Ivan Tolpe Prijs 2021

The Dutch company Colsen has won the Ivan Tolpe Award 2021 with the AMFER technology.

8 projects were submitted from Flanders, the Netherlands, Ireland, France and Denmark. A jury of experts selected 4 nominees from these entries: AMFER from Colsen (Netherlands), Valu-TRAC from Cooperl (France), Tveskaeg from Nanonord (Denmark) and Flower pots from cattle manure from Wim Somers (Flanders). The award ceremony was exceptionally digital this year and the VCM members selected via a voting AMFER as the final winner.

AMFER

Colsen (www.colsen.nl) has been providing for 30 years a total package for the development, delivery, installation and follow-up of in-house developed environmental technologies.

With the AMFER® technology, nitrogen can be recovered from raw manure or digestate through stripping-scrubbing. The nitrogen in manure or digestate mainly consists of ammonium nitrogen (NH4-N). By increasing the pH and / or the temperature, this soluble nitrogen will escape from the liquid as ammonia gas.

AMFER works at relatively low temperatures (55-65 ° C) and does not use chemicals to raise the pH (eg NaOH, Ca (OH)2), but instead strips CO2 from the manure or digestate.

AMMONIA STRIPPING

The manure or digestate is sprayed at the top of the stripping column, while an air stream is sent from below in the opposite direction. To make the contact surface between air and liquid large enough for an efficient transfer of ammonium to ammonia, AMFER uses several stripping columns in series. As a result, no carrier material is required in the columns and this reduces the risk of blockages when streams with higher dry matter values are used such as manure or digestate.

AMMONIA SCRUBBING

The air stream loaded with ammonia goes to the scrubber, which works on the principle of an acidic air scrubber. The air stream is sent through a mist of acid (sulfuric or nitric acid) and this reacts with the ammonia in the air to form a stable ammonium salt, which is expelled as a solution that can be used as single (N) or multiple (N and S) nutrient fertilizer.

Next to optimizing the technology for treating raw flows such as manure and digestate, the AMFER is very flexible in terms of capacity and scale. A large installation can be built that can treat up to 100m³ per hour, or a smaller mobile installation in a container from 1 m³ per hour is also possible. The AMFER can also be implemented in a modular way in a treatment process, for example as a treatment of liquid fraction after separation, “inline” with a digester to keep toxic NH3 levels low or as pre-treatment for a nitrification-denitrification process.

4 NOMINEES

The three other nominees for the third edition of the Ivan Tolpe Award were Nanonord, Wim Somers and Cooperl.

Nanonord's Danish entry (www.nanonord.dk), presented their revolutionary nuclear magnetic resonance (NMR) sensor "Tveskaeg". With this compact sensor, various elements (e.g. N, P, K, Cl) and their sub-components (e.g. -PO4, org-P, -OCl2) could be measured in raw flows such as manure in a relatively short time (i.e. 15 minutes) or digestate, with the precision of a lab analysis.

The Flemish entry by Wim Somers from Essen illustrated the intensive but ultimately successful path of a Flemish farmer / manure processor as a pioneer in the development of new techniques for manure valorisation. Wim Somers has succeeded in developing a process together with IDD to make sturdy, biodegradable flower pots from cattle manure. These can be used by private gardeners or in horticulture. A pilot installation is currently producing the first pots on Wim's dairy farm.

Cooperl's French entry described the TRAC animal housing system, in which the manure and urine are separated at the source by means of a ramp and scraper system in the floor. The innovation is in the link with their “Valu” system (together “Valu-TRAC”) in which the urine is treated in an ammonia stripping-scrubbing unit. With this, the nitrogen is recovered as ammonium sulfate.

OFFICIAL AWARD HAND-OVER

The winner of the 'Ivan Tolpe Award 2021' has already been announced, but the prize itself will be officially handed to Colsen during the celebration of 25 years of VCM in 2022. Through this award, VCM wants to underline the importance of such developments and hopes that these ambitious achievements can therefore be rolled out further in Flanders! The nominees will

also have the opportunity to present their achievements to an international audience during a plenary session on November 25 at ManuREsource conference 2021 (see www.manuresource.org).

Adjusted scheme for NH3-stripping scrubbing made in the framework of the Interreg Flanders-Netherlands project NITROMAN (www.nitroman.be)

