Dr. Knopf & Oswald

A breath of fresh air

CAT 3000

CAT*3000* tube ventilation system

Do standard ventilation systems make cattle ill?

The air inside a barn contains a high concentration of ammonia and germs, which damage the mucous membranes in the respiratory tract and leave them susceptible to infection. This makes it necessary to administer more medicines, running up high treatment bills and resulting in whole host of additional costs. It is now a well-known fact that all cows housed in barns where the air is poor have damaged lungs – including animals that are not obviously feverish with flu.

This is caused by the numerous problems associated with traditional ventilation systems. Natural ventilation means, such as exhaust stacks or openings in the roof ridge, can only provide irregular and inefficient ventilation as the weather changes almost constantly. Installations in the barn and partition walls to divide it into individual calf stalls prevent the air from circulating freely. In combination with the cows' breath, body heat and excretions, the humidity in these areas increases enormously.

Dr. Ken Nordlund, Professor of Veterinary Practice at the University of Wisconsin-Madison (USA) conducted a study in which he measured the microbial content of the air in different parts of a barn. His results showed that the number of germs in the air inside conventional barns is around 3000 times higher than that in the outside air.

When you consider that a cow which had pneumonia as a calf produces 20% less milk, the resulting loss is easy to calculate.

"A cow that suffered from pneumonia as a calf produces 20% less milk."

Professor Nordlund,
School of Veterinary Medicine, University of Wisconsin-Madison, USA

"Respiratory illnesses are the second leading cause of death in calf rearing behind diarrhoeal diseases."

Professor Günter Rademacher, LMU Munich, Kälberkrankheiten, Verlag Eugen Ulmer

Outside air: 100 - 1.000 CFU/m^3

Well-ventilated barn: 10,000 - 15,000 CFU/m^3

Poor ventilation is the no. 1 cause of illness

Normal outside air has a microbial content of between 100 and 1000 colony-forming units (CFU) per cubic metre. This means that in a well-ventilated modern barn there are around 10,000 to 15,000 CFU/m^3. In conventionally ventilated barns (such as calf barns with individual stalls), however, there can be as many as 25,000 to 3,000,000 CFU/m^3 – that's an enormous number of germs.

Traditionally ventilated calf barn: 25,000 - 3,000,000 CFU/m^3

Fresh air is the best medicine!

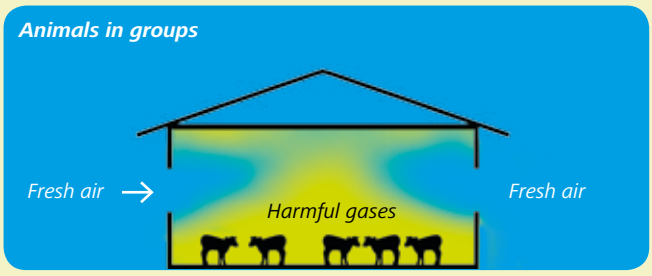
Disadvantages of current barn ventilation systems

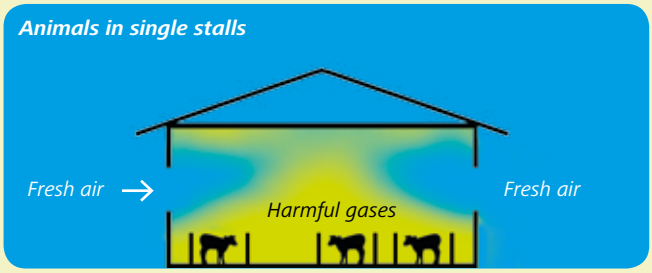
Weaknesses of fan ventilation systems
- Fans create draughts in their immediate vicinity and are unable to fully cover long distances.
- Fresh air is not distributed effectively.
- Air exchange is not uniform.

