

Automatic cleaning for pigs

A moving floor in pig barns - an automated conveyer belt system to remove manure and add fresh bedding every two hours. A Swedish Operational Group testing this technology believes it will lead to cleaner and healthier pigs, a lower use of antibiotics, increased profitability, 95% fewer livestock emissions and zero water usage.

'Moving Floor' is the name of the Swedish company leading this Operational Group, they developed their technology initially for cattle barns, and it has proven successful. "The idea for our Moving Floor concept is quite easy: continuous cleaning (12-15 times a day) provides a high level of hygiene and therefore improves animal health and lowers use of antibiotics. If the manure from the barn is removed within 2 hours, it also minimises the ammonia emissions by 95%" says Katja Lindvall, vice president of Moving Floor. They have decided to test the technology for pigs.



Motion is key

Moving Floor is a family-owned company situated on the Swedish island of Gotland. Today, the company is run by Katja Lindvall and her sister, but it was their father Tommy Lindvall who invented the self-cleaning barns for cattle in 1995. The story goes that after watching a documentary about gnus on the savannah, Tommy Lindvall realised that these animals never got sick because they could constantly move away from their manure as they graze the vast landscape. But, when thousands of animals are brought together in a barn, they can't move away. Lindvall concluded that if the animals cannot move from their manure, then the floor should be able to move the manure away from them.

From 2003 to 2008 university trials were carried out in Sweden in order to gain approval for this new innovation from the Swedish government under animal welfare law. Moving Floor then launched the product for calves and later cows.

During this time, Lindvall also carried out trials for pigs "We understood from the beginning that the demand for the Moving Floor for pigs would always be way higher than the demand on the cattle side, and that is due to the way the industry is structured – the population of pigs is high and pigs live indoors" says Katja Lindvall. In 2002, the trials on a moving floor for pigs showed some positive results, however the pigs kept eating the moving belts and therefore the trials were finally unsuccessful.

A new material for the cleaning belt

"The commercialisation of our self-cleaning barn for pigs has not been possible so far due to material challenges. The belt is very important for the self-cleaning because the moving floor consists of this belt. The belt enables the rotation and the manure can be mechanically scraped off without adding water. We had to find a material for the belt that would meet all the requirements, wouldn't be destroyed by the pigs and wouldn't be too slippery for them. In the last few years, we have identified a material that works. In this EIP-AGRI funded project [Operational Group] we have been able to test this material,

optimise the technology and we have now reached the stage where we can commercialise it”, explains Katja. They have sought inspiration and advice from other industries, mainly the automotive industry.

The Operational Group’s activities consisted of a small-scale installation for fattening pigs at a Swedish farm. The aim of the installation was to optimise the technology, testing the belt performance and cleaning function, checking the optimal cleaning intervals and general maintenance. Once the technology was working properly, the Operational Group also wanted to find out how it could enable the improvement of animal welfare, hygiene, environment and reduce the use of antibiotics.

95% lower livestock emissions

Tests are still on-going and the Operational Group has not yet delivered its final results, the second batch of pigs are currently in the barn. Preliminary results show healthy pigs that grow quickly with a good feed conversion rate. “In the test barn there is space for 60 piglets. We are evaluating them thoroughly. A Swedish veterinarian team is performing tests and observations on animal health, welfare and growth performance. Climate and emission control is also an important element and therefore this is being measured too. Ammonia emissions in the barn environment so far have shown a level of 0.2-0.7ppm ammonia. These values are approximately 95% lower than in conventional pig farms. This low level of ammonia therefore reduces livestock emissions and it benefits animal health”.

“The technology is being promoted in China at the moment because 50% of the total global pig production is in China and the Chinese pig industry is facing severe environmental challenges. We would definitely encourage further studies, in countries such as Denmark, Holland and Germany” says Katja.

Contact: Moving Floor - katja.lindvall@movingfloor.se

Partners:

Farmer: Olof Ahlby

Veterinarian: Gård och Djurhälsan, Fredrik Johansson

Photos: Moving Floor copyright.

Website: <http://movingfloor.se/gris/?lang=en>

Video: <https://www.youtube.com/watch?v=sWOXII3ibVg&t=12s>

More info about the technique: <http://cleantechhubs.se/wp-content/uploads/2017/12/Brochure-Moving-Floor-Pig.pdf>

More information on EIP-AGRI website: <https://ec.europa.eu/eip/agriculture/en/find-connect/projects/sj%C3%A4lvreng%C3%B6rande-golv-till-grisar>