

Ammonia measurement - a tool for litter management

For many years, the house computers have controlled the climate in the livestock house using information about temperature, air humidity and CO₂ level. A newly-developed ammonia sensor has been launched, which offers whole new opportunities to optimise the quality of the litter.

"The CO₂ level is a very good indicator for the air quality in the livestock house, while the ammonia level in the air can tell us something about the quality of the litter," explains Martin Rishøj, Poultry Specialist, SKOV A/S.

The litter quality has great influence on the production results, and it is a known fact that there is a close connection between good litter, a uniform distribution of the broilers and good production results.

"A good, uniform litter is one of the most important factors to having good animal welfare and healthy chickens. An increase in the ammonia level in the air will often be a good indicator that there is or will arise problems with the quality of the litter," continues Martin Rishøj.

With correct litter management, the ammonia level in a livestock house will typically be somewhere between 10 and 15 ppm when the concentration is at its highest. The pressure on the litter increases dramatically during the 2nd and 3rd weeks of life, when the broilers' gain accelerates rapidly. Here is where a sensor can provide an "early warning" of potential problems before any visible sign that the litter is going bad.

In a livestock house with poor litter management, ammonia concentrations can climb up to a level of 30, perhaps even 50 ppm in the course of just a few days; perhaps without the producer being aware of this increase.

"It is hard to assess whether the ammonia level is 20 or 40 ppm, if you don't have measuring devices - but the production results can be significantly influenced if there is an ammonia concentration in the air of 40 ppm," continues Martin Rishøj.

An increased ammonia concentration can result in a higher feed consumption (FCR) and lower gain, just as the welfare of the broilers is impaired. Legislation in this area has also been passed in many countries.

"Based on research studies we at SKOV have calculated what a raised ammonia concentration can mean for the financial yield. The profits can be cut by up to 2500 euros per batch in one livestock house with 35,000 broilers," concludes Martin Rishøj.

As regards management, an ammonia sensor is an excellent tool. If a broiler producer notices that the ammonia level rises at the start of the batch, he or she has the option of taking corrective action in the form of additional ventilation or heat supply. There is also the possibility of detecting any digestion problems early, and thus an opportunity to tackle issues earlier, for the benefit of the broilers' welfare and productivity.

Picture: New DOL 53 ammonia sensor for litter optimisation in broiler production