Weaknesses of natural ventilation:
- No wind = no ventilation.
- Heat rises very little as calves barely generate any heat themselves.
- Heat will only rise if the outside temperature is lower than the inside temperature. In the middle of the day, however, it is often warmer outside than it is in the barn.
- Variations in wind speed and direction mean that air is not exchanged uniformly.

Weaknesses of air extraction systems
- Open windows/doors create draughts and disrupt air distribution.
- Small air inlet openings or perforations in roofs can become clogged and need regular maintenance.

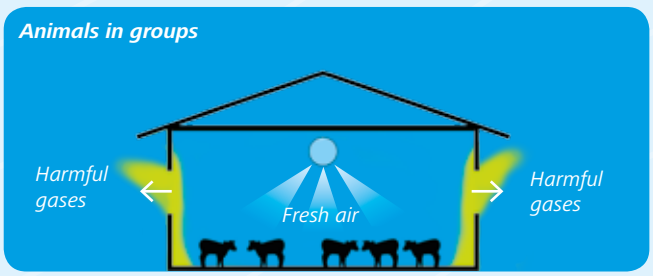
General disadvantages
- Damp air can absorb a large number of germs and is the no. 1 carrier of disease.
- The air exchange rate is very low.
- Efficiency is highly dependent on the weather.
- Very little fresh air enters the barn.

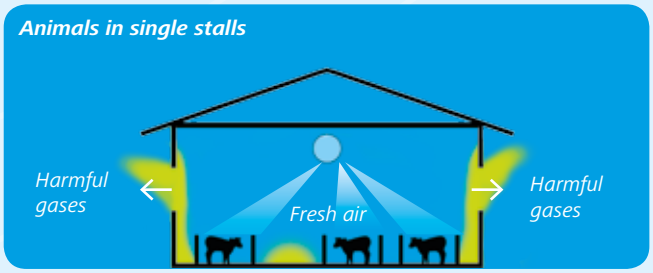




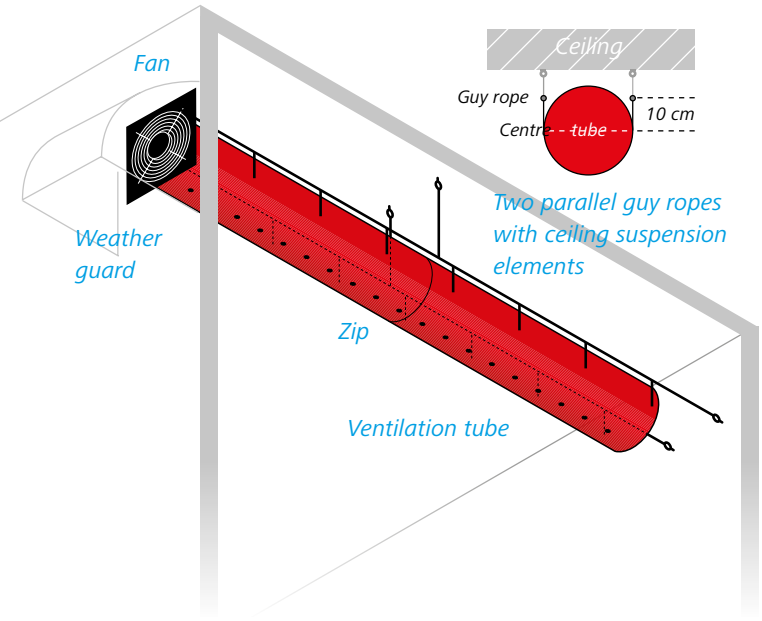
Advantages of the CAT 3000 tube ventilation system

- Perfectly positioned ventilation tubes systematically supply the inside of the barn with fresh air – right into each calf stall – 24 hours a day, 365 days a year.
- The tube ventilation system negates the seasonal and structural factors that would otherwise make the animals' supply of fresh air insufficient and intermittent.
- Ventilation is constant and stable – the ventilation power remains the same from the start to the end of the tube. This means that fresh air is distributed uniformly and without draughts, regardless of the current weather.
- The tube is made from washable material to facilitate hygiene management.
- The air in the barn is not recycled. This stops particles and germs from building up on the inside and outside of the tube. The ventilation system cannot become clogged and it requires virtually no maintenance.
- The tube fabric lets a small amount of air through. This prevents condensation from forming on the tube.
- Livestock are healthier, which significantly reduces the cost of veterinary care and medicines while considerably increasing their lifespan.
- The initial outlay is quickly recovered by the improvement in the animals' health.





