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Piglet rearing

The separation of piglet rearing accommodation from the sow herd is now standard in new buildings. On the one hand this allows the highest health status to be achieved and, on the other, the ability to offer large batches of homogenous sized piglets of similar ages. Such requirements are changing the housing systems used up until now and their influence on structure, fundamental planning, pen design, feeding and ventilation control is explained in the following report.

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The development of piglet rearing housing depends on many factors. Up until a few years ago it was standard to integrate the piglet rearing with the sow housing (shorter distances within the buildings, reduced demands on transport). Nowadays, the stronger argument is reducing infection pressure through compart mentalised rearing of piglets. The SEW (segregated early weaning) system has greatly accelerated this development of individual management of piglet rearing accommodation through which the complete health status for infection-susceptible piglets is able to be improved. With free-standing buildings, hygiene requirements can be met much more easily so that a black-white enterprise, separation of animal production and outside work can usually be achieved simply and efficiently through building design. Standard planning nowadays in farm buildings are office, boiler room and staff changing accommodation.

Planning fundamentals

Piglet rearing capacity must depend on the size of the associated sow herd if this is on-farm or the feeding enterprise to be supplied by the piglet facility. Where the sow herd is the starting point the number of piglet rearing compartments and their stocking rate is designed according to the farrowing cycle because in such cases the rearing and sale of the piglets are of first importance. Where piglet rearing is a primary stage for a pig feeding enterprise, the number of compartments and stocking rate must match the feeding enterprise capacity. An important tip is the adoption of all-in all-out management for all compartments with similar age classes so that infection dangers at the different age stages are kept as low as possible.

The housing is strongly influenced by the possible feeding, ventilation and interior design systems. Nowadays, a rearing compartment is mainly divided into two zones, a feeding and activity zone with possibilities for direct contact between the animals, and a resting or laying zone designed for long rest periods. Where piglets are reared in large group systems – which nowadays is the main management target – only the activity is ventilated and the lying area is specifically heated over and above the general heating of the compartment. With larger groups of up to 50 animals every animal has more freedom of movement compared with smaller 10 to 12 piglet pens. This increased availability of space is a substantial advantage from the ethological point of view because it allows more development of social contact and ranking behaviour at the piglet stage. Additionally, building costs are saved through the reduced equipping required for the larger pens. The large pen disadvantages of a poorer overview of the animals and reduced sorting capability are compensated for by suitable crush gates.

Pen design

Large pens are equipped with fully perforated flooring and with from 50 cm deep slurry cellars with capacity for a complete feeding cycle. After every cycle there should be a thorough cleaning of the compartments after the slurry has been run off. The flooring over the channels is completely plastic with large-area perforations, of plastic coated metal gridding, or of galvanised triangular-section or flat steel strips.The flooring, in differing area sizes, is set on plastic supports or flat steel bearers with the important characteristics non-skid footing, good manure throughflow and long working life. Around the feeders, concrete slats should be used for flooring to ensure appropriate hoof wear. This type of flooring design is mandatory in multiplication enterprises because there female piglets are often kept on flat beds at liveweights of 40 kg and over. The area requirement of pigs up to 20 kg lw is 0.2 m^2/animal and, up to 30 kg lw, the requirement rises to 0.3 m^2/piglet. The pen design should be rectangular (pen depth up to 4.5 m). A passageway down the middle of the house, often only designed as a stich-passage, allows access to the pens. The lit interior height is sufficient at 2.40 m.

Feeding

Main feeding system in the flat decks is dry feed self-feeders with additionally fitted nipple drinkers in lateral bowls or above the feeding trough. Additional hand-feeding possibility for the first few days should be planned for. The bowls for this can be withdrawn after a few days when the piglets are strong enough to be able to feed themselves at the installed equipment. Feed augers or chain and flight transport systems within pipelines for at least two types of feed are required for the self feeders in an ad lib system.Rationing of the feed can only take place through a general reduction of the ration for every group per pen. Interval feeding

