



# final report

Project code: P.PIP.0165, P.PIP.0142  
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Date submitted: August 2008

PUBLISHED BY  
Meat & Livestock Australia Limited  
Locked Bag 991  
NORTH SYDNEY NSW 2059

## Modifications to stimulation electrodes to suit single leg suspension in sheep (Lobethal Abattoir)

This is an MLA Donor Company funded project.

Meat & Livestock Australia acknowledges the matching funds provided by the Australian Government and contributions from the Australian Meat Processor Corporation to support the research and development detailed in this publication.

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## **Executive summary**

There is currently no way of electrically stimulating sheep hanging on one leg in the bleed area for plants without room for stimulation post dressing and hanging on one leg pre dressing, stimulation is not possible.

MLA have developed a new generation of meat electronics and one component, the Electrical Stimulation system for sheep is being installed widely because of the improvement it offers in improved eating quality. However, many plants could not install the technology because they do not have sufficient room after dressing to install the electrodes. An alternate electrode system (transverse leg) has recently been developed which applies the stimulation energy to the carcass in the bleed area before dressing. Most plants have room in this area to install the electrodes however this electrode arrangement will only work if the carcass is suspended by both hind legs. There are still many plants which do not have room for post dressing electrodes and also suspend the carcass by one leg in the bleed area. These plants currently have no viable electrical stimulation option.

This project was approved in 2005 for the Devonport Meat Works, however, this plant was subsequently sold and the new owners did not want to proceed with the project. Since that time MLA have been looking for another plant in which to attempt the Research and Development.

Majority of large sheep plants (estimated 70%) are now using the new MLA electronics and this is giving these plants a market advantage. This technology will enable the remaining plants to compete equally.

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## Background

MLA have developed a new generation of meat electronics and one component, the Electrical Stimulation system for sheep is being installed widely because of the improvement it offers in improved eating quality. However, many plants could not install the technology because they do not have sufficient room after dressing to install the electrodes. An alternate electrode system (transverse leg) has recently been developed which applies the stimulation energy to the carcass in the bleed area before dressing. Most plants have room in this area to install the electrodes however this electrode arrangement will only work if the carcass is suspended by both hind legs. There are still many plants which do not have room for post dressing electrodes and also suspend the carcass by one leg in the bleed area. These plants currently have no viable electrical stimulation option.

With knowledge gained from recent developments in wool-on sheep immobilisation an electrode system has been developed which works on sheep carcasses suspended by one leg in the bleed area (T&R Loebethal, PIP.142 completed). This method used multiple blade electrodes positioned on either side of the carcass to reduce the twisting of the carcass (twisting has been the obstacle to blade electrodes in the past). This previous project has been 90% successful but the plant and MLA believe some reengineering and the development of a deflector plate will improve the success rate to over 95%. This project aims to increase the successful stimulation percentage with the developments described above.

This project was approved in 2005 for the Devonport Meat Works, however, this plant was subsequently sold and the new owners did not want to proceed with the project. Since that time MLA have been looking for another plant in which to attempt the Research and Development.

## Project Outline

The following are the milestones:

<b>Milestones</b>
1. Realcold, as MLA's contracted commercialiser for Meat Electronics, will design, install and commission the electrode modifications under supervision from the Lobethal works. Electrode modifications installed and adjusted for good carcass contact.  Installation to be reviewed and approved by MLA.
2. Realcold, as MLA's contracted commercialiser for Meat Electronics will adjust and test the modified design to confirm improved contact success rate and efficient transport of the carcasses through the electrodes.  Review to be conducted by MLA.

## Project Objectives

The objectives of the project are:

- Modify a through wool electrode system in the bleed area to more consistently maintain a contact impedance between two sets of electrodes of less than 1000 ohms.
- Confirm electrode modifications do not adversely affect the transport of carcasses along the chain conveyor.

## Experimental

### Milestone 1:

Realcold, as MLA's contracted commercialiser for Meat Electronics, will design, install and commission the electrode modifications under supervision from the Lobethal works.

Electrode modifications installed and adjusted for good carcass contact.

### Milestone 2:

Realcold, as MLA's contracted commercialiser for Meat Electronics will adjust and test the modified design to confirm improved contact success rate and efficient transport of the carcasses through the electrodes.

## Conclusion

At the completion of the Project, Loebethal completed the following:

- Installed electrodes.
- Installed electronics.
- Tested total assembly for consistency and maximum contact resistance.
- Performed pH/Temp profiles on sample product.

## Recommendations / Commercial

Knowledge gained will be transferred to the MLA commercialiser for Meat Electronics, RealCold Milmech. Existing MLA commercialiser Realcold Milmech will use this knowledge.

## Appendix 1 – Suite of sheepmeat electronics



### Sheepmeat electronics available now

