SMART CALF SYSTEM

There are many options for using technology to help monitor and manage your herd, and the calf barn is no exception

Calf behaviour is a great indicator of health and welfare. Calf managers know the key to success is watching calf behaviour, knowing what is normal, and responding to changes. However, most farms don't have the luxury of having staff standing by the calf pen to observe their behaviour all day long, and it can be difficult training people to notice small behavioural changes that could indicate a health or welfare problem if they aren't watching calves all day. Luckily, innovative technology companies have developed sensors and computers to perform this vital task.

The Smart Calf System was introduced by Förster-Technik to the public for the first time at EuroTier 2016, the leading trade fair for animal husbandry professionals in Germany, and one of the world's top livestock tradeshows. The system earned a gold medal from DLG, a German agricultural association, for the system's highly innovative design. At this year's World Dairy Expo, the system made its debut to the North American market. Canadian producers at Canada's Outdoor Farm Show got to see the smart neckband in the Grober Young Animal Development Centre. Producers can visit http://bit.do/smartcalf to watch a video of the Smart Calf System, which will be available in North America in 2018.

The two main components of this system are the activity box attached to a Förster-Technik automatic feeder and smart neckband. Data from the activity box and smart neckband are transmitted via CalfCloud, an Internet-based service. The system provides information on calves' growth, development and disease risks from the data.

The smart neckband is a collar with an activity sensor and LED signal light. The activity sensor is similar to a fitness tracker one wears on their wrist or has on a smartphone. By measuring a calf's activity, conclusions can be drawn about the animal's growth and health status.

Extensive behavioural studies have shown movement and playing behaviour decrease significantly with illness, and result in reduced activity times, and more time doing the same activity, such as laying down longer. These studies also revealed there is a significant difference in behaviour and activity between healthy and sick animals.

Another feature of the smart neckband is the signal light, which is controlled via CalfCloud. Animals can be displayed individually or in temporary groups, such as animals with an increased risk of disease, in need of vaccination, or meeting any alarm criteria as set by the farm. When activated, the light on the collar flashes, making the selected calf or calves easy to find.

THE SMART neckband is a collar with an activity sensor and LED signal light. Here they are shown on calves from a dairy farm in Germany.

The activity box is equipped with a two-axis movable nipple. This allows the calf to perform natural udder bumping behaviour. An integrated activity sensor registers these udder bumps. Thus, a new parameter is recorded, which supports the early detection of stress and increased disease risks.

Studies have shown drinking behaviour is closely related to emerging diseases. The Smart Calf System signals an increased risk of disease about two to four days before a visible finding. Activity on the nipple is also a parameter that supports automated and objective assessment of animal welfare since environmental conditions affect drinking behaviour. Using this novel behaviour tracking, new insights into calf health and welfare can be used to enhance management. As this is such a new area of research, necessary algorithms are currently still under development.

The Smart Calf System combines the activity box and smart neckband data. Even before you see signs of sickness, activity, visits to the feeder and drinking speed decrease and drinking interruptions increase. The system also provides messages to the automatic calf feeder and-or an external device, such as a computer, tablet or smartphone, by sending early warnings and alerts. Since the system is browser-based, it does not matter which hardware or operating system is used. Calf health monitoring can take place anywhere.

The Smart Calf System has a modular structure that includes a smart water station to monitor water intake. As a result, individual components can be combined to create a smart calf barn that works for producers and their herds. Taking advantage of these innovative products past generations could only dream of can provide major stepping stones for staff in charge of calf care to focus on big-picture management. The Smart Calf System can help managers understand their calves' needs and respond with targeted management changes to keep calves productive, healthy and experiencing good welfare.

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