



# Big Dutchman®



## **Combi**Tunnel-Ventilation

The intelligent climate control option  
for your poultry house

# CombiTunnel ventilation is a combination of two different ventilation systems

## Ventilation in side mode

To ensure a stable negative pressure ventilation, it is mandatory to install the respective air inlet and exhaust air elements, heaters and an automatic control system, including emergency opening system.

### 1. Fresh air

Wall inlets installed along the entire length of the house:

- ✓ all-purpose wall inlets CL Flex and CL 1200 with automatic motor winch for incorporation into a wall or as flange inlet, depending on the building design;

- ✓ baffles and split baffles with automatic motor winch.

Fresh air enters the house at a high speed (3-5 m/s) but without causing draught in the animal area. This ensures uniform temperatures and a good air quality throughout the entire house.

### 2. Exhaust air

The following products are available:

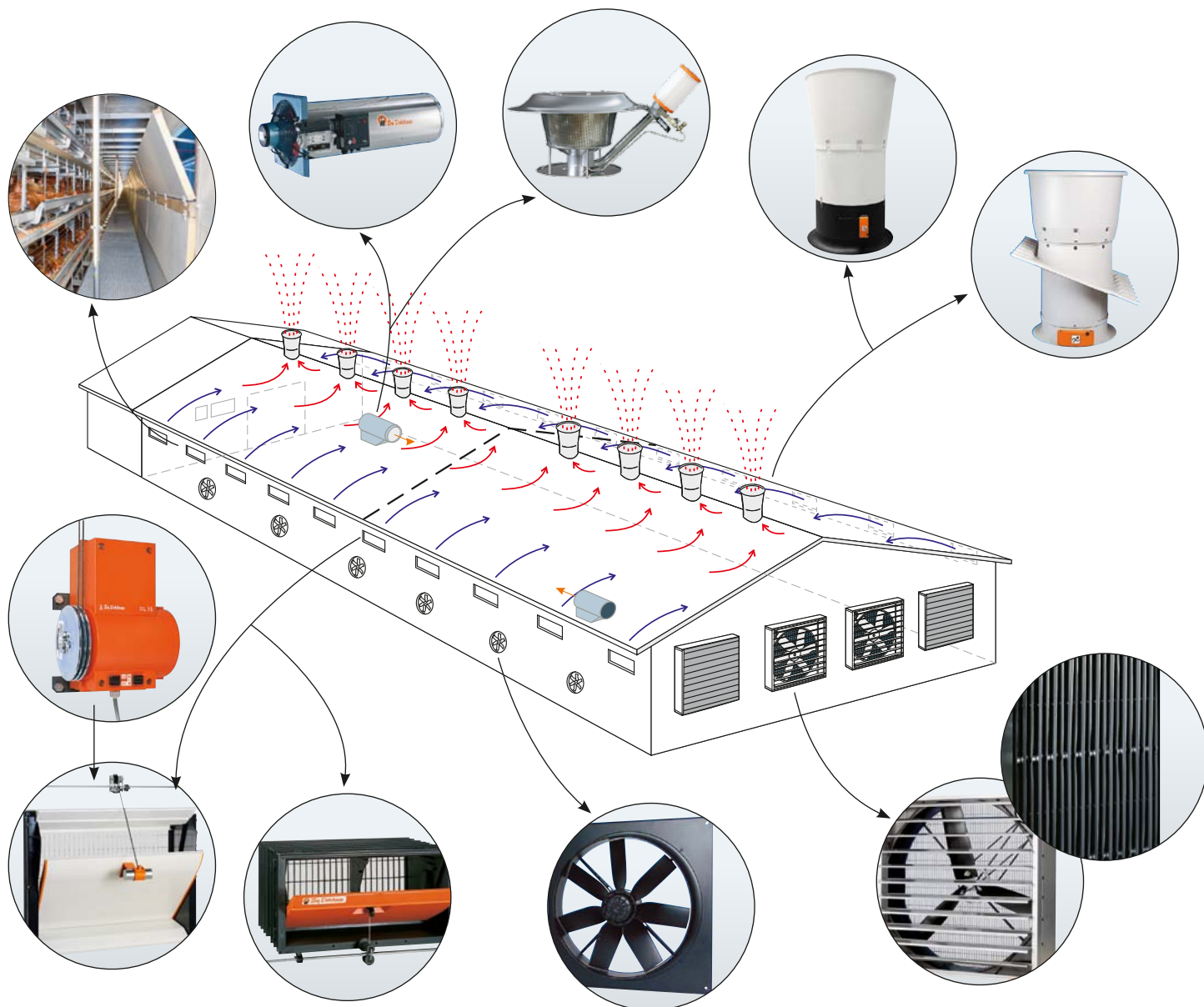
- ✓ exhaust air chimneys for roof-installation, designed for precise, continuously-controlled exhaust air removal;
- ✓ wall fans installed at the long side of the house.

