

Animal health and monitoring livestock buildings

The continued health and well-being of livestock is at the forefront of any livestock farmer's mind, and smart LoRaWAN sensors are one of the best ways to help ensure housed animals are performing at their full potential.

Scottish livestock farmers have much to gain from the application of smart digital sensors – these IoT (Internet of Things) devices are a great tool to ensure optimal performance of livestock during housing. Time is limited on a busy farm so relying on people to observe changes in the housed environment and in animal welfare and performance, beyond the obvious or clinical, is increasingly difficult. Having access to smart sensors can help monitor a range of parameters of housed livestock in real time, allowing the early detection of any potential problem. Notification can also be sent to more than one person to ensure prompt action. It is also a reliable route to gather vital information to help the farm's vet in assessing any potential livestock health issue.

Sensors for monitoring livestock buildings

There is a range of simple cost-effective smart sensors which help farmers monitor their livestock buildings in real time, all equipped to send alerts to a mobile phone or dashboard if something is happening beyond the normal range.

- Temperature and humidity monitoring
- Light (Lux) monitoring
- Air quality – monitoring ammonia (NH₃) and carbon dioxide (CO₂) levels
- Water trough monitoring
- Gates /doors closure and security monitoring



Benefits of monitoring livestock buildings

- Early warning of potential animal health risks
- Improved animal welfare; performance and productivity
- Reduced use of medication, particularly antibiotics
- Reduced production costs – leading to improved margins
- Alerts to warn if water troughs are either overflowing or blocked
- Improved animal efficiency leading to less waste, all contributing to lower GHG emissions
- Importantly, saving valuable time for farmers.

Early identification of the risk of pneumonia at housing

Calf pneumonia is one of the major causes of health problems in beef and dairy youngstock. Early intervention is critical to prevent permanent lung damage which has lifelong effects on health and performance. Research has shown infected calves lose an estimated £43-£84 per head, through increased vet and medical costs, feed, extra labour and reduced weight gains. Monitoring the temperature and humidity in livestock sheds, particularly in autumn / early winter, is a useful indicator of the environmental risk associated with pneumonia infection. Good ventilation and building design are critical for removing pathogens, ammonia, and excess humidity.

Contribution to Climate Challenge

The use of a range of sensors in livestock buildings help farmers better manage the housed environment which in turn contributes to more efficient livestock production. Efficient production demands that animals remain healthy, which supports reproductive performance, lowers veterinary costs and antibiotic usage, and ensures livestock are able to exploit their genetic potential – this is good for the farm, the supply chain and helps mitigate against harmful GHG emissions.

Measuring light levels

The quality and duration of natural light varies throughout the year. Research has shown that light influences reproduction efficiency, feed intake, behaviour, and performance. Dependent on building design, there can be benefit in automatically monitoring light levels and adjusting timing and brightness of artificial lighting, via robust farm sensors.