



final report

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Neck vac san trial

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Abstract

This trial has been conducted to determine whether a steam treatment of the neck area in small stock carcasses is an acceptable alternative to the current procedure of tipping this area. If the steam treatment process was to prove successful the benefit to the industry would be an increase in yield due to the fact that the tip of the neck was not being discarded.

Unfortunately at this point in time the steam process did not provide equivalent bacteria count results to that achieved by tipping the neck. It is felt that further development of the steam treatment tool is required for this procedure to be successful.

Executive summary

Trials were conducted at Peel Valley Exporters processing plant, on 10 November 2009, to validate an alternate small stock carcasses dressing technique identified by Machinery Automation & Robotics Pty Ltd. The alternative technique aims to eliminate the yield loss associated with neck tipping by applying a steam treatment to this potentially contaminated area.

Both the Export Control (Meat and Meat Products) Orders 2005 and the Australian Standard (AS 4696:2007) allows for alternative processing procedures provided that a validated equivalent outcome to existing procedures can be scientifically demonstrated.

During these trials Food Safety Services (S.A.) Pty Ltd and MAR sampled 90 carcasses, 30 from each of the following:

- non-tipped necks
- conventionally tipped necks
- steam treated necks

for microbiological testing at a NATA registered laboratory.

The data from this testing is the basis of the validation of the novel steam treatment technique. Based on this data, equivalence cannot be claimed between the proposed steam sanitization technique and the current tipping technique.

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1 Background

Regulations relating to standard carcass dressing techniques require that wherever a bone or carcass joint is cut by severing through the pelt or hide, the exposed bone must be re-tipped to remove any microbiological contamination that may have occurred during the original cut or the subsequent pelt or hide removal.

This re-tipping process is required where necks are initially cut through the pelt and which is the focus of this proposed trial.

This re-tipping obviously results in lost carcass yield to the processor. The removed tip is sent to rendering, where it has minimal value compared to its value when part of the carcass.

Machinery Automation & Robotics Pty Ltd (MAR) has identified an opportunity to eliminate the yield loss associated with neck tipping by applying a steam treatment to the potentially contaminated area. Steam treatment to remove microbial contamination is a standard practice in the Australian meat processing industry with systems such as Sani Vac steam treating pelt and hide opening lines as sites of maximum risk.

Both the Export Control (Meat & Meat Product) Orders and the Australian Standard allows for alternative processing procedures provided that a validated equivalent outcome to existing required procedures can be scientifically demonstrated.

If trials prove successful the process could replace existing manual 2nd neck cutting/tipping and allow for future automation of this process.

Following discussions with industry representatives from Peel Valley, Burrangong Meat, AQIS and Food Safety Services (FSS), MAR propose to arrange and facilitate and independently carry out validation on small stock carcasses that have been subjected to modified neck processing procedures including elimination of tipping.

2 Project Objectives

The objectives of the project are as follows:

- Prepare a detailed trial protocol for approval by AQIS with receipt in writing required prior to the trials GO/NO
- Design, build and setup suitable shrouded neck vac san tool to make ready for trial
- Site preparation on-site trials sampling & micro testing including AQIS approval of trial protocol
- Perform a series of on-site trials including sampling & micro testing for independent evaluation and microbiological based validation of alternate processing procedures.
- Collate and analyse all data and prepare a formal report.
- Prepare a draft SOP for the proposed alternate process, based on the outcomes of the trial
- Document and video the trials

3 Methodology

In preparation for the trials, MAR will:

- Design and build a suitable shrouded neck vac san tool to be fitted with adequate steam supply and to a vacuum system at Peel Valley Exporters plant in Tamworth NSW.
- Conduct on-site arrangements at Peel Valley in preparation for the trials.
- Setup equipment to ensure proper operations prior to conducting trials.

With the assistance of PVE staff, MAR and Food Safety Services will carry out the following activities:

- Prepare a detailed trial protocol for approval by AQIS prior to the trials.
- Submission of trial protocol to AQIS and receipt of trial approval
- Perform sampling of 3 small stock carcass groups. It is proposed that these groups represent different processing techniques:
 - 30 off **Untipped necks** – baseline for demonstration of process effectiveness
 - 30 off **Tipped necks** – currently approved process
 - 30 off **Steamed necks** – novel process.
- Provide all materials for microbiological sampling and testing.
- To maintain independence from site laboratory activities this will be sub-contracted to Symbio Alliance Laboratories, Brisbane.
- Collate and analyse all data and prepare a formal report. This report will compare the microbiological outcomes of the novel process against (a) the current accepted practice of tipping, (b) untipped product and (c) Australian Meat Industry baseline data for sheep carcass microbial quality.
- Prepare a draft SOP for the proposed alternate process, based on the outcomes of the trial, defining the critical process limits. The SOP will be in a format compatible with the Company's MSQA documentation.

MAR will utilise the independent services of Food Safety Services (SA) for the following reasons:

- Food Safety Services have a proven track record over almost 12 years service to the Australian meat industry as providers of reliable technical consulting services.
- Chris Sentance, the Principal Consultant, who will be conducting the tests, has over 35 years experience in the meat industry covering slaughtering, boning, smallgoods, canning, rendering and pet food. Chris's experience covers research and development, quality assurance and technical management, production management and company management.
- Chris & FSS are recognised by AQIS as reliable and competent independent consultants in the microbiological based validation of alternate processing procedures.

4 Results and Discussion

The shrouded neck vac san tool manufactured by MAR is shown in Figure 1 below.



Figure 1

This tool was connected to the Rear Sani Vac steam and vacuum systems on site. The steam supply was regulated up from what is normally used for Vac San operation for the purposes of this trial.

The Process Validation Report is shown in the Appendix and includes the trial protocol approved by Peel Valley QA and AQIS representative. The trials onsite were conducted in accordance with this protocol.

The Addendum from Food Safety Services is shown in Appendix 2

5 Success in Achieving Objectives

As can be determined from the independent report in Appendix 1, the steam treatment technique of sanitising the neck area in small stock carcasses is not an acceptable alternative to Neck Tipping at this point in time. Due to this result it is not appropriate to develop a SOP for this process at this point in time.

6 Impact on Meat and Livestock Industry – now & in five years time

As discussed above steam sanitising of the neck area is currently not an acceptable option when compared to the existing Neck Tipping procedure. However it is felt that with further testing and development of the tool particularly in the area steam jet direction, positioning and pressure that this alternative may become a viable option. It was noted however that care would need to be taken to ensure that the neck meat was not 'cooked' during the process.

7 Conclusions and Recommendations

This project has been conducted in conjunction with P.PSH.0480 Peel Valley Front Hock Cut, Hind Hock and Neck Tipping project to determine whether this steam sanitisation of the neck area process could be used to replace the proposed robotic neck tipping process. It is concluded from the trials conducted and the independent report presented that the steam sanitising process is not a viable option and that the neck tipping process should be used for the Peel Valley project.