If the exhaust air removal rate is not sufficient, it is possible to increase the air rate by starting individual exhaust air fans installed in the gable – AirMaster with or without light protection – which are also active in tunnel mode.

### 3. Heating devices

Big Dutchman offers the following heating devices in its product range to satisfy the birds' heat requirements in the winter:

- ✓ hot air blower (JetMaster);
- ✓ gas radiators;
- ✓ box heaters
- ✓ infrared heaters



for an intelligent solution to maximise the performance potential of your birds at

## CombiTunnel - Ventilation

The CombiTunnel ventilation recommended by Big Dutchman is a combination of two ventilation systems in one house. This makes it possible to profit from the advantages of both systems:

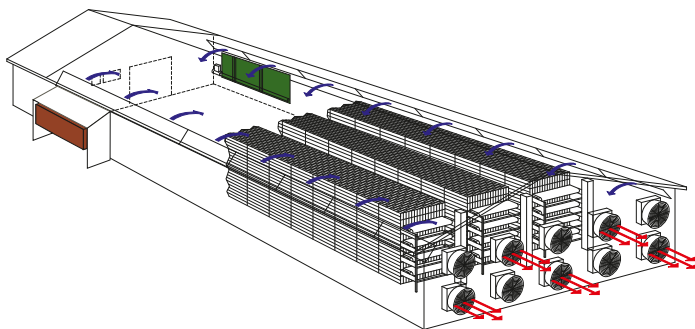
- ✓ in case of low outside temperatures: ventilation in side mode, uniform temperatures throughout the entire house;
- ✓ in case of high outside temperatures: ventilation in tunnel mode; high cooling efficiency through wind chill effect at a low energy consumption.



This solution is particularly suitable for climates that are characterized by strong fluctuations in temperatures – high temperatures in the summer, low temperatures in the winter or major differences in temperature from day to night.

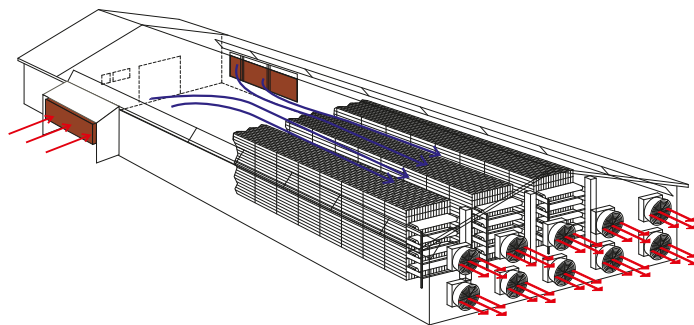
Both ventilation systems are controlled by a ViperTouch climate computer. This also includes automatic switching between the two ventilation systems. When the system runs in tunnel mode the computer also records the air speed and therefore the wind chill effect.

### Ventilation in side mode



During ventilation in side mode, air enters the house evenly through the baffle inlets installed on the long sides of the house and is partly removed from the house by the gable fans.

### Ventilation in tunnel mode



During ventilation in tunnel mode, the air inlets are closed and air is pulled through the tunnel inlet travelling the length of the house at high speed. The fresh air can additionally be cooled by means of a RainMaker cooling system.