Planning and superior quality



Before production begins, we come to your farm to discuss your buildings and conduct a structural analysis.
We enter parameters such as room size, number of animals, age of animals, etc. into our software, which calculates the required fan power and the layout of the air outlet openings on the ventilation tube, and much more besides.
We then manufacture a made-to-measure tube ventilation system in accordance with these specifications.

We never compromise on quality:

- Slightly breathable fabric **prevents condensation** from forming
- **Tube can be washed at 40 °C** to keep it hygienically clean
- **Zips** enable the tube to be separated into sections that can then easily be put in the washing machine
- Excellent **UV resistance**
- Laser-cut openings mean that **edges do not fray** – even when subjected to frequent washing
- **Free from harmful substances** – Oeko-tex® 100 certificate, class 1 (textile items for babies and toddlers)
- **Difficult to ignite** – no flaming droplets, material class B1-s1,d0 in accordance with DIN 13501-1
- Practical retaining clips for **extremely easy installation**
- **Hand-stitched** and **quality checked multiple times**
- Optional **washing service** including repairs
- **Stainless steel** fastening material

- **Made in Germany**
- **Barn fans that can withstand tropical climates** – protected against humidity
- **Sturdy aluminium blades** – fan impellers are not made of plastic
- Balanced to ensure **smooth, quiet running**
- Energy-saving and designed with cutting-edge blade geometry to ensure **maximum energy efficiency**

Quick and easy to install

Each and every system we design is tested thoroughly to ensure it works as it should prior to installation. We measure the ventilation system's actual output and efficiency on our test bench, meaning we can guarantee that all its constituent components deliver precisely the amount of power needed. You have the choice of making the fan opening in the building yourself (in accordance with our specifications) or having a core hole drilled for the fan by a specialist company. It may also be possible to install the fan in a window opening. It normally takes no more than a day to install the fan and the ventilation tube. Once the tube ventilation system has been connected to the mains electricity supply, it can be put into operation straight away.

