

# final report

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## **ALC X-Ray Middle (with Primal) integrated automated lamb system**

This is an MLA Donor Company funded project.

Meat & Livestock Australia and the MLA Donor Company acknowledge the matching funds provided by the Australian Government to support the research and development detailed in this publication

## **Abstract**

Scott Technology have successfully installed a fully integrated lamb automation system comprising of an x-ray, primal and middle process at ALC Sunshine. The middle system formed part of this project and was supported by a previous R&D project that installed the x-ray primal components. A post installation cost benefit analysis by Greenleaf enterprises valued the R&D at \$2.93 per head net benefit.

### **Executive summary**

Scott Technology, ALC and MLA have successfully installed and refined a fully integrated lamb x-ray primal middle system at ALC's Sunshine processing facility that is exceeding all pre-install predicted benefits as ascertained by independent evaluation by Greenleaf enterprises.

Under this project (along with a previous x-ray primal installation) ALC further developed and installed an x-ray enabled middle system as an R&D project. Scott Technology had to modify the existing x-ray and primal systems to prepare the middles and ensure the required x-ray data for the middle system to operate has the required data integrity, via remaining in full control of the carcass and resulting middle system, for further processing by the middle system.

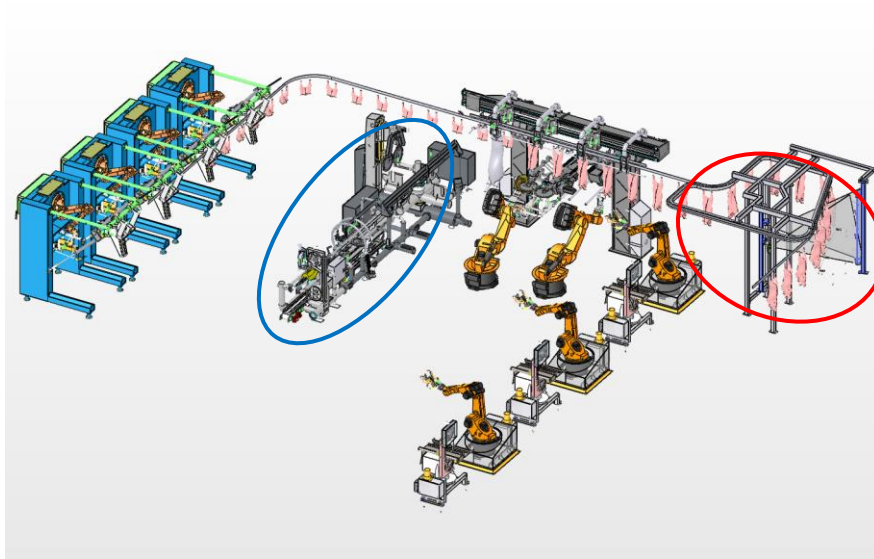
In addition, due to the room limitations at ALC and the orientation of the original x-ray primal, Scott also had to modify the standard middle machine design and primal to middle machine integration device. These modifications resulted in a two carriage linear integration device (compared with the standard rotary integration device) and a six position middle machine carousel, compared with a standard four position carousel.

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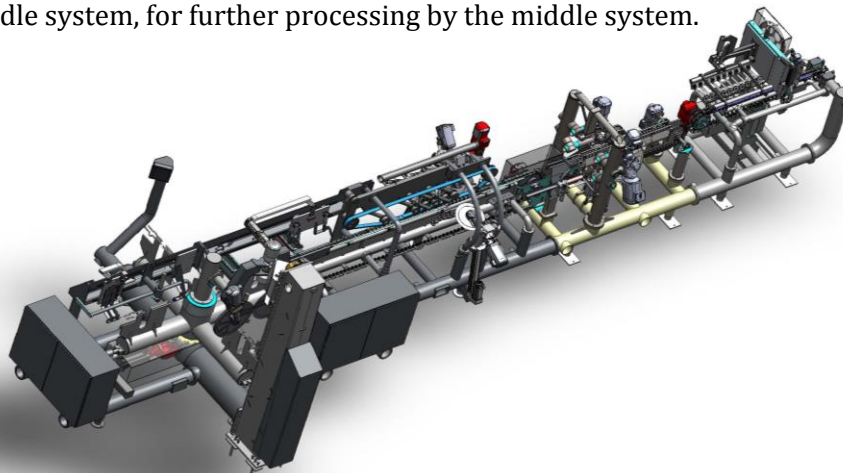
## 1 Background

For the past ten years Scott Technology (within its joint venture company Robotic Technologies Ltd) and supported by MLA, AMPC and various Australian processors has been developing their vision of a fully automated bone-in lamb boning system that removes operators from bandsaw interaction, provides uniform boning room production speed and significantly increases yield. The vision is depicted in Figure 1.



