



# SKOV International

**PIG EDITION**

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## The wind can affect the pig house environment

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### A study carried out by the Faculty of Agricultural Sciences (DJF) showed large differences in the pressure stability of exhaust units

It is not irrelevant how a new pig house is located in relation to wind directions, other buildings and stands. Wind conditions around the house may generate a pressure impact or suction that is much stronger than in the open wind, e.g. in an open field. This may affect ventilation in the pig house as the volume of air in the house can become much higher or lower than it would normally be.

– This is useful information when deciding which exhaust units and shutter strategy to use, say the two researchers from DJF Bygholm, Svend Morsing and Jan S. Stroem, who have developed methods for measuring pressure stability.

The impact of wind on an exhaust unit results in either additional suction or counterpressure on the outlet opening of the exhaust unit. This means that either excess ventilation in the house or downdraught from the outlets will occur. The extent of this depends on the wind conditions and the exhaust unit used.

– The study showed that the pressure stability of a frequency-controlled fan is not necessarily higher than that of a voltage-controlled fan, say the two researchers.





## The most wind stable unit

For the test, they used fans both from SKOV and from a SKOV competitor. According to an internal report from the researchers, the most wind stable system at a wind suction force of 5.8 metres per second is the shutter-controlled DA 600-1 unit from SKOV. This was also the exhaust unit that performed best at all the selected wind pressures. However, it is not the most energy-optimised unit.

The other company had a completely voltage-controlled exhaust unit and a frequency-controlled unit. The pressure stability of the frequency-controlled unit tended to be lower at wind pressures.

However, a comparison between the voltage-controlled units from SKOV and the other company, respectively, showed no big difference in pressure stability at wind suction but some difference in pressure stability at wind pressure.

## Pressure stability and energy consumption

The two researchers examined whether anything could be gained economically from controlling the shutter in calm weather or at different wind velocities.

They concluded that energy is needed to improve the house climate if the goal is to prevent wind from affecting the ventilation output.

The researchers point out that in spite of the great focus on ventilation energy costs, many other factors affect the well-being of pigs.

– Energy is not the highest operating cost in the pig house, so rather than saving the last bit on energy for ventilation, a pig producer can choose to close the shutter a little more to ensure pressure stability and a good house climate, Svend Morsing and Jan S. Stroem say.

The study of pressure stability was the second part of the project 'Energy saving control of ventilation in finisher houses'. Here, attention was focused on energy consumption in frequency-controlled fans and on stepwise connection of fans, also known as SKOV's MultiStep. The project was supported by the Danish Ministry of Climate and Energy and was carried out in cooperation with the National Committee for Pig Production/ Danish Bacon & Meat Council and Danish Agricultural Advisory Service, the National Centre.

The researchers measured pressure conditions above the exhaust outlets as well as wind conditions at three houses with diffuse ventilation, combined with tests of ventilation material at DJF Bygholm.

– As far as the impact of the wind is concerned, you cannot generalise but will have to consider local conditions. We could also see that one of the houses was exposed far more to the impact of the wind than the other two houses, say the two researchers who recommend being careful about exhaust outlets close to gables because they are particularly exposed to the impact of the wind which may influence the house environment.



*This article is a reproduction from an earlier SKOVnyt and was written while Svend Morsing (right) was employed by DJF. Today, Svend Morsing is employed by SKOV A/S.*