Installation in a window opening

1. Performance testing

2. Structural conditions prior to installation

3. Installation of the fan (in a window opening in this example)

4. Connection and installation of the ventilation tube

5. System is put into operation

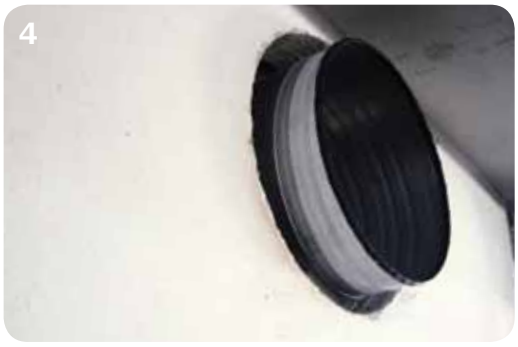
Installation with wall lead-through

2. Wall lead-through with core hole

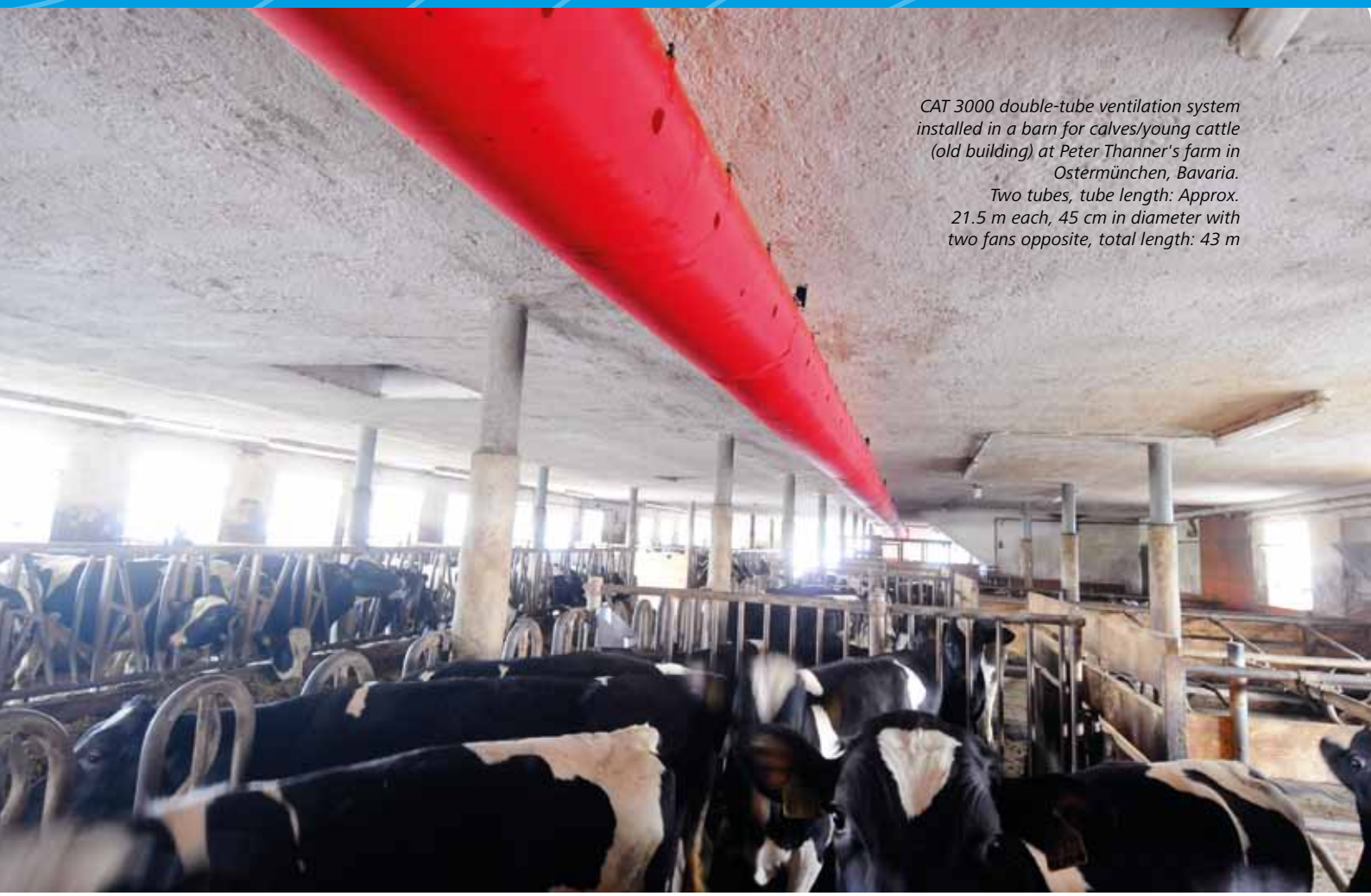
3. Installation of the fan

4. The ventilation tube is connected to the wall lead-through protruding into the barn

5. The ventilation tube is simply clipped into the tensioned steel rope and the system can be put into operation immediately.



Case studies



CAT 3000 double-tube ventilation system installed in a barn for calves/young cattle (old building) at Peter Thanner's farm in Ostermünchen, Bavaria. Two tubes, tube length: Approx. 21.5 m each, 45 cm in diameter with two fans opposite, total length: 43 m

"The climate in our barn has improved considerably since we installed the CAT 3000 tube ventilation system. Thanks to the ventilation it provides and the cooling effect this has, our milk yield remained steady throughout 2015 – despite the summer being extremely hot. Before we installed the system, our milk yield always dropped in the summer months. The clean air also makes working in the barn much more pleasant for me."

