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Trends in dairy cattle husbandry

The increasing animal concentration in larger farms will entail considerable constructional changes. Standard housing for dairy cattle husbandry is the cubicle system. The stalls are constructed along longitudinal axes. Possibility for extension by lengthening and, if need be, mirror symmetry on the milking centre must be considered in the planning. Here it clearly ensues that the milking parlour cannot be planned as an extension of the stall building. By the strict separation of the milking area and stalls it is possible to optimally arrange both segments.

Large regional differences and variable individual situations in dairy cattle husbandry require customised solutions for the industry.

Flooring design: Rubber overlays have been successful

The choice between solid and perforated flooring design often follows regional preferences that are not always technically justified. Both systems have their merits and with correct management provide good results. Problematic for both variants - with the exception of poured asphalt - is the increasing slipperiness over time. This leads to a change in animal behaviour and increases the risk of injury. It is also important to consider the lack of elasticity of the floor compared to natural surfaces. This can increase hoof damage. A solution which has proved itself in practice is the incorporation of flexible rubber overlays. The positive effect on animal behaviour and hoof health could be seen in several trials. Prerequisite for the successful usage is that other areas are not neglected. The rubber overlays are also suitable under certain conditions for the refurbishment of smooth surfaces. With perforated floors it is important to consider the expected remaining period of use. To refurbish a twenty year old slatted floor made up of individual planks with rubber overlays would be a waste of money. With solid floors the situation is different since the time span is considerably longer. One alternative being discussed by advisors, which definitely has advantages, is the laying of a concrete floor with a brushed finish in new buildings which then after four to six years is fitted with rubber overlays. In this way the investment sum is spread.

NH_3 emissions: Efficient drainage of urine highest maxim

With the size of the surface there is a potential conflict between the requirements which arise from the demands of the animals and environmental concerns. Fifty percent of the NH_3 emissions from agriculture come from cattle husbandry and half of this out of housing. Potential reductions, without limiting animal welfare, arise in the area of storage and dispersal of liquid manure. If emission reduction in housing is to be achieved, the efficient drainage of urine is the highest maxim. By frequent scraper usage an additional positive contribution to hoof hygiene is also achieved. The often discussed use of urease inhibitors or surface acidification are so far hardly accepted in practice.

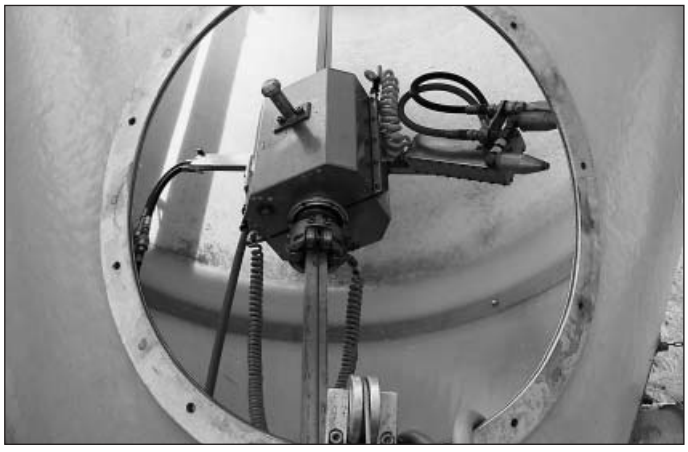

Fig. 1: For its "Silo-RoBoFox – robot cleaner" Menno Chemie Vertrieb GmbH was awarded a silver medal.(H 20, S. E 9)

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Keywords

Dairy cattle husbandry, stall planning, herd management

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Fig. 2: Förster-Technik GmbH (H 24 St A 17) pasteurises the milk with steam: a silver idea

Litter material is becoming scarce and expensive

The choice of floor construction for cubicles also strongly follows regional preferences and the availability of litter material in the region. Due to the compacting of sawdust into wood pellets in some regions there is already a scarcity leading to higher prices. The search for alternatives to organic litter material is fully underway. Industry is offering several products that in some cases are already tested.

Separation tube increasingly in focus for cubicle layout

For the cubicle layout the focus is increasingly being put on the separation tube. For the lateral separation attention is placed on the smallest possible restriction of the animal in the lower region. For this the cubicle width is adjusted to prevent small animals lying down obliquely and becoming dirty. The lying down of large animals is in this way not restricted. For limitation at the front side the neck rail should be adjusted so that contact only occurs with a cow standing in the cubicle. With a suitably high adjusted neck rail, the traditionally used head rail can and should be abandoned. The limit of the lying area in the longitudinal direction is by means of a fore-rail or board.

Natural ventilation barn standard for new buildings

The outdoor climate or natural ventilation barn without any fixed walls is standard for new buildings. Outdoor climate means in a summer like that of last year temperatures of 40°C and more in the barn. Due to the solar radiation on the roof surface the stall temperature is higher than the outside temperature. Here the use of a bright reflecting roof surface can provide a certain degree of alleviation. Transparent panels in the roof should generally be avoided. If in the future there is a close sequence of "once in a century summers" roof insulation will have to be taken closely into consideration. Barn temperatures then in mid-summer mean acute heat stress for a high performance cow. Reactions of the animal are increased body temperature, higher breathing frequency (panting), reduced activity, lower feed intake and as a consequence loss of milk production. When also taking into account reduced fertility and increased risk of udder infections there is already enough purely economic grounds for urgent action.

Securing the water supply

When making technical provisions the first step - securing the water supply – is often forgotten. During extreme temperatures the animals take in up to 200 l water per day – double the normal average. The feeding frequency and an altered rationing can also effectively alleviate heat stress. The use of fans, their regulation and layout, as well as the possibility of air cooling are dealt with in detail in DLG leaflet 335.

Selection gates very practical

In growing businesses the general abandonment of feeding racks should be deliberated.

Fig. 3: The rumination sensor from Lely (H 24 St C17) for heat control was also awarded silver

For treatment, during which they have to be firmly held, animals returning from the milking parlour are automatically led by selection gates into the treatment bay. This is routinely necessary for hoof hygiene, insemination, medical treatment and blood sampling. With the use of selection gates an immediate treatment of health problems is possible. In the selection area it is practical to locate the hoof treatment stall, into which the animals can be freely driven. The stall must have available, in addition to adequate working space, good lighting and an electricity and water supply accessed from above where possible.

Intelligent herd management systems

In growing businesses demands on herd management grow continuously. Numerous herd management programmes and systems are meanwhile available. One of the aims is a one-time entry of data in order to reduce transfer errors. In some systems an automatic gathering of data takes place. With reference to the supplied data, intelligent management systems provide information on imminent heat periods, also udder diseases or metabolism problems. The corresponding routine use allows abnormalities or incidents to be recognised before clinical symptoms. Early remedies mean cash savings.

Udder health: New mobile appliance for cell counts

On the topic of udder health, alongside the proven Schalm test, new hand appliances are available giving fairly accurate cell counts. Sensors to detect deviations in the milk pipeline system are beyond the trial phase. For fertility control in addition to the proven processes, such as monitoring of activity, new appliances are available with partial automation simplify the determination of progesterone in the milk. For the recognition of hoof problems activity measurements can also be used. A new alternative arises here from a special walk-over weighbridge which is installed in the return passage from the milking parlour. From the longitudinal distribution of the weighing sensors deviations in the load from the different body halves can be detected.

Due to the imminent forthcoming passing of the international norm for the ISO-Bus Internal Management, a further leap in development of intelligent management solutions is to be expected. Insular solutions will then finally be redundant.