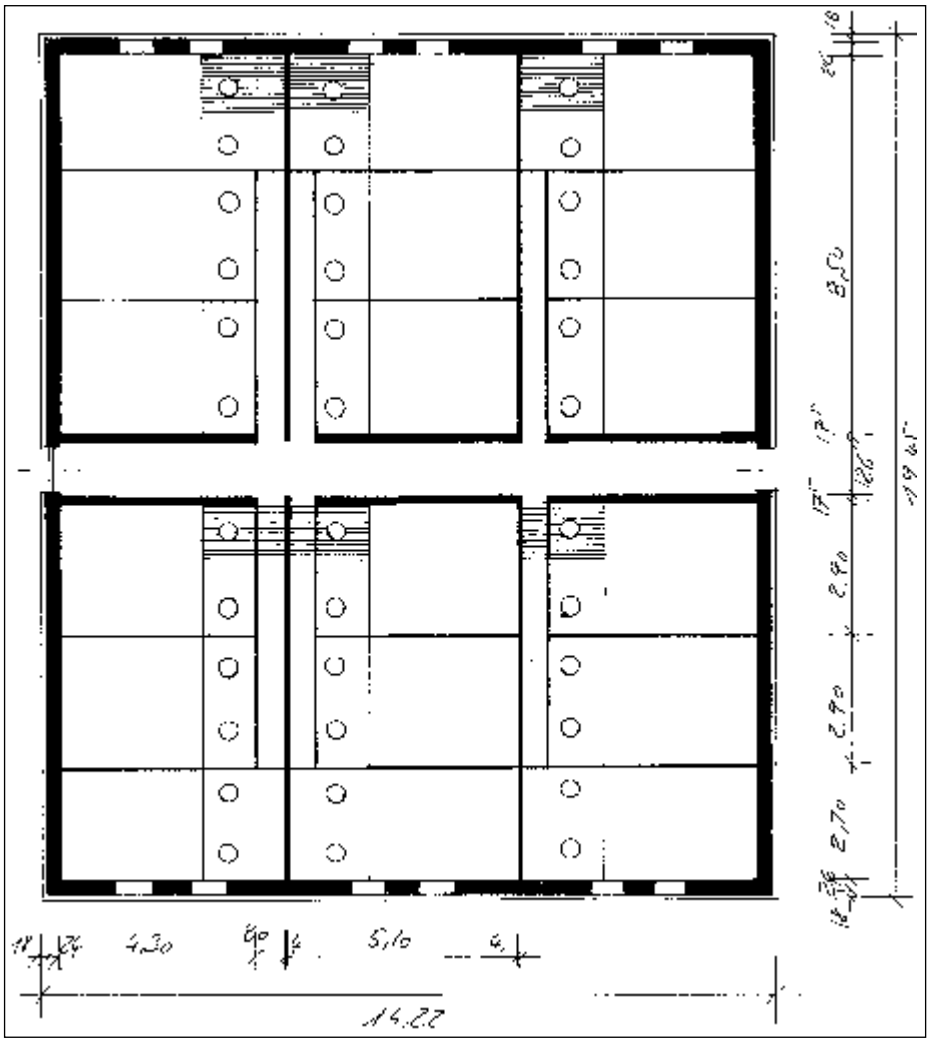

Fig. 1: A building with six compartments for in each case 3 x 40 piglets (large groups), one-sided compartment passage, wet feed tube self-feeders; concrete slat flooring in movement and feeding areas.

with the requirement of a separate feeding place for every piglet is, in the light of the limited portion of feed per feeding interval, very cost-intensive and does not lead to the hoped-for advantages. This can be carried out with a longitudinal trough with feeding available on both sides for up to 100 head or with a round trough for up to 25 piglets. The rationing (amount and interval) is computer controlled and matched to the requirements of the animals.

Where piglets are rearing especially for a particular feeding unit, the feed can be rationed in small amounts through a liquid feeding system with sensor control, also apportioned over several feeding intervals. With currently available feeding systems this is a cost-effective alternative to dry feeding. For water supply, up to 12 animals per drinking point must be planned for. Where the drinkers are fitted in the self-feeders, additional drinking points should be installed elsewhere because feeding animals often block access to the trough drinkers.

Ventilation design

Management of compartmental ventilation should ensure fresh air for all animals without danger of draughts. For this reason only the feeding, dunging and activity zones are supplied with fresh air, and not the lying area. The fresh air comes in via trickle ducting made of hole panels placed above the passageways and the feeding areas, or via feeding passage ventilation with partitions completely closing-off each area. The piglet lying area should be free of direct fresh air supply and be separately heated. Solid lying are flooring with underfloor heating is not suitable for housing of piglets up to 30 kg lw because, with increasing weight, the animals dung on the lying area and dried excreta or urine negatively influences the interior atmosphere to a considerable extent with associated increased disease dangers. It is more practical to warm the lying area via radiation heating from above, or from the rear wall. Delta, dual, or hot water piping on the rear wall of the pen, or an infra red radiation system fitted below the ceiling, allows precisely-directed heating. A horizontal canopy fitted against the wall can create a warm zone in the lying area and at the same time reduce overall heating requirements. Oil or gas hot water heating, or dark radiation systems, secure heat delivery. Heating with gas directly burned within the building is bad for interior climate in that it leads to the need for increased ventilation capacities and unnecessary heat losses. The interior heating within a flat deck compartment should be ~30° at initial housing and then slowly reduced with increasing liveweight. With individual heating for the lying zone, the general interior temperature can be reduced where a temperature of 30° in the lying area can be secured. A linking of heating and inlet and exhaust air is relatively easy to achieve through electronic control. Temperature controlling sensors should be adjusted at regular intervals so that heating performance remains as originally planned. Where several compartments are involved, often the more cost-effective and environmentally-friendly central exhaust air systems can be planned for.

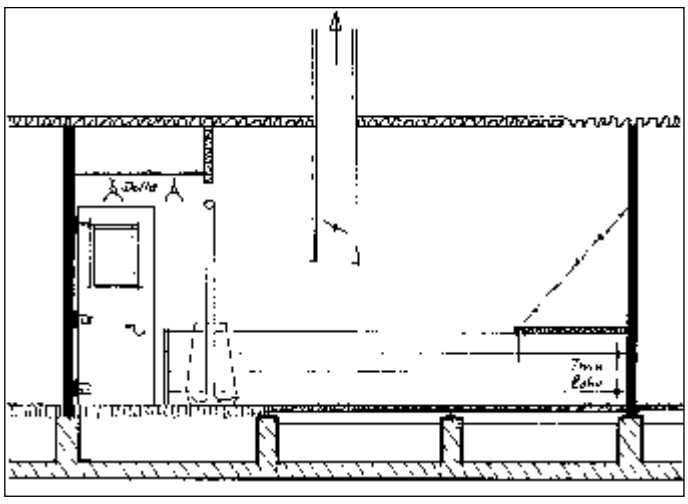

Fig 2: Cross section through the compartment with one-sided trickle canal ventilation with warm air heating underneath the trickle canal (delta pipeline) and zone heating underneath the wallside laying areas with covers and wall heating (dual pipeline)