SNAPSHOT

LAMB AITCHING MANUAL ASSIST

Project Report Reference: 2014-1055 **Date: 8th December 2016**

Project Description
Scott shall utilize its technology and intellectual property from the Leap II hindquarter boning robot along with lessons learnt in the manual-assist Beef Boning Unit to develop a manual assist device for lamb hindquarter boning. The intention of the device is to allow the boner freedom to concentrate on boning technique in the most ergonomic manner in order to reduce RSI-type injuries and promote increased yield.

Project Content
Hindquarter boning is one of the most difficult tasks in lamb boning. A high skill level is required, as well as a reasonable level of strength. The task therefore has the potential to create significant RSI or strain injuries, in particular for under-skilled workers. Furthermore the work set-up is typically designed for best pulling action, which potentially therefore