



New steam vacuum suction tool - Tubular-5 -a method to improve slaughter hygiene



Helle Daugaard Nielsen, Hardy Christensen and Niels T. Madsen. ntm@teknologisk.dk*, DMRI, Danish Technological Institute, Roskilde, Maglegaardsvej 2, Denmark

Objective to investigate:

To assess the efficacy of a new handheld steam vacuum handle Tubular-5 for improved slaughter hygiene in a commercial beef operation.

Conclusion

Tubular-5 steam vacuum suction is a useful method to improve carcass hygiene on beef carcasses, by removing hair, faecal and soiled carcass spots. The microbiological quality of treated areas is also superior to non treated.

Background

In the USA and Scandinavia, steam vacuum suction has become a commonly accepted and useful method to improve carcass hygiene on beef, lamb and pork. A new tool for this process is developed by DMRI.

Materials

Tubular-5 is constructed with flexible silicone nozzles that follow the carcass surface closely (WO2009/138083A1). A cluster of several nozzles makes cleaning of large areas possible. The silicon steam nozzles are easy to clean as they do not have material films sticking to the nozzles as is sometimes the case for metal type heads.



Figure 1. Tubular-5

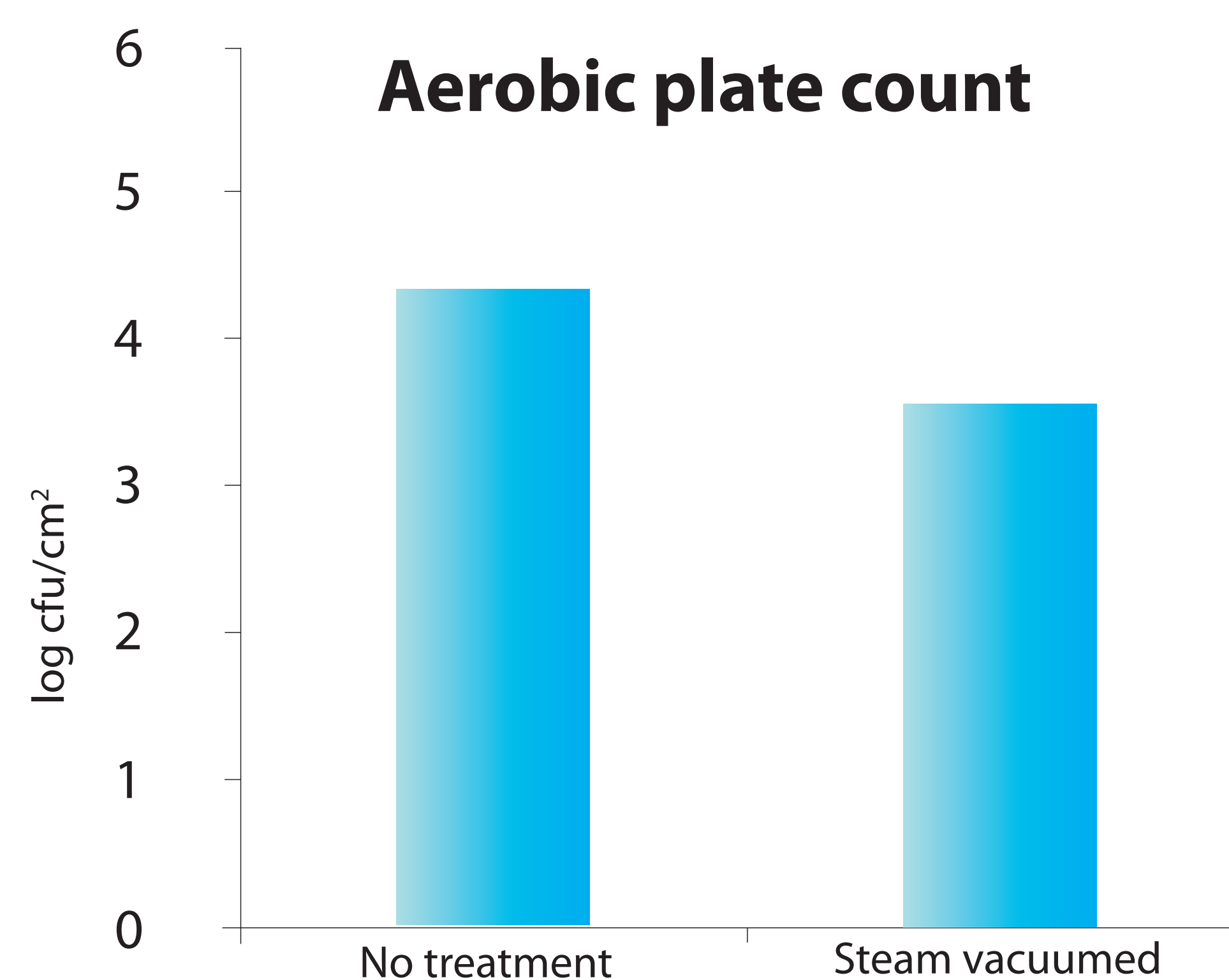


Figure 2. Means and deviation of aerobic cell count on beef carcass legs cleaned or not cleaned with steam vacuum suction Tubular-5 (log cfu/cm²)

