



# SKOV International

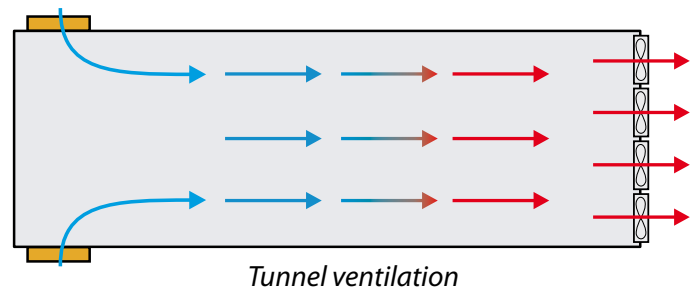
POULTRY EDITION

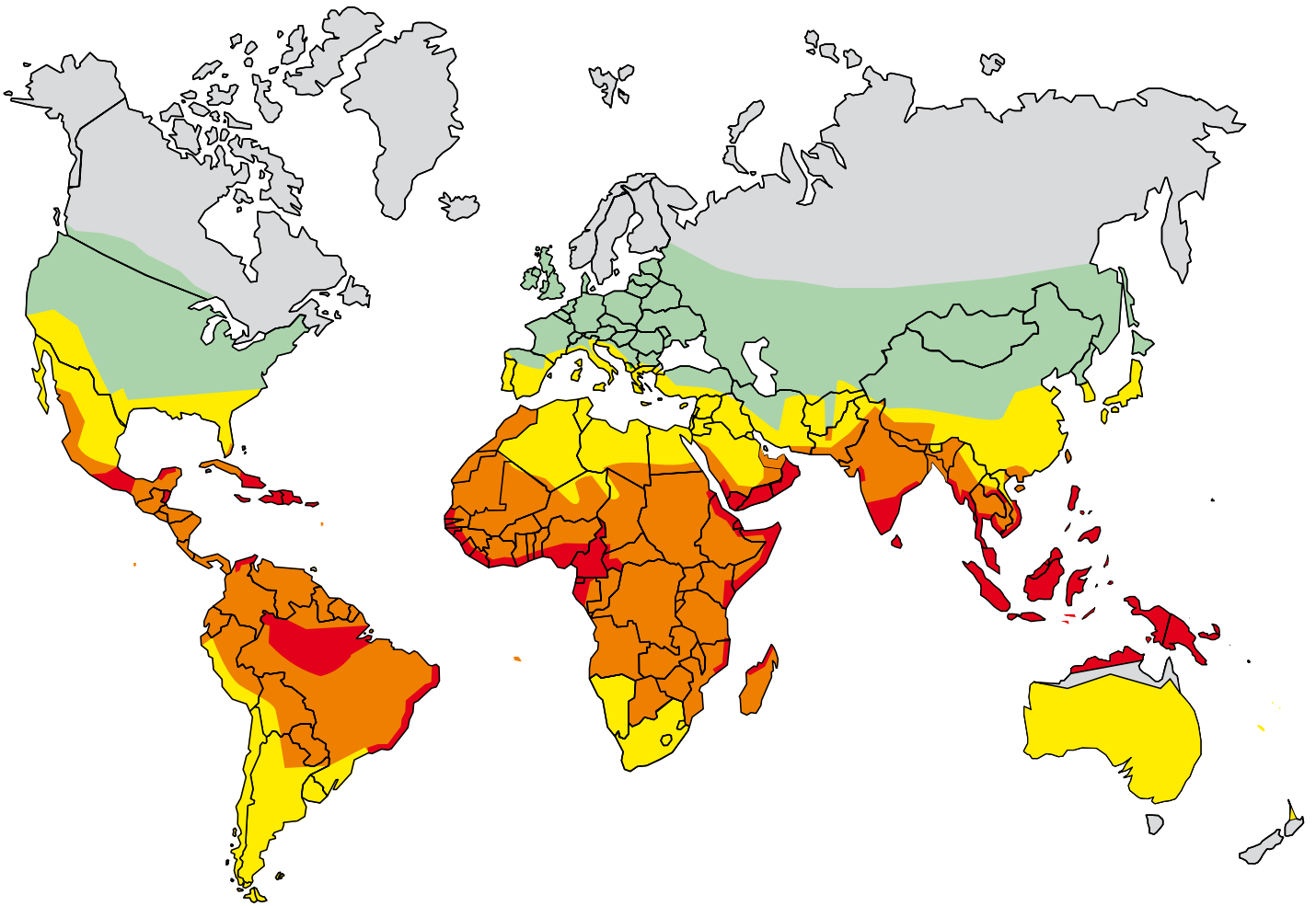
November 2007

## Choosing Ventilation System in the subtropical and tropical Parts of the World

### **Tunnel ventilation - not suited for the cooler periods**

In the subtropical and tropical regions of the world, the traditional choice of ventilation system often is Tunnel ventilation. A ventilation system which takes the air in through tunnel openings (often installed with cooling pads) at one end of the house and exhaustion of the air is carried out at the other end of the house through gable fans. Airflow is thus created lengthwise in the house. Tunnel ventilation is a good system when it is a matter of cooling the birds.





