

Automatic equipment for handling the bung in the lamb slaughter process

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Project Description

An automatic unit that handles the bung after bung dropping has been developed and is in use at pig slaughterhouses in Denmark.

The unit grabs the bung in the pelvic duct, wraps it in the mesentery and leaves it in the abdominal cavity. The unit can be used before or after opening of the midline. The primary objective for using the unit is that it reduces the risk of faecal contamination normally connected to manual handling of the bung after bung dropping. Furthermore, the “bagging” of the bung in the mesentery effectively prevents spillage from the bung during removal of the intestines. The equipment is mechanically fairly simple, and it should be possible to modify it for use on slaughter lines for lambs, if the need is there, and benefits can be realized.

The objectives of the project are:

- Evaluate the benefits of adapting the existing pork bung handling equipment to slaughter lines for lamb under conventional Australasian lamb processing operations.
- Evaluate if the equipment can be modified for use on slaughter lines for lamb and the necessary steps and costs associated.
- Propose a plan and steps for adapting, installing and documenting one lamb bung handling unit on an Australasian lamb slaughter line, including modification for the process.

The analysis were based on information from technical reviews of a number of Australasian slaughter facilities willing to share the necessary information. The visits were carried out by personnel from DMRI and Milmeq. The output from this first project step was an evaluation of how the equipment might be adapted and deployed for a lamb slaughter operation, and the benefits in hygiene and operational efficiency that might accrue from any change or order of slaughter operations. As part of this evaluation, any modifications or alterations to the equipment to adapt it to ovine processing were identified.

Project Content

In Australia, four lamb plants were visited in order to evaluate if the automatic bung handling



equipment could be modified for typical lamb slaughter lines. Comprehensive data and information from the four visits were obtained and subsequently evaluated.

Manual trials conducted at the abattoirs indicated that the core principle used in pork slaughter lines could be transferred to lamb slaughter lines, with minor adjustments. The optimal location of the equipment to operate was identified to be after the carcasses are shackled in the hind legs, and where the bung is cut partially free but still remaining in its natural position. This position is preferable based on the positioning of the carcass, the optimal process and the space required for the equipment. Furthermore, it was validated that the anal cavity of lamb is generally larger compared to e.g. pigs, which are presently handled by the automatic bung handling equipment. This should allow for applying a similar process in an adapted lamb equipment. It was concluded that it is possible to modify the automatic equipment to handle the bung in an Australian lamb slaughter line benefitting both efficiency and slaughter hygiene quality.

Furthermore, initial analysis of the cost benefit of using the automatic bung handling equipment indicate an interesting pay back scenario, naturally depending on local conditions and assumptions. For a typically large processor the simple pay back time is estimated to be in a range of 6-9 month.

A Full Research Proposal has been submitted to AMPC for a step 2 to build, install, and fine-tune performance inclusive of comprehensive validation of both hygienic and technical performance on an Australian Lamb processor site.

Project Outcome

Based on comprehensive data and information from the four visits, it is concluded, that it is possible to modify the automated equipment to handle the bung in an Australian lamb slaughter line. DMRI were convinced that a modified equipment can handle approx. 99% of the variability in size of the carcasses. The value propositions of implementing the modified bung handling equipment were analysed.

Adaptation of the equipment for lamb slaughtering will require adjustments on the line but it is the perception that the cost benefit analysis are indicative for what is generally processed at Australian lamb abattoirs and for a typically large processor the realistic simple payback time is estimated to be in a range of 6-9 month. This is very positive given the benefits that could be generated from adapting the equipment.

Benefit for Industry

The results obtained in this project verifies that it is possible to modify the automated equipment to handle the bung in an Australian lamb slaughter line. The installation of the automated bung handling equipment will benefit the Australian lamb processing sector as an enabling tool to decrease the fecal matter and microbial number on carcasses and improve the hygienic standard on the whole processing line. It is considered that the “automatic procedure” not only brings the benefits of automating a unit operation, but will also generate significant improvements in the slaughter hygiene quality.

The automatic bung handling equipment will help maintaining process control and also function as a marketing tool that could be useful for obtaining and maintaining market access and finally ensure compliance with national food authorities’ and customers’ requirements.

USEFUL RESOURCES

DMRI website video clip. Available from: <https://www.dti.dk/specialists/automatic-handling-of-the-bung/35305>

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