



WIRELESS MONITORING IN LIVESTOCK FARMS

A PROJECT BY OUR ITALIAN PARTNER **SITIP**

Livestock farming is one of the largest sources of ammonia gas (NH₃). Increased levels of ammonia pose many health risks to both the farmers and the animals themselves. Inhalation of NH₃ can result in irritation of eyes and respiratory tract, loss of appetite and lethargy. When NH₃ escapes into the atmosphere it reacts with acidic compounds and forms fine particulate matter pollution of less than 2.5 microns in diameter (PM2.5). This can be devastating for human health as it can penetrate deeply into the lungs and impair their function. Exposure to airborne particulate matter air pollution contributes to human mortality, increasing cardiovascular disease-related mortality. ¹ Therefore, it is critical to control NH₃ levels through monitoring and making sure they do not exceed norms.

Research has shown that prolonged exposure to unhealthy levels of ammonia (> 40 ppm) can result in a 7 % reduction in daily weight gain of animals and 9 % reduction in feed conversion ratio. ²

ADVANTAGES OF WIRELESS MONITORING

SITIP is a wireless communication integration partner of SAF Tehnika in Italy. Their specialty is to offer innovative and tailored solutions for every need. They have implemented Aranet solutions in many of their industrial and agricultural projects. In agriculture their focus is on environmental monitoring for livestock applications.



¹ [Air Quality, Health Effects and Management of Ammonia Emissions from Fertilizers](#)

² [Investigation of a feed additive regarding emission reduction and performance with consideration of the IED \(IPPC\) guideline](#)

Introduction of new technologies in the agricultural segment is a challenge in Italy. The farmers are traditional and generally are more skeptical toward new technology. Therefore, demonstrating clear and palpable benefits is paramount in order to gain the farmers' confidence and get a green light for project implementation.

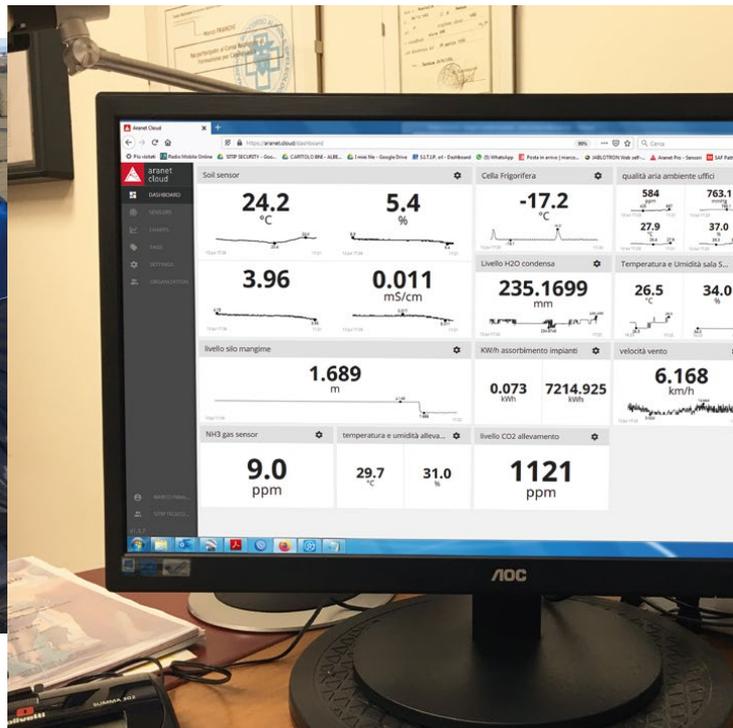


“Introduction of these sorts of systems is very slow, but we believe that step by step, showing the benefits and returns on time saved, we can manage to conquer this market. We believe in technical advances,” says Marco Franchi, the Technical Director of SITIP.

SITIP had the opportunity of receiving and testing in field the first Aranet Ammonia (NH_3) sensor. The complete solution consists of the Aranet PRO base station as well as sensors to monitor the levels of ammonia (NH_3), carbon dioxide (CO_2), temperature and relative humidity. The installation process was quick and effortless – everything was set up in a couple of hours and it just worked.

“Through a market survey we discovered that the only truly ready-to-use and complete solution for our problem was the Aranet system – the sensors, base station and software. We looked for other potential solutions, but all of them were lacking in some way or another. They were not “ready to use”. This is the main reason we chose Aranet,” explains Marco Franchi.

Aranet offered a solution to the manual data collection problem. Up until this point farmers were used to doing everything including regular temperature data gathering on pen and paper. One can only imagine how much time it takes, especially having a large farm of 19 000 animals. Now all the data can be collected automatically. Another benefit is the continuous recording of the data which means that farmers now have access to historical data for analysis, seeing trends and making predictions for the future. A farm now has the full picture of what is happening at any given moment and what needs to be done in order to avoid mistakes in the future. You can only improve what you can measure. This is true for the farmers whose business is now greatly improved.



As for going wireless, Marco Franchi recommends:

“We would suggest Aranet to others because it is a complete system that is easy to install and has an intuitive user interface. It is not expensive, and for small installations the base station software comes for free – there are no recurring license fees which is a major argument for any farmer. The Aranet system is also growing constantly – new sensors, new ideas. There’s always something to look forward to!”



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