However, there will always be times during the production cycle when there is no need for cooling to maintain the optimum temperature. For instance during brooding and at night in general where further cooling by means of the chill effect of the Tunnel ventilation can be downright harmful for the birds and the productivity.

In most areas, there will be times (day/night or summer/winter) when the outside temperature for a shorter or longer period will fall below the temperature comfortable for the birds. A day-old chicken requiring 33°C (91°F) - at a relative air humidity of 50% - would feel it as very cold if the outside temperature is 24°C (75°F) and the air is directed straight into the zone occupied by the birds without being heated first.

In addition, there will be great difference in the temperature lengthwise in the livestock house when using Tunnel ventilation. In a traditional broiler house with day-old chickens, it may take up to 10 minutes for the air to flow from one end of the house (at air inlet) and to the other end of the house (at the gable fans), when the grower observes the requirement about the air velocity not exceeding 0.2 m/sec (0.65 foot/sec.). The

temperature and quality of the air will undergo great changes during these 10 minutes. From a general point of view, the broilers will have the correct temperature if the temperature sensor of the ventilation system is placed in the middle of the building; the temperature will be too low at the air inlet and too high at the air outlet.

Tunnel ventilation therefore has its limits during the cold/cooler periods where it is not possible to maintain a sufficient and uniform temperature in the entire house. Especially during the brooding period, it can be difficult to maintain a sufficient temperature in a Tunnel ventilated house. The birds will huddle together and eat to maintain the body temperature. The birds huddling together results in the grower having an uneven distribution in the house which affects the litter among other things; FCR will be worse because the birds have to eat to maintain their body temperature. At best, the consequences of these conditions will be that the broilers do not obtain an optimum gain and at worst, they will die.

#### **Combi-Tunnel ventilation – two-in-one**

The Combi-Tunnel system takes this complex of prob-

lems into account. The ventilation system consists of two systems ventilating according to two different principles. The system changes between two principles based on the outside temperature and the age of the birds.

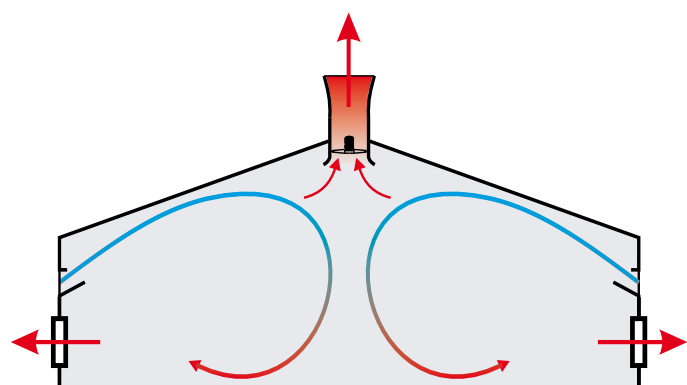
During the hot season, Combi-Tunnel ventilates as a normal Tunnel system. During the cool/cold season, where the Tunnel principle has its weaknesses, the Combi-Tunnel system takes the fresh air in through smaller wall inlets that are placed in sidewalls of the building. The air outlet is conducted through exhaust units in the roof or through wall fans. This principle has been known for many years from the temperate regions of the world where it has proved its worth as a stable and profitable system.

Unlike the Tunnel principle, a certain warming-up of the incoming air is ensured at minimum ventilation, as the air is directed up along the ceiling and is mixed with the house air before reaching the zone occupied by the birds. In that way, minimum ventilation is created which adequately removes the excess humidity and heat of the birds and the air velocity is kept below 0.2 m/sec(0.65 foot/sec.).

Provided that there is a need for heat supply from an external heat source, this heat will be distributed far more evenly in the house, when the air intake is conducted through wall inlets. An even distribution of the heat will thus ensure an even distribution of the broilers and contribute to a good litter.

### Conclusion

To have a homogenous production, it is important that the grower keeps track of the factors such as temperature, air velocity, air humidity and air quality. If this is not the case, the grower will not have an optimum production.

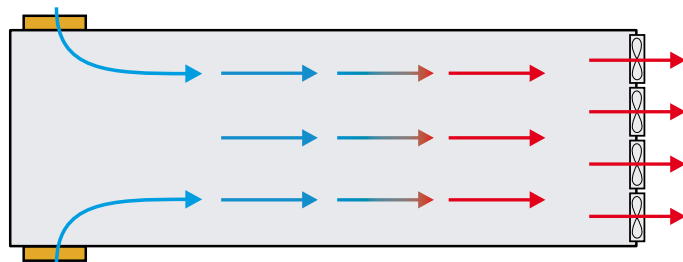


*Side mode - low temperature*



Tunnel ventilation is a good principle when it is hot, but there will always be times when the principle does not work optimally at minimum ventilation. Combi-Tunnel includes the advantages of the Tunnel ventilation system during the hot seasons and at the same time, it warrants the creation of optimum ventilation during the cold season.

The price of a Combi-Tunnel system is approximately twice the price of a Tunnel system. But the experience of SKOV is that this surplus investment will be paid back in three or four years as a result of a better FCR and a lower mortality rate. The more cold periods - time of the year or cold hours at night - the quicker the surplus investment will be earned back.



*Tunnel ventilation - high temperature*