich in nitrogen, but a surplus causes problems in vulnerable nature, reduces biodiversity and causes acidification of soil and surface water.  
- Ammonia causes stench.  
- Nitrogen is an important fertilizer. Ammonia emission is therefore a loss of nitrogen for the farmer, which means that more chemical fertilizer has to be used.  
Animal welfare:  
- Dryer and cleaner floors contribute to better claw health.  
- Cleaner air is better for the lungs and mucous membranes and contributes to better animal health (fewer respiratory diseases). |
What is the advantage of the CowToilet for the farmer?
The CowToilet can be used universally in every cow shed. The system only works in a Hanskamp walk-through cubicle station. Surplus farms (farms with little land to drive out the manure) save on manure removal costs. Urine can be used as a substitute for chemical fertiliser*. *urine does not yet have a separate manure code. This is pending on legislation (Netherlands). Farmers in intensive livestock farming areas will comply with the stricter ammonia regulations without new construction or major renovation. Imaging: In a lot of places ammonia emissions are seen as a major problem. With the CowToilet, the farmer can make his contribution to a possible solution!

How did we come up with the idea of the CowToilet?
20 years ago we started working on how to get more milk out of cows. 10 years ago we were working on how to improve animal welfare? 5 years ago, we started working on how we as a sector can make a positive contribution to our environmental impact. One of the issues is to reduce our emissions, in particular by preventing the formation of ammonia at the source. An important question for us was: how is it possible that our cows are still living in their own sewers when for us humans it was one of the most impactful inventions for longevity improvement? By looking at nature, we see that the cow never does its faeces at the same time. This is where our search for a separate source solution began.

What was the decisive effect on the mechanism? The eureka moment?
By caressing the nerve pathways that run between the udder and the vulva, scientists and veterinarians have been taking a desired urine sample for years. We have automated this in a Hanskamp walk-through cubicle station. The CowToilet free-standing cubicle where a cow can visit voluntarily.

Does the CowToilet also contribute to the reduction of greenhouse gases?
In some publications of Wageningen University & Research, the impact of the separate and closed storage of urine and faeces is already included in their studies on the reduction of greenhouse gases. We are currently investigating at DairyCampus Leeuwarden (WUR) which claim of greenhouse gas reduction can be made with the use of our CowToilet.

What is the effect of grazing and the CowToilet?
The effect is that less urine is collected. However, this is not a problem: Cows do not urinate and defecate in the pasture on the same spot and therefore (practically) no ammonia is produced.
Is the manure getting thicker?
The slurry contains more organic matter (carbon) and is slightly thicker. For manure processing we recommend mixing the manure more often. Spreading remains the same, the manure remains well pumped out of the storage.

What does pure urine consist of?
Urine contains relatively high N (nitrogen: \( \pm 6-7 \text{ g N per kg urine} \)), and also a lot of potassium (12-15 g per kg). It does not contain phosphate, which is all in the manure.

What does this mean for my phosphate space?
The government has no regulations on the separate collection of urine. That is why nothing changes in the manure administration. However, sampling allows you to remove nitrogen and retain the phosphate on your farm.

What is the effect of the CowToilet on a biogas installation?
Because the manure is thicker, the carbon content is proportionally higher, making the biogas installation more efficient.

When will it be on the market?
Second half of 2021 (depending on the RAV* certification)
*RAV is a Dutch certification procedure.
During the digital EuroTier 2021, we will announce when orders can be placed.

Is the product also available outside the Netherlands?
We will certainly also make the CowToilet available for export. However, this is not expected until 2022. For viewing and research there is a CowToilet in use at landwirtschaftskammer Haus Düsse (Germany).

Can the CowToilet be built into my milking robot?
Hanskamp is currently testing the CowToilet on a milking robot and will continue to work on this. Depending on the results we will make a decision whether we will also incorporate the CowToilet in milking robots.

Can the CowToilet be built in my concentrate feeding station?
The CowToilet box is a Hanskamp walk-through feeding station which has been adapted for the operation of the CowToilet. With this we also guarantee the capacity because the cow leaves the CowToilet forwards. It is therefore not possible to build the CowToilet on your existing concentrate feeding station.

How much ammonia will be reduced?
With the CowToilet we collect more than 50% of the urine per cow per day. The ammonia reduction will be around 50%*, which is now being tested by the Wageningen University & Research (WUR) in official research.
*50% reduction is based on 13KG ammonia per cow per year.

What will it cost?
Expectation is \( \pm 20,000 \text{ for 25 cows per CowToilet} \).