



The importance of the

# MICROCLIMATE

AN INVESTMENT IN HEALTH AND PRODUCTIVITY



#letschallengethefuturetogether



[www.rotaguido.it](http://www.rotaguido.it)



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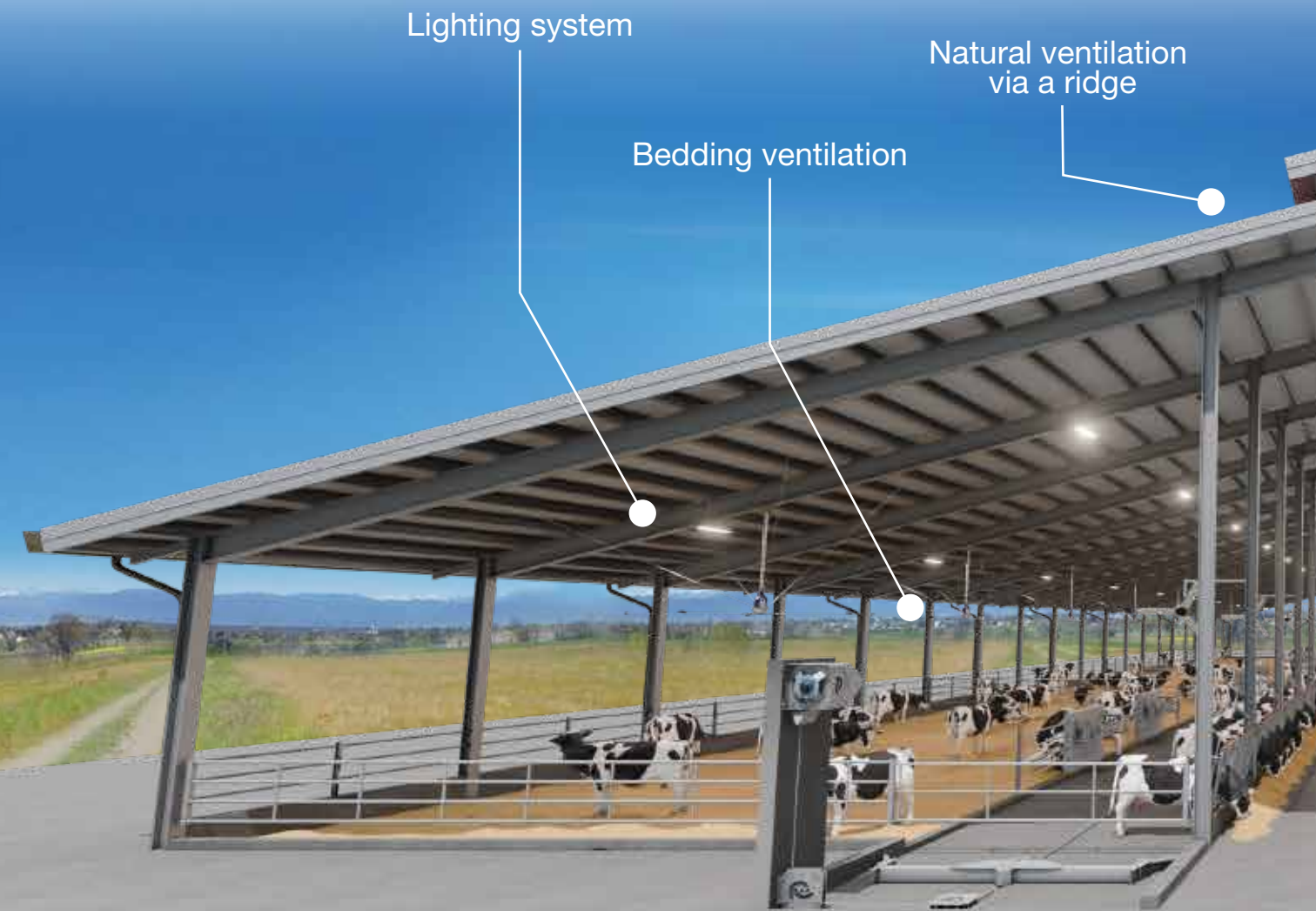
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# DID YOU KNOW

Source:



Recent studies show that climate control is not a 'fixed setting', but a dynamic system that needs to be monitored and managed over time. The conditions perceived by animals can change significantly throughout the day and between different areas of the farm. In short, the actual performance of the system is measured by the stability and uniformity of the microclimate. The design approach is very practical; to achieve climate control today, the following must be accounted for: **VENTILATION + SENSORS + CONTROL LOGIC**. Designing today means knowing how to size and channel air, management, and data: only in this way can the **barn maintain consistent and verifiable performance** over time.