Franz Baumann

CAT 3000 tube ventilation system installed in a barn for young cattle (old building) at Martin Soyer's farm. Tube length: Approx. 17 m, tube diameter: 50 cm

"The cost of veterinary care has gone down significantly since we installed the CAT 3000 tube ventilation system."

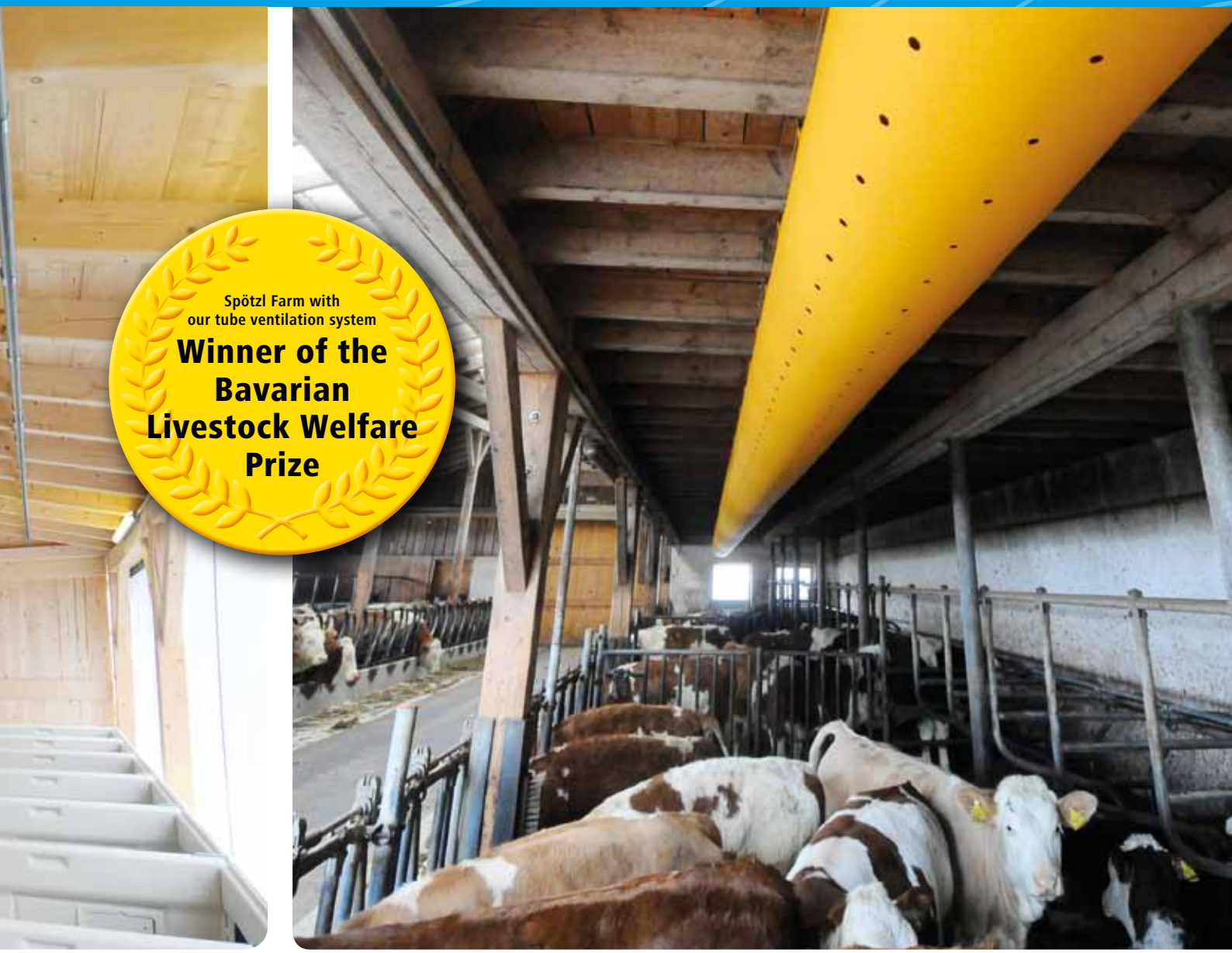
Martin Soyer Jr, Oberelkofen, Bavaria

CAT 3000 tube ventilation system installed in a barn (old building) at Franz Baumann's farm. Tube length: Approx. 10 m, tube diameter: 35 cm

Winner of the Bavarian Livestock Welfare Prize

Click on this link to watch a feature from the Bayerischer Rundfunk programme "Unser Land" about August Spötzl and his experiences with the tube ventilation system [in German]:

https://www.youtube.com/watch?v=-en5IVjaTwU



Spötzl Farm with
our tube ventilation system

Winner of the Bavarian Livestock Welfare Prize

CAT 3000 tube ventilation systems installed in two barns for young cattle (old buildings) and a calf barn (new build) at August Spötzl's farm.

In old buildings:
Tube length: Approx. 22 m,
tube diameter: 45 cm
Tube length: Approx. 26 m,
tube diameter: 55 cm

In new builds:
Tube length: Approx. 11 m,
tube diameter: 35 cm

"Our calves have grown a lot more and been far more lively since we moved them from their igloos into the new calf barn. There's been almost no more coughing in the young cattle barn since we installed the tube ventilation system there. The tube ventilation system has proved to be the best solution for rearing young cattle successfully in our farm's old building too."

Gusti Spötzl, Obereichhofen, Bavaria
Farm manager (Master's diploma in agriculture)

Case studies

"I've finally found the right solution for my calf barn."

CAT 3000 tube ventilation system installed in a calf barn (old building) at Paul Kranz's farm. Tube length: Approx. 6 m, tube diameter: 40 cm

