

Temperature and relative humidity



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What are the thermal limits?

- The upper limit of the thermoneutral zones of pigs is as low as 25°C in the end of the finishing period.
- For lactating sows the thermoneutral zone already ends at 21°C, heat stress starts beyond this temperature.
- High humidity will aggravate heat stress due to the reduced ability of the pigs to use evaporative cooling (e.g. by panting).



Devices to measure continuously or instantaneously temperature and relative humidity. The sensor of the climate control system can also be used for logging.

Legal requirements



The only legal requirement can be found in Directive 98/58/EC (EU, 1998), Annex: Buildings and accommodation, Article 10: Air circulation, dust levels, **temperature**, **relative air humidity** and gas concentrations must be kept within limits which are **not harmful to the animals**

How to measure

- Temperature and humidity should be recorded and records should be made available on request of the inspector.
- Check animals for signs of increasing pig fouling or for panting and/or pumping.

Assessment of ambient temperature

To check if the basic requirements for pigs' thermal comfort are met, assess the ambient temperature. It is recommended to measure the temperatures close to the presumably hottest place in the room, i.e. as far away from the air inlet openings and the expected air flow as possible. The temperature above which heat stress starts depends on body weight and feed intake and can be found in the "[Review on heat stress in pigs on farm](#)".

A related EURCAW topic is the review on climate control during transport: "[Review of climate control and space allowance during transport of pigs](#)"



Measuring temperature

As pigs lie around 85% of the time the temperature should be measured at pig level in a lying position. The challenge is often to protect the sensor against manipulation by the pigs. Mounting the device in a pipe or small steel rack against one of the side walls of the lying area could be a good protection. Periodical testing of the thermometer by temporarily installing an additional calibrated sensor is advised.

The standard location for an instantaneous manual measurement is from a standing position in the inspection alley, stretching the arm with the sensor at a height of 1 m and try to measure 1 m into the pen from the front.

With different air inlet and fan positions the temperature can vary considerably within a room. Measuring at multiple locations in the room for instance front, middle and back gives a better understanding of the thermal distribution.

Pig activity and curiosity will affect the temperature around the sensor for instantaneous measurements. So this needs time and patience to wait for a stable value.

Measuring Relative Humidity

The relative humidity can often be measured in combination with the temperature and requires no approach other than temperature measurement.

Comparing with outdoor data

Comparing the indoor data with the outdoor data can be very useful. When the indoor temperature is reaching the upper critical temperature while the outdoor temperature is lower, there is room for improvement. With a higher ventilation rate the indoor temperature will become lower and will give the pigs the opportunity to cool down. However when the outdoor temperature is higher it's necessary to find other solutions. And of course the weather forecast offers the possibility to prepare cooling measures in advance.



Commercial solutions can support to solve climate problems.



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If you have any questions or suggestions regarding this factsheet please contact info.pigs@eurcaw.eu