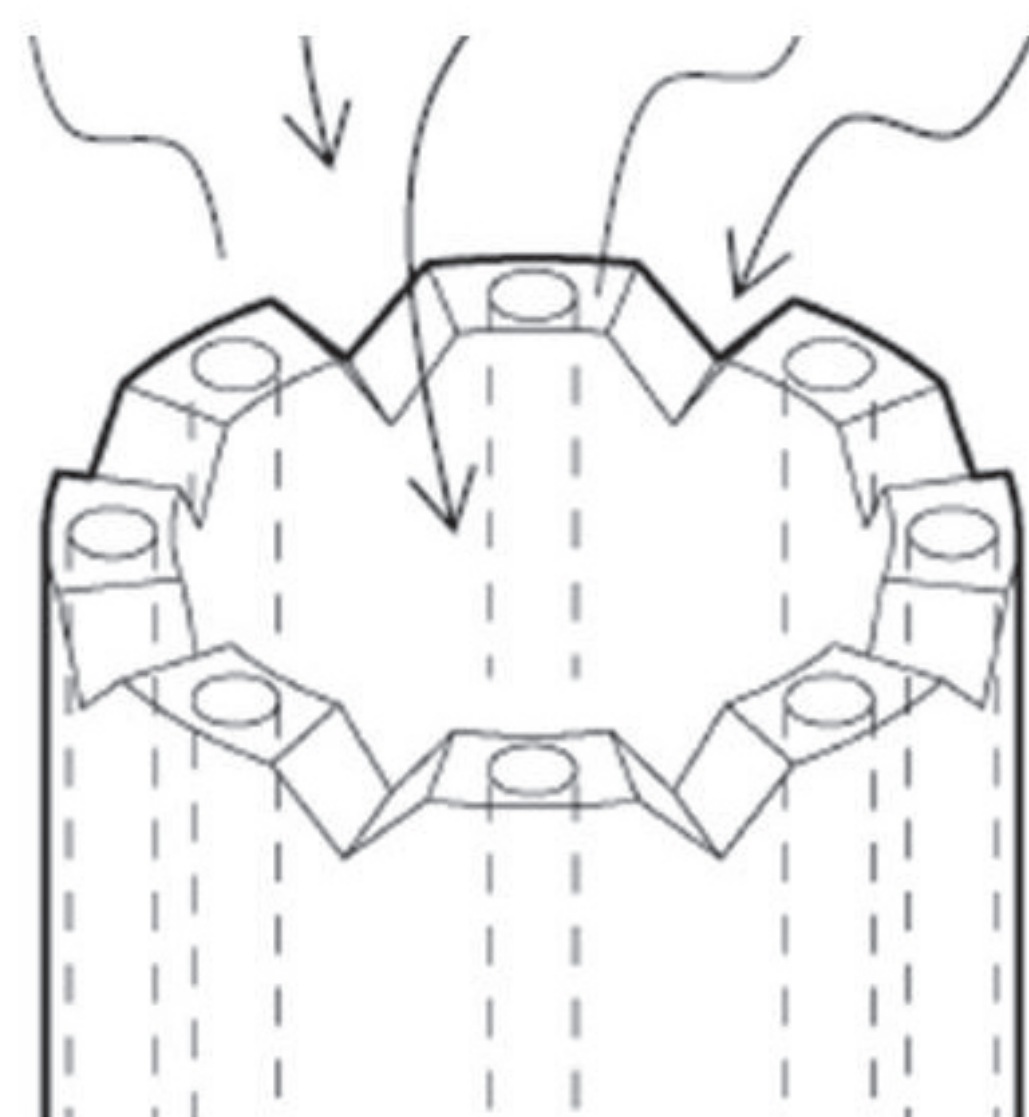


Figure 4. Cleaning of the leg

This reduction is similar to previous investigations with steam vacuum suction. Samples were also analysed for *E. coli*. *E. coli* occurred in approx. every third carcass at the control side, but none were found on the treated sides. A reversible discolouration of the carcass surface can occur but is generally not visible after the chilling process.

- Use of steam is approx. 10-20 kg steam/water/hour.
- With electrical steam generator, an energy consumption of approx. 7-10 kWh is expected.
- A vacuum pump system with separator providing 5-15 kPa requires approx. 4-6 kWh.

Figure 2. Suction through core of nozzle, steam discharge from jets in outer nozzle wall



In a test including 30 beef carcasses at the cutting lines in a commercial slaughterhouse, the Tubular-5 handle was used on the left and right leg alternating.

Results

The aerobic cell count was reduced by approx. 1.2 log cfu compared with the non steam vacuum sucked side.

Steam vacuum suction it thus an efficient tool for application at the end of the slaughter line as a CCP or at other critical positions such as hide removal or evisceration.

References:

Patent application WO2009/138083A1.

Larsen, H.D., Teilmann, J.P, Wahlgren, M. & Christensen, H. 2009. Hygienic effect on steam vacuuming lamb and cattle carcasses in a Norwegian slaughterhouse. Fleischwirtschaft International 1/2009, 77-82.

Vitenskabskomiteen for mattryghett <http://www.vkm.no/dav/ce5be76078.pdf>.

Acknowledgement:

Funded by: The Danish Livestock and Meat Board