**Figure 1: Boning Room Vision (fully automated room)**

Under this project (along with a previous x-ray primal installation) ALC further developed and installed an x-ray enabled middle system as an R&D project. Scott Technology had to modify the existing x-ray and primal systems to prepare the middles and ensure the required x-ray data for the middle system to operate has the required data integrity, via remaining in full control of the carcass and resulting middle system, for further processing by the middle system.



**Figure 2: Middle System**

## **2 Project objectives**

### **2.1 Fully Automated X-Ray Lamb Middle System**

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The project objectives were to:

1. Successfully install and have operational a fully automated middle machine processing 10 carcasses per minute,
2. Undertaken an industry open day, and
3. Develop a post installation cost benefit analysis and dissemination video and report.

## **3 Methodology**

### **3.1 Customer Specification, Design, Manufacture and Installation**

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The customer specification process, design, build and installation components of the project were relatively uneventful considering the size of the investment.

To manage the risk of such a large development project it was decided to install the X-ray (and associated primal system) modifications and the middle under two separate phases.

### **3.2 Product Commissioning and System Acceptance**

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The middle machine installation commence early February 2014. It was not until late August 2014 that the entire system was deemed acceptable to Scott, although the customer took production acceptance in April 2014.

## 4 Results and Discussion

The system is now operational and acceptable to all parties with recent Greenleaf CBA determining that better than predicted benefits have been realised.

**Table 2: Summary of ex-ante and ex-post benefits relative to manual cutting performance over two shifts**


SUMMARY PERFORMANCE MEASURES		
	Ex-ante	Ex-post
Hd / annum	1,796,640	1,796,640
Production increase with equipment	8.33%	8.33%
	Avg.	Avg.
Capital cost (pmt option, upfront)	\$2,100,000	\$2,100,000
Gross return Per head	\$1.83	\$3.43
Total costs Per head	\$1.26	\$1.22
Net Benefit Per head	\$0.57	\$2.22
Annual Net Benefit (Incl. capital cost)	\$1,028,284	\$3,983,538
Annual Net Benefit (Excl. capital cost)	\$3,128,284	\$6,000,159
Pay back (years)	0.67	0.35
Net Present Value of investment	\$21,042,992	\$41,213,839

## 5 Moving forward

Utilising the Greenleaf CBA, and ALC (and JBS) as reference sites, Scott will continue to market the x-ray primal middle suite of offerings to the Australian processing sector.

## 6 Appendices

### Appendix A - X-ray (and Primal) sign off.



**PROJECT DETAILS**

Scott Project No. ....238  
Scott Project Name .....ALC Integrated Middle System  
Customer .....Australian Lamb Company (ALC)  
Contract Name .....Quotation ALC 120705, Middle System, Rev.2

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**"Try Before You Buy" Start** *Steve Munn*  
*APRIL 16<sup>th</sup> 2014*

This document certifies the machine referred to above has reached the stage of "try before you buy" start, as of Wednesday, ~~March 19<sup>th</sup>, 2014~~. It has been agreed that the TBYP period will be 11 months from this date - this is a variation from the original contract as agreed by Darren Verrall after he requested delaying the installation to coincide with the ALC Christmas shutdown.

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**1. Try before you buy – Final payment**

- Final payment for the machine will be ~~March 19<sup>th</sup>, 2015.~~ *APRIL 16<sup>th</sup> 2015.* *Steve Munn*

**Signature:**

*Steve Munn*  
\_\_\_\_\_  
On Behalf of ALC

*16/4/14.*  
\_\_\_\_\_  
Date

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