"I chose the tube ventilation system because our conventional window ventilation method wasn't working well. If the windows were open, there were draughts; but if the windows were closed, the air quality was poor. With this specialist ventilation system I've finally found the right solution for my calf barn."

Hubert Sedlmaier
Farm manager (Master's diploma in agriculture)
Kleinesterndorf, Bavaria

"After installing the CAT 3000 ventilation system, I noticed that the climate in my barn improved dramatically in a very short space of time. The level of ammonia in the air around the ventilation system decreased enormously. The air in the barn is drier. I've noticed that I get through less straw because of this. The animals have drier beds to lie on and they seem much healthier."

CAT 3000 tube ventilation system installed in a calf barn (old building) at Hubert Sedlmaier's farm. Tube length: Approx. 6 m, tube diameter: 40 cm

Fresh air for the top sires in the Rinderunion Baden-Württemberg

CAT 3000 tube ventilation system installed in the young and old bull barns at the Rinderunion Baden-Württemberg e.V.

Two ventilation tubes 16.5 m in length and two ventilation tubes 24.5 m in length

Compare the quality:

	CAT 3000	Comparable product
Machine washable	✔	
UV-resistant material	✔	
No condensation	✔	
Can be separated with zips	✔	
B1 flammability rating (no flaming droplets)	✔	
Free from harmful substances (Oeko-tex® 100 Standard)	✔	
Air openings do not fray	✔	
Optional washing and repairs service	✔	
Energy-efficient fans	✔	
All components made in Germany	✔	
Standard five-level controller for more power in the summer	✔	
Fastening material incl. rope suspension made of 100% stainless steel	✔	

CAT 3000 is a Knopf & Oswald GmbH brand
You can find offers, information, research and case studies at:

www.frischluft-im-stall.de

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