In case of power failure or technical failure, the emergency opening system MC 378 CT with integrated maintenance-free 24 V battery opens the servo motors for the air inlets and outlets based on the temperature requirements in the house.



In very long houses, the air speed in tunnel mode can increase to over 4 m/s. In this case, we recommend using a double tunnel. This method keeps pressure loss to a minimum.



any time of the year

## Ventilation in tunnel mode

When it is warm outside and the ventilation system operates in tunnel mode, fresh air enters the house via air inlets that are located close to the gable. The fresh air is »pulled« through the house in longitudinal direction by means of high-performance fans. This is a so-called displacement ventilation at minimum energy consumption. The fresh air enters the house on a large surface and displaces the stale air without mixing with it. Thanks to the uniformly high air speed of 2-3 m/s at bird level, the wind chill effect reduces the temperature felt by the animals by 3-8°C, depending on the age and the weight of the birds. If the outside temperature exceeds 30°C, the cooling effect caused by the air speed becomes less pronounced. If this is the case, the fresh outside air should be cooled additionally before it enters the house.

### 1. Tunnel air inlets

The air inlets are large openings equipped with a safety guard. The inlets are opened and closed automatically by means of roller curtains, flaps or shutters.

### 2. Exhaust air removal

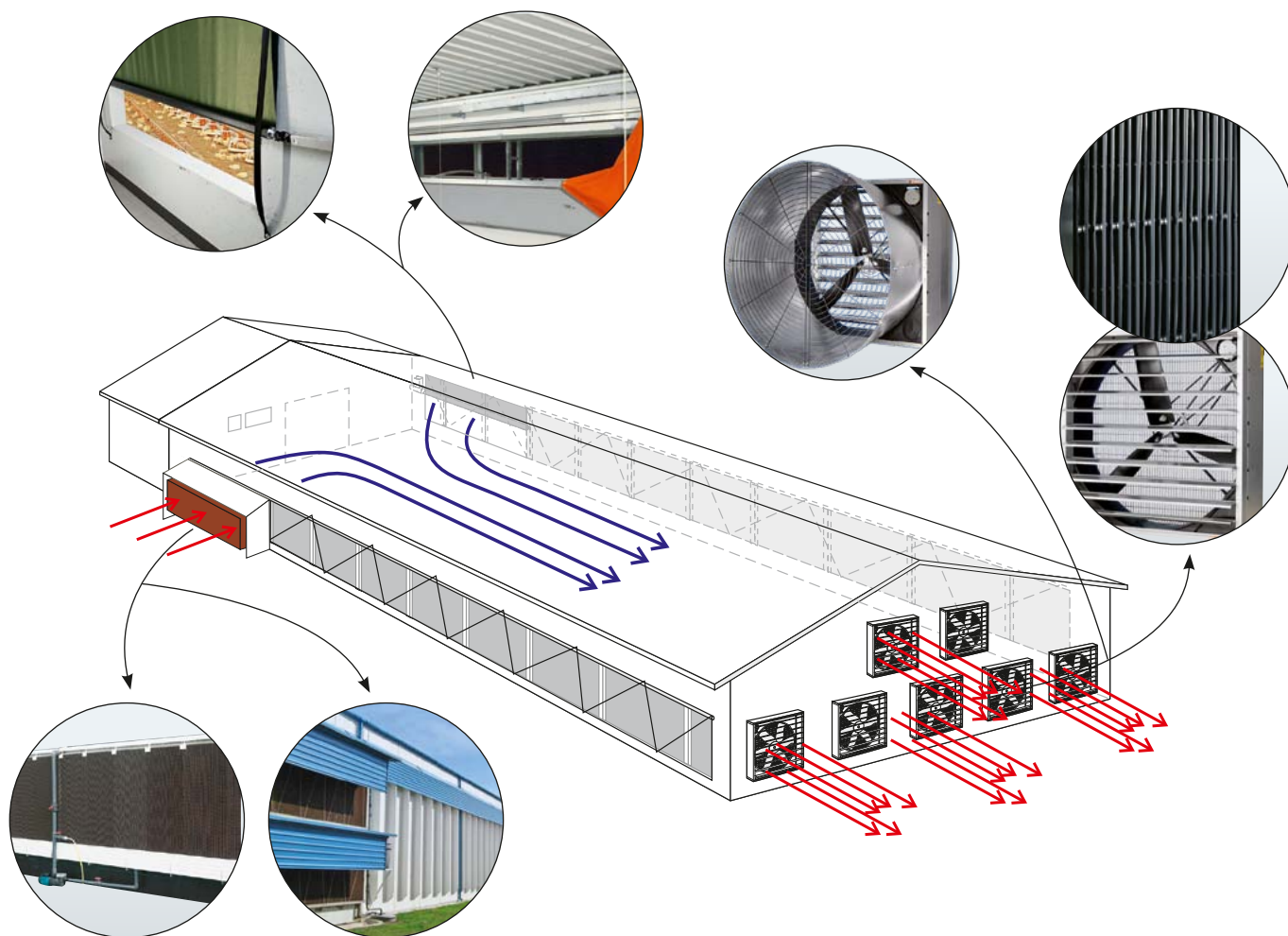
Exhaust air is removed by means of AirMaster fans which produce high air flow rates at a low energy consumption (available with or without cone, with or without shades).