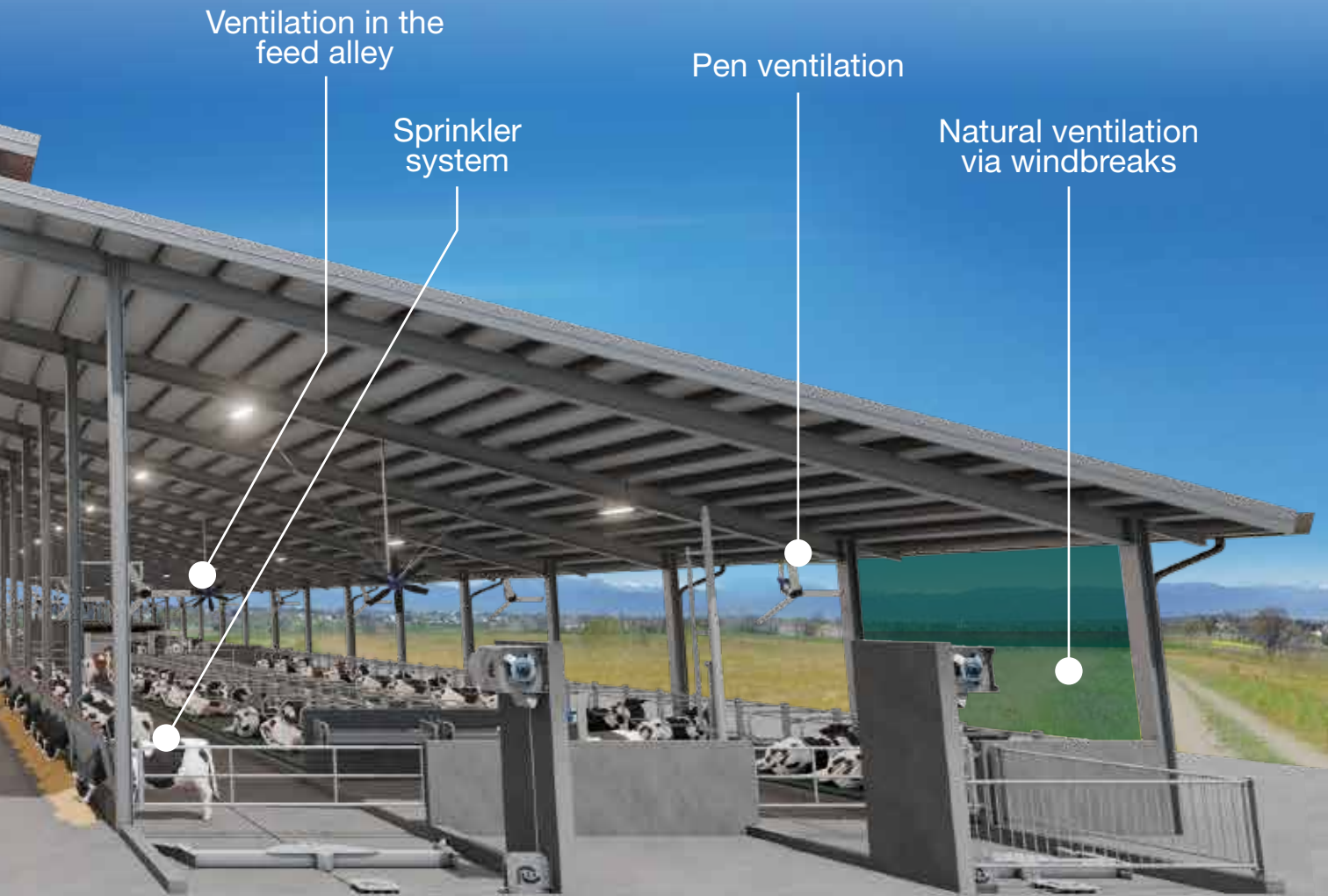


The image is for illustrative purposes only.  
It depicts an actual barn, built in accordance with specific design requirements.  
Preliminary 3D designs can be produced to provide an early rendering of the project.

