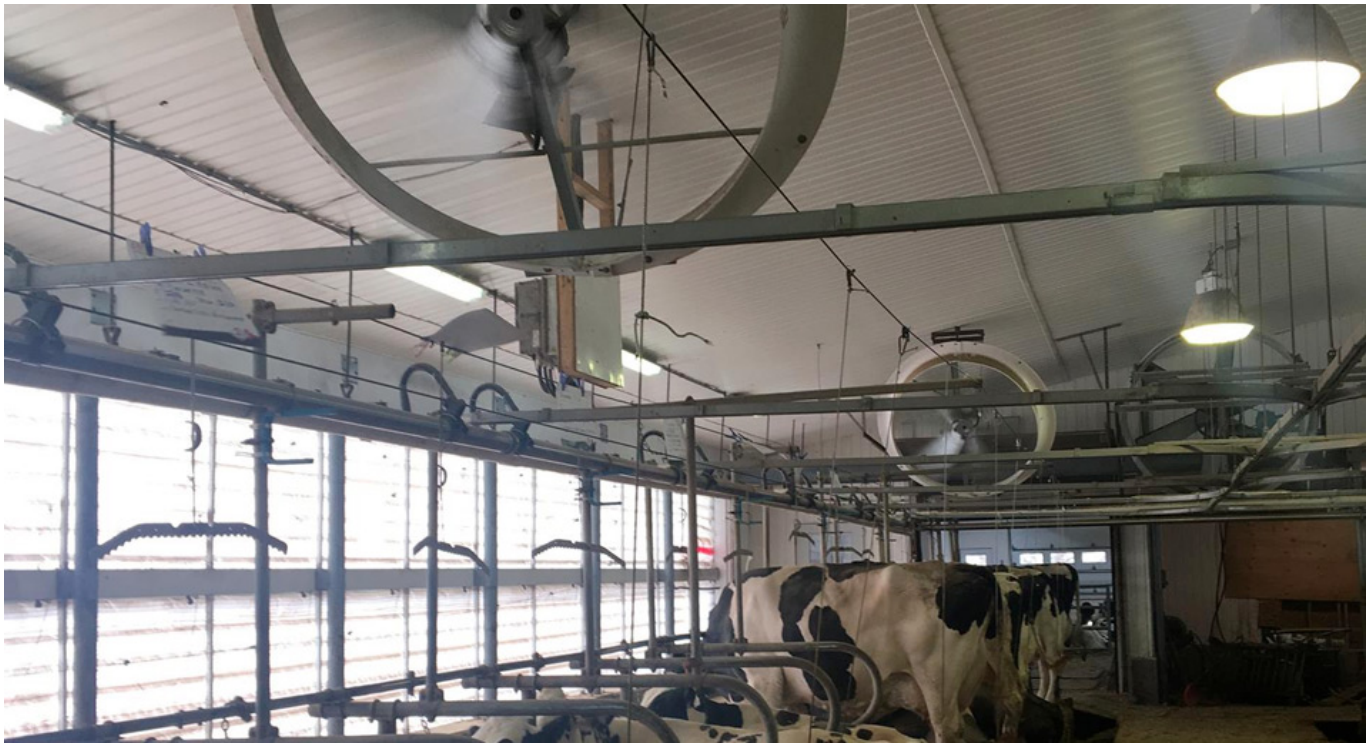
Is your ventilation system up to the challenge of keeping your cows cool?

April 10, 2019

In a relatively humid climate, a wind speed of 5 to 7 km/h (300 to 400 fpm) on a cow’s hair coat is required to ensure adequate cooling during a period of heat stress.* Will your ventilation system be up to the task?



What are the problems frequently encountered in our barns?

With a longitudinal or tunnel ventilation system, any number of obstacles can prevent wind from reaching the cows in their free stalls:

- the robotic milker and milking box
- the wall of the watering station
- cows in free stalls blocking others
- air inlets not aligned with cows

With a natural ventilation system, the challenge is that hot weather doesn’t necessarily coincide with windy conditions. Likewise, the chimney effect is ineffective because the temperature difference between indoors and out is insignificant. The drawbacks of this system include:

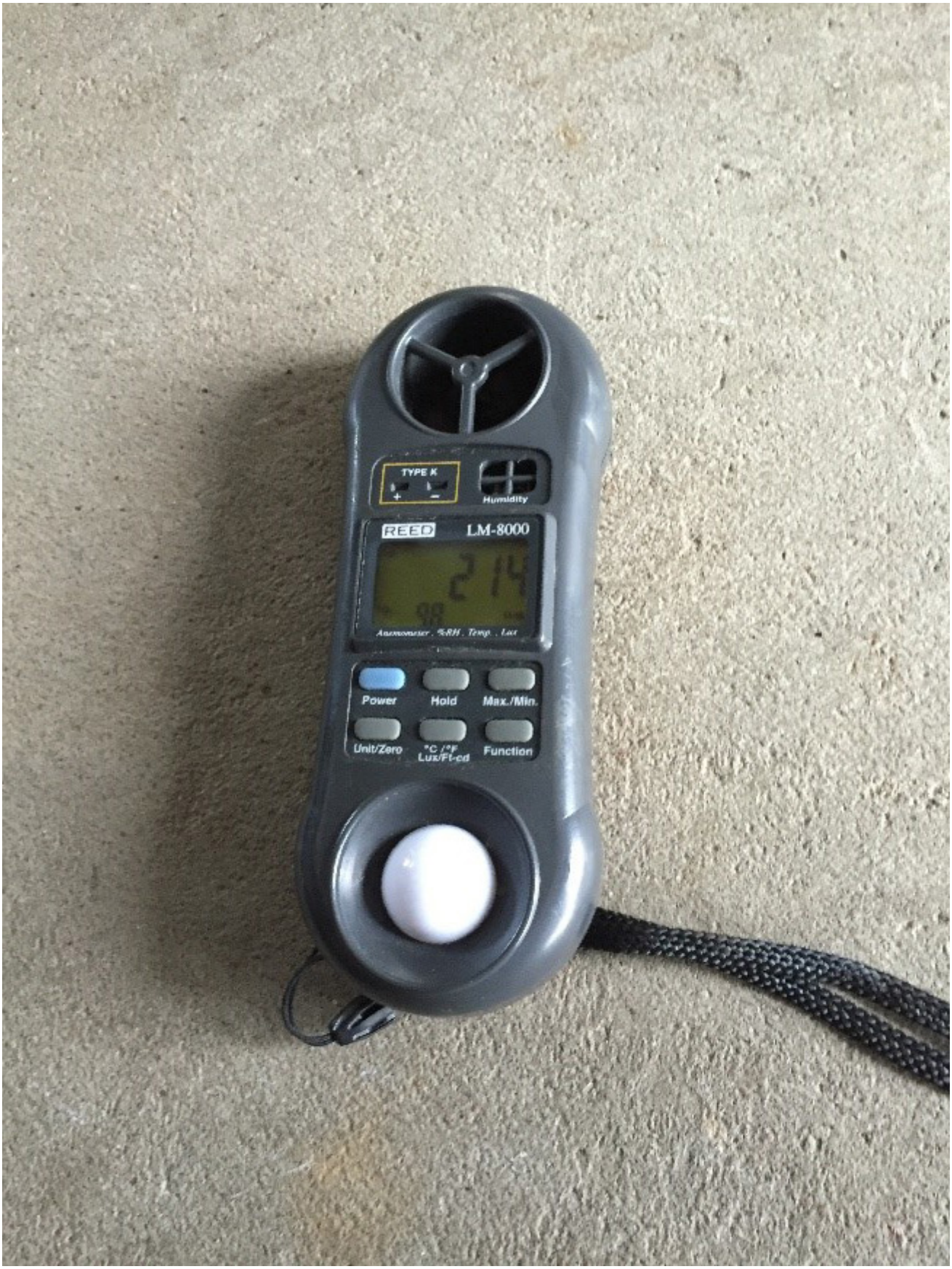
- wall openings that don’t extend to ground level
- lack of complementary mechanical ventilation
- insufficient number or improper placement of fans
- insufficient air renewal (40 to 60 changes per hour)

With a cross-ventilation system, there are other difficulties:

- the manger curb diverts the airflow toward the ceiling;
- air flows above cow level and along the ceiling before being exhausted through the fans
- air flows down the alleys and walkways instead of over and around the cows

How do we ensure adequate ventilation?