Cone fans are used especially in houses that are operated with a high back pressure, up to -80 Pa, or in houses with only little space available for the installation of fans. These fans achieve significantly higher air rates and are therefore ideally suited for tunnel ventilation in cage houses.

### 3. Cooling

If the outside temperature exceeds 30°C, the RainMaker cooling system is used. The cooling system should be installed in a separate building, the so-called dog house. This has the following advantages:

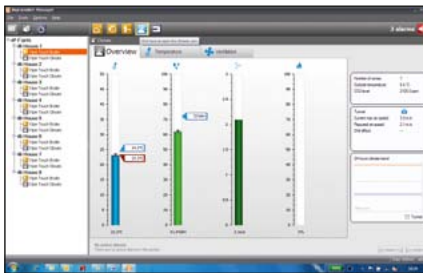
- ✓ the tunnel openings are smaller
  - higher air speeds can be achieved
  - better distribution of air
  - the required air speed can be adjusted more precisely
  - better insulation, i.e. fewer insulation plates are needed for the winter time
- ✓ curtains, flaps and shutters are protected better against dust and other environmental influences
- ✓ better protection against wind and rain
- ✓ no danger of water entering the house
- ✓ the pads can be accessed from both sides → easy maintenance, even when the house is occupied.



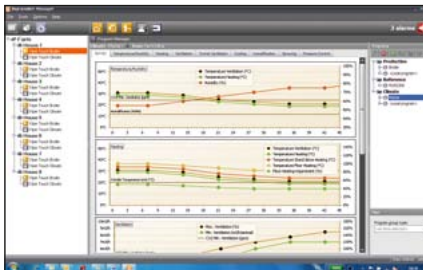
## ViperTouch and BigFarmNet-Manager

BigFarmNet-Manager is a PC program which allows the customer to list and visualize as well as process and control the barn climate and production data from his office PC. Production results can be analyzed comfortably. It is also possible to make and automatically transfer settings regarding feed, water and light to other houses in the same

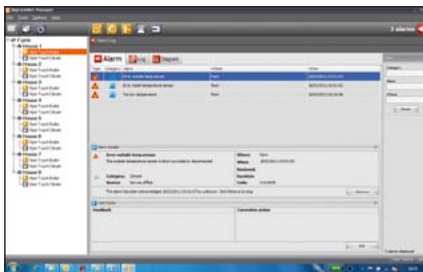
production mode. These are the best prerequisites for the producer to save costs and achieve consistently good results at a high degree of efficiency.