# THE CLIMATE IS CHANGING

## THE COW IS AFFECTED

Cows, being **homeotherms**, are particularly sensitive to temperature fluctuations. When they move outside their thermal comfort zone (+5°F/ +20°F), they expend energy to regulate their body temperature, at the expense of productivity. Excessive heat reduces feed intake and compromises health, while winter humidity can cause respiratory problems. For this reason, controlling the microclimate of the **barn** is a **key factor in ensuring consistent welfare and performance**.



# WETTING

Mist spraying in the barn lowers **body temperature**, ensuring greater fertility, helps **reduce dust**, and improves **air quality**, creating a more comfortable environment for the animals.

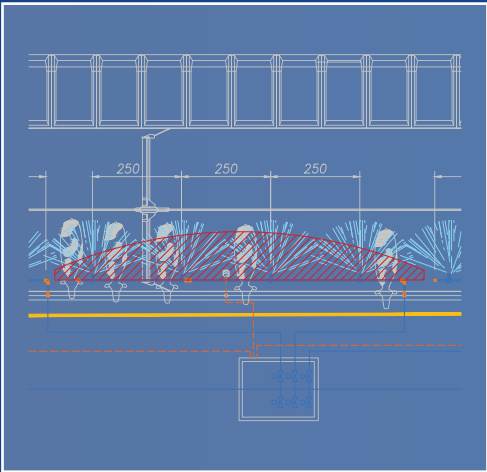
It promotes **evaporative cooling**, preventing heat stress and increasing welfare and productivity, especially on hot days. The **heavy-duty** misting system allows humidity levels to be controlled, with a direct beneficial effect. **Also ideal for holding areas.**



## WIS - Water Individual System

Zone-based wetting

Automatic animal detection for **selective water dispensing**, with the aim of optimising consumption and reducing waste, leads to significant **water savings**.  
**Ideal for use with anaerobic digestion systems**, resulting in less water in the effluent.



## INCREASED MILK PRODUCTION

High THI values lead to a reduction in rest time. Every hour of rest lost equates to a loss in milk production of up to **1.5 kg per cow per day**.

# ALU FAN

FIVE OR SIX BLADES

Ideal for cooling both stalls and feed alleys.

**WHERE:** Stalls and feed alleys

1.5 m 2 m 2.5 m

- **ON-BOARD INVERTER**
- **PERMANENT MAGNET MOTOR**
- **ALUMINIUM BLADES**

\* With the new brushless fans, creating a healthy environment is more affordable thanks to a significant reduction in energy consumption.  
**MORE AIR CIRCULATION MEANS LESS HUMIDITY.**

| Diameter | Electrical power |          |
|----------|------------------|----------|
| mm       | kW               |          |
| 1500     | 0.50             | 6 blades |
| 2000     | 0.79             | 6 blades |
| 2500     | 0.68             | 5 blades |

**ARTIFICIAL VENTILATION**

## HEALTH

Prolonged heat, high humidity, the presence of insects, and poor air circulation **compromise performance and pose a risk to the health of both animals and staff.** Proper management of heat stress helps reduce the incidence of disease, improving long-term health and fertility while keeping healthcare

costs down. Adequate ventilation is therefore essential in all types of livestock farming and across all sectors (pig, poultry, sheep, and goat), to safeguard **animal welfare and production quality.**

### LESS BUNCHING

Good air circulation helps prevent cows from bunching to areas with better ventilation.

# PVC FAN

SIX BLADES

Ideal for cooling the feed alley.  
Also suitable for holding areas,  
stalls, and pens.