First, measure the air speed at cow level. Use a vane or hot-wire anemometer to locate the “dead spots”.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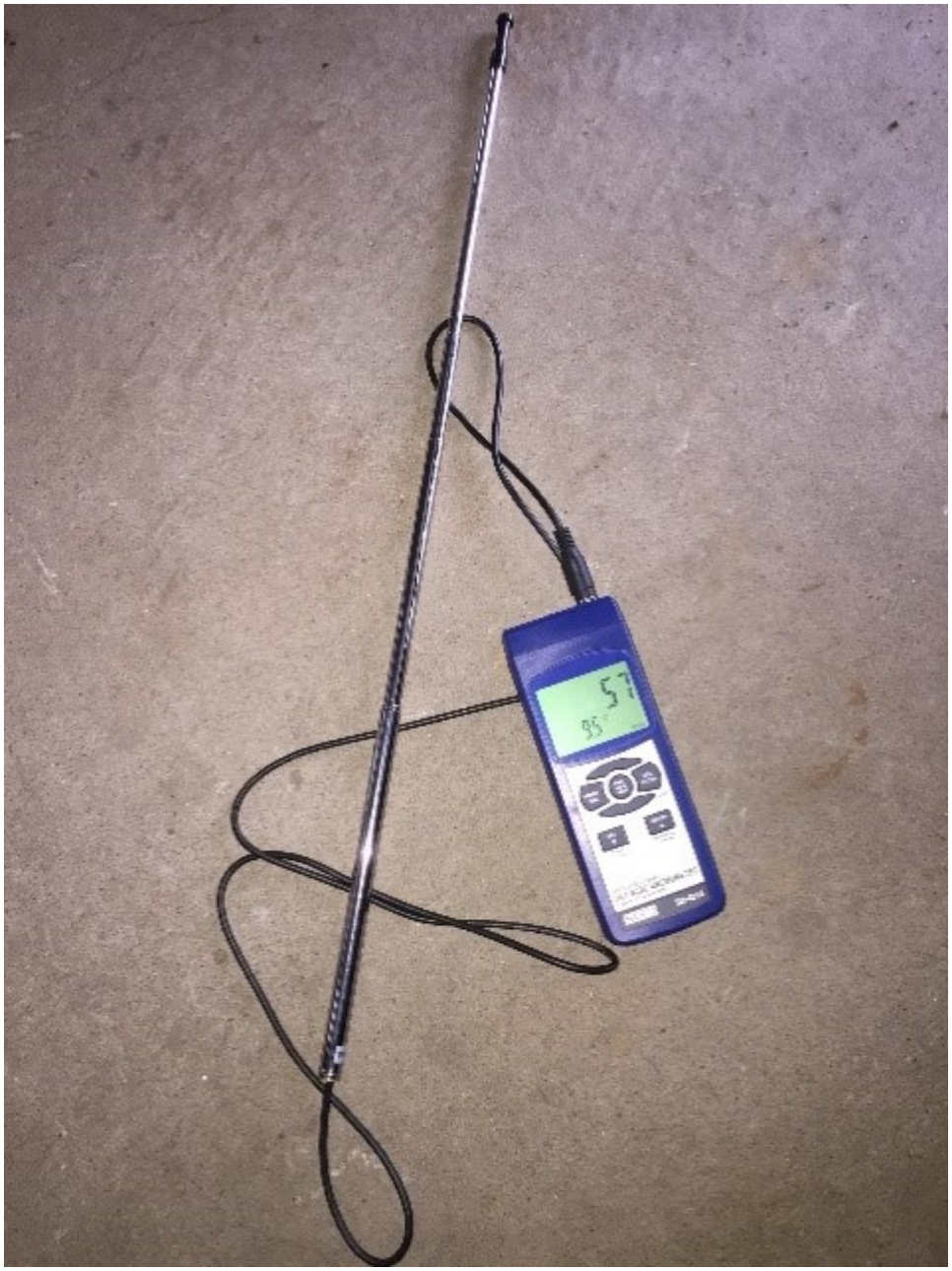

Depending on the result, you may need to add supplementary fans to increase wind speed. When doing that, however, it is important to avoid some of the pitfalls associated with the different types of fans.

The range in which the wind reaches the desired speed will vary depending on the size, height and location of the fans in the building. Airflow must reach the cows' resting area to improve rest time.

Basket fans:

Both the spacing and the angle of the fans are important considerations. Placing fans too far apart creates a dead spot below them. The airflow from one fan should converge with the airflow from adjacent fans.

But simply adding fans is not enough to cool cows down. The airflow must be directed properly to ensure that the cows can benefit from it!

Do you have any examples of how ventilation has been improved on your farm? Describe them in the comments section and share your photos with us, if possible.

*According to experts at the University of Wisconsin who reviewed literature on the subject.

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A graduate of Laval University in agronomy, Steve has developed an expertise in the comfort and well-being of dairy herds. In 2017, he received the OAQ's Medal of Agronomic Merit for his contribution to the development of the training program 'The Barn, a source of Comfort''. As an expert in dairy production, he shares his knowledge as an author and speaker throughout Quebec and Canada.