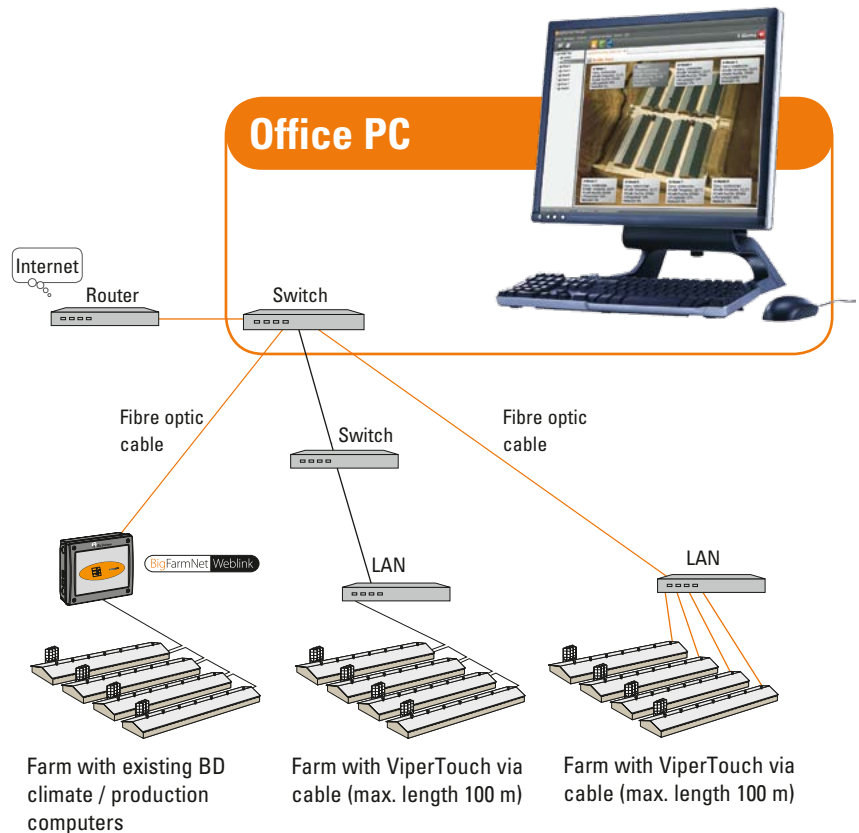
Current climate situation



Climate overview



Alarm overview



### The advantages at a glance

- ✓ the software uses simple, easy-to-understand symbols;
- ✓ quick data overview, both as graphs and as lists;
- ✓ fast connection to the office PC via LAN Ethernet in combination with fibre optic cables;
- ✓ detailed alarm protocol, history and analysis;
- ✓ communication with existing computers via BFN-WebLink;
- ✓ use of standard IT components;
- ✓ remote data access via network.