**WHERE:** Feed alley and stalls

1.4 m

- **ON-BOARD INVERTER**
- **PERMANENT MAGNET MOTOR**
- **ALUMINIUM BLADES**

| Diameter | Electrical power |
|----------|------------------|
| mm       | kW               |
| 1430     | 0.75             |

## ARTIFICIAL VENTILATION

# SUSTAINABILITY

Cooling measures **should not be limited to dairy cows**, as other cattle are also highly susceptible to heat stress. Growing animals are affected by high temperatures, which have a negative impact on their development, **while in dry cows, heat stress can affect the foetus and future milk production**. In calves, high temperatures and the presence of parasites can increase

mortality and slow down growth. Proper microclimate management promotes greater feed intake, better rest and increased vitality, especially during the most delicate stages of growth.

The benefits of proper ventilation allow for a return on investment **in just two years**.

### FEWER CASES OF LAMENESS

A cool, dry environment reduces the risk of infections and damage to hooves.

# PHOTOPERIOD

MORE LIGHT, MORE MILK

Artificial lighting is a management tool that **affects the welfare and productivity of dairy cows**: the intensity, distribution, and duration of light have a direct influence on biological functions and performance.

A proper balance of light between resting and feeding areas, as well as between different groups (lactating and dry), **helps stimulate metabolic functions**.

## CONSISTENCY AND TECHNOLOGY

The right light, in the right way

To achieve the desired benefits, the lighting must be: evenly **distributed**, **dimmable**, and **controlled** by twilight sensors, and of a **warm** colour temperature (3000K) to simulate natural sunlight.



## NO STRESS

Cooling systems help create an **optimal microclimate**, **improving both production and reproductive performance**. They help increase air velocity when natural ventilation is insufficient and are particularly important in resting areas.

**Adequate rest** improves energy recovery, circulation, and **metabolic efficiency**, with positive effects on milk production, feed conversion, and the prevention of stress-related disorders.

### DAIRY CATTLE

#### HIGHER FERTILITY

Cows are photoperiod-positive animals, meaning they respond to increased light exposure by entering oestrus more readily.

### BEEF CATTLE

#### HIGHER GROWTH

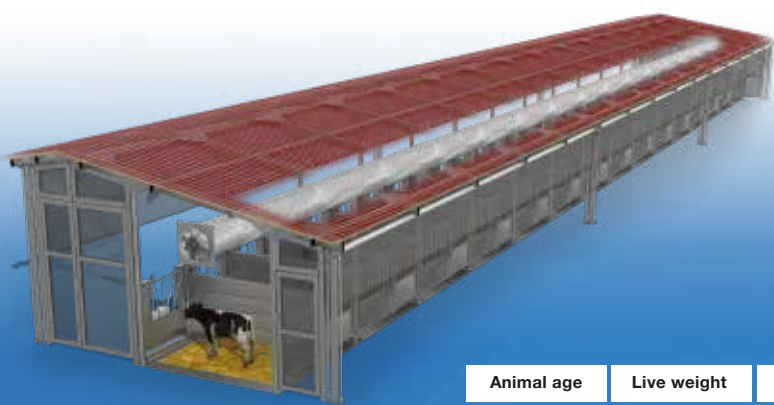
In beef cattle, increased exposure to light leads to increased feed intake.

# VENTILATION TUBE

## POSITIVE PRESSURE

Positive-pressure ventilation ducts are **ideal for calf rearing units**, where it is essential to ensure a supply of **fresh air, thereby improving air quality and ventilation**.

The fans draw in clean air, pushing it through the ducts and ensuring proper air exchange within the building. This system **helps maintain a stable temperature, reduce humidity and prevent respiratory diseases**, ensuring calf well-being while keeping energy consumption low.



TWIN BOX  
ROTA GUIDO

| Animal age | Live weight | Volume  |
|------------|-------------|---------|
| days       | kg          | m³/head |
| 0-30       | 30-60       | 6       |
| 30-60      | 60-85       | 10      |
| 60-120     | 85-140      | 13      |



VENTILATION TUBE  
ROTA GUIDO



Rota Guido has developed the new “**SMART FARM**” software for precision livestock farming, which enables remote control of:

- **Ventilation** systems
- **Lighting** systems
- **Cleaning** systems
- Windows and **temperature**



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