

Dairy Ventilation

Parlours

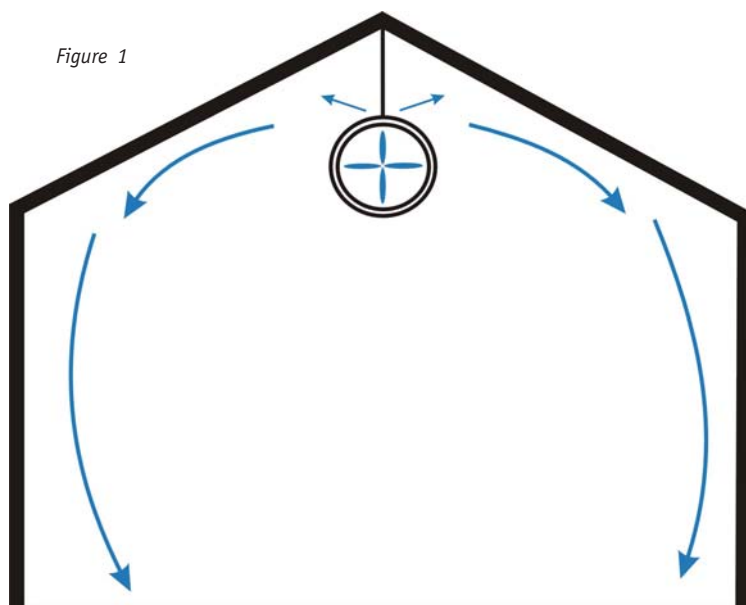
Many parlours become hot and humid during the summer months making them attractive to flies, but very uncomfortable for the stock person. In addition to high summer temperatures, each cow generates about 1 kW of heat - the equivalent of a one bar electric fire. As most parlours are naturally ventilated it is very difficult to remove all this heat effectively. The addition of fan ventilation will not only remove some of the heat but will also provide evaporative cooling from wet surfaces. The fan will also greatly reduce the number of flies in the parlour, as they dislike high air speeds.

The simplest installation is to fit a semi-portable fan suspended from the ceiling at a height of about 2 m above the pit floor. The fan should be positioned if possible near a doorway so that it brings in fresh air from outside and blows down the pit at cow udder level. Two fans may be required for wide or long parlours or some form of duct work to distribute the air. A rough guide to sizing an installation is 350 m³/hr per metre run of parlour.

Calf Housing

Poorly sited buildings and building conversions often require the addition of fan ventilation to provide a continuous supply of fresh air into the building. The addition of fan ventilation often solves pneumonia problems reducing mortality and vet bills dramatically. One of the most successful ways to mechanically ventilate a calf building is to install a fan with a polythene duct air distribution system. The polythene duct has holes cut into it along its length to disperse the air evenly down the building. Polythene ducts with the holes pre-cut can be purchased from specialist ventilation companies. The number and size of the holes is important and has to be matched to the fan size and length of tubing. The position of the holes around the circumference of the tube can be specified. Typically for a narrow calf house with no roof obstructions the holes would be at 10 o'clock and 2 o'clock (see Figure 1). In wide span buildings or where the roof has obstructions (such as purlins) the holes should be positioned at 9 and 3 o'clock or 8 & 4 o'clock. The fan should be positioned in the

Figure 1



gable end of the building, bringing fresh air in from outside and forcing stale air out of the building. A manual stepped speed controller should be fitted so that the ventilation rate can be adjusted according to the ambient conditions. Typical fan sizes for calf numbers are shown in Table 2. If the maximum length is exceeded a larger fan should be used or two fans positioned at opposite ends of the building. When the ventilation requirement exceeds a 632mm fan, two fans should

Table 1 Fan air outputs

Fan size (dia-mm)	Approx output (m ³ /h)	Maximum number of calves	Maximum duct length (metres)
350	2,700	30	20
400	4,200	40	23
450	5,400	60	27
501	7,000	75	30
632	10,000	100	36
711	14,500	*	46

Experience has shown that, except in extreme weather conditions, it is better to keep the fans running all the time, therefore maintaining positive air movement and reducing the risk of draughts. The ventilation requirements for calves are given in Table 2 below.

Table 2 Ventilation requirements for calves

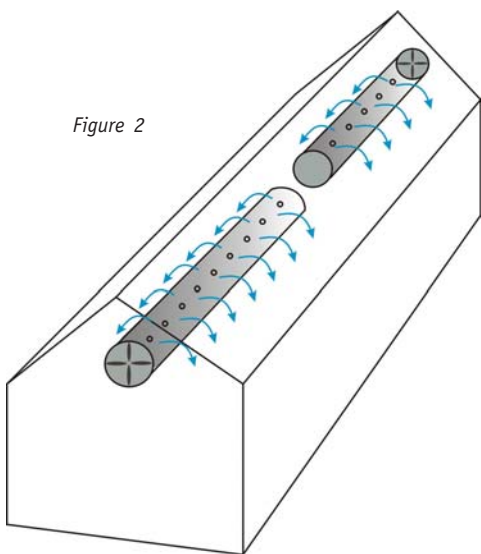
Winter	Summer
35m ³ /hr/calf	105m ³ /hr/calf

The air speed over the calves in the winter should not exceed 0.25 m/s. As it is often difficult to achieve low air speeds, it is quite common to install horizontal boarding down the side of the building where the calves can shelter. A minimum air space of 6 m³/calf is recommended to reduce the incidence of respiratory diseases.

Beef and Cattle Housing

Many buildings suffer from "still air" which often leads to respiratory problems. The same principles discussed in ventilation for calves also apply to ventilating these buildings. However it is necessary to alter the position of the holes to provide positive air movement particularly in wide span buildings. Hole positions would typically be at 5 & 7 o'clock and 4 & 8 o'clock. A ventilation rate of around 50m³/h/100kg is used for ventilating cattle buildings. It should be noted that this is not the total ventilation requirement, as it is assumed that there will be some natural ventilation. In buildings housing cattle and calves, the air should preferably be forced away from the calves towards the cattle not the other way round.

Figure 2



be used, either at opposite ends of the building (Figure 2), or one positioned above the other (Figure 3).

A larger fan than indicated in Table 1 gives flexibility if calf numbers are increased and costs very little extra to install. This is worth considering as a larger fan provides a lot more air throughput, and with the provision of a controller it can be turned down to meet the daily requirements.

Figure 3

