

High Pressure Fogging

Point of production: Sow / Finishing

Country of origin: Netherlands



Pigs have an optimum temperature at which they thrive. Temperatures across Europe in the summer (even Ireland and the UK) can exceed that level, causing stress on pigs and lowering productivity.



In extreme cases it can cause increases in mortality despite ventilation and systems to keep the air moving in indoor accommodation.

The solution – Best practice

To reduce the climate risks in the pig accommodation and to achieve an optimal climate for the pigs, a system that produces high pressure fog is used to lower the temperature during the hot summer months.

This is so heat stress can be prevented, reducing productivity losses and importantly reducing mortality. The system is relatively cheap to install and uses a series of nozzles along the side inlets/vents (externally mounted) to release a fine mist. The mist is drawn into the building with air by the building's ventilation system. Moist air moves through the building and exits at the ridge fans. Triggered by exceeding a specific temperature, the water can be 25 times more effective at cooling than air. Ventilation of the fog removes heat from the animals and the buildings in conjunction with the ventilation system.

Points to consider and additional information

Key learnings since installing the system have been:

- Better calculations of the right volume of fog to maximise cooling;
- Replacing some nipples for a smaller nipple to get an appropriate droplet size;
- A little less ventilation speed to maximise the thermal exchange between animals, environment and building to the fog.

Based on these assumptions variable production costs after implementation of best-practice decreased by 2.3% as per kg of hot slaughter weight (or decreased by 2,3% as recalculated per piglet produced). Decrease was also observed in case of fixed costs by 2.4% as per kg of hot slaughter weight (or decreased by 2,1% as recalculated per piglet produced). As result, the total costs were lower by 2,3% as per kg of meat (or 2,3% as per piglet). The economic impact of the improvement represents also an increase of sales income due to increased production by 1 finisher/sow/year.



Cost/Benefit analysis

Costs:

Installation costs –

- €12 per sow
- €2 per porker

Typical 500 sow unit – €6,000

Plus, finishing (7,000 pigs) - €14,000

Each fogging pump uses 800-900 kW a year. For the whole farm the energy costs increase by around €300.

The investment including installation of the system was €18,000. Life cycle of the system is expected to be 10 years. Maintenance requires pumping the water out of the system before winter, control and boiling of the sprinklers once a year. In total 1 day of additional work per year is needed (€300).

Benefits:

- Ability to lower building temperature by up to 6 °C
- Lower pig mortality

During high temperature periods, cooling allows animals to keep their feed and stay fitter. As a result, they give about 0.8 more piglets in the next litter. Furthermore, growth of finishers is about 50 grams higher and feed conversion 0.1 lower, if they have less heat stress. If this innovation had not been present, approximately 2 to 5% of sows and finishers would have died during the hottest months.

Further research & Project links

<https://eupig.eu/>

Link to technical report

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