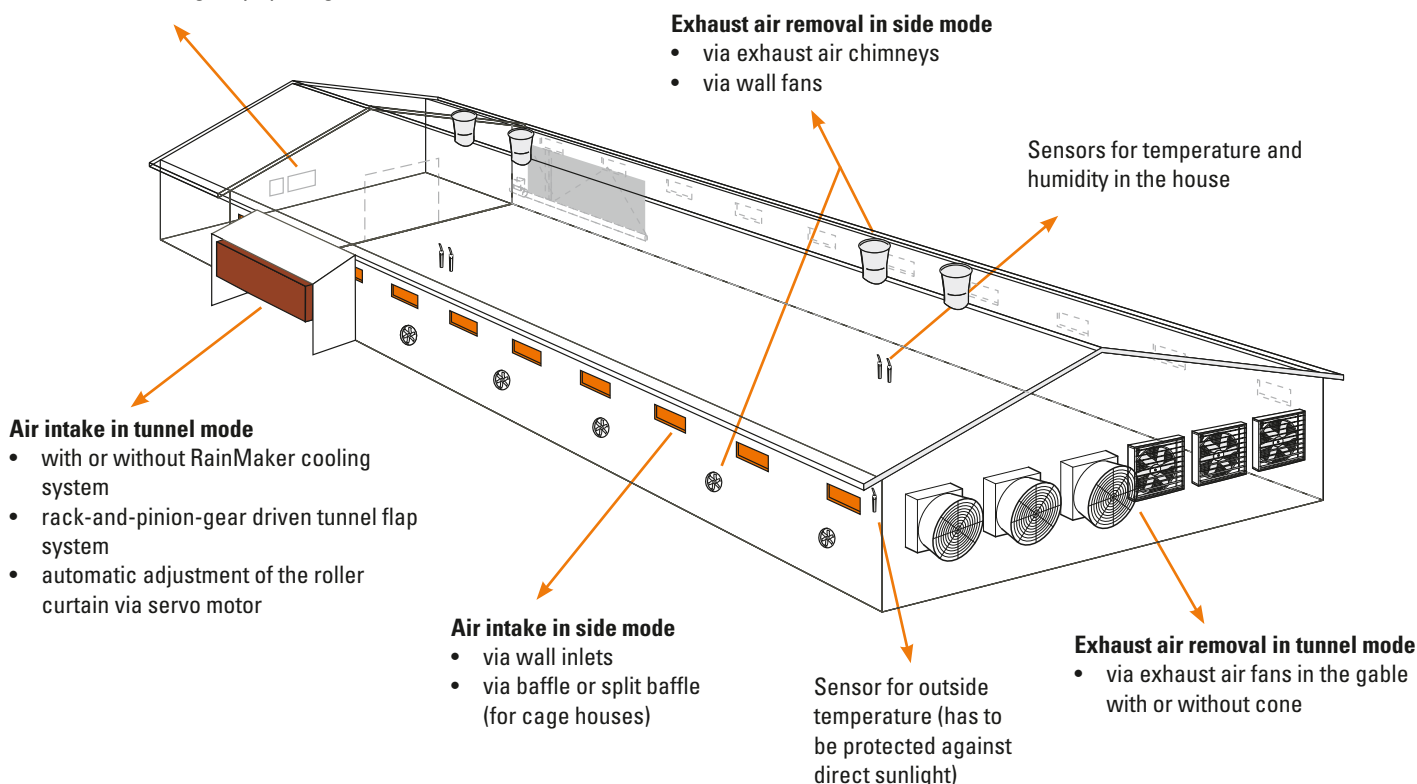
### Important functions of the ViperTouch with CombiTunnel ventilation

- fresh and exhaust air control:
  - side mode
  - tunnel mode
  - CombiTunnel ventilation
- max. no. of motors for fresh air: 6
- max. no. of motors for tunnel opening: 2
- max. no. of temperature sensors: 8
- max. no. of humidity sensors: 2
- sensor outside temperature: 1
- no. of controllable heaters: 6
- easy switching of the computer, if only one half of the house is used
- ventilation steps/groups: 14 steps
- minimum ventilation in pulse/pause mode
- control of cooling and humidifying
- control of cooling via pad sensors (option)
- automatic negative pressure control with pressure sensor
- max. no. of relays: 20, 30, 40
- temperature-controlled emergency opening system
- options for ventilation control:
  - Basic Mode (simple control)
  - Flex Mode (flexible control)
  - Profi Mode (sophisticated control)
- display of the wind chill factor in Profi Mode

# CombiTunnel ventilation and layout options

## CombiTunnel ventilation control

- via the ViperTouch climate computer and temperature-controlled emergency opening MC 378 CT



## Advantages of CombiTunnel ventilation

- ✓ especially suitable for regions with cold winters and hot summers  
→ ideal climate conditions throughout the entire year, healthy birds;
- ✓ constant climatic conditions throughout the entire year  
→ excellent production results, full utilisation of the birds' genetic potential; good feed conversion;
- ✓ it is possible to compensate a wide temperature range from approx.  $-20^{\circ}\text{C}$  to  $+40^{\circ}\text{C}$   
→ low outside temperatures ventilation in side mode: even a small air rate can be precisely regulated to maintain a uniform temperature in the entire house;  
→ high outside temperatures ventilation in tunnel mode:
- ✓ high air velocities calculated based on the birds' age, taking advantage of the wind chill effect;
- ✓ the ViperTouch climate computer allows for a smooth transition from side to tunnel mode and vice versa.



**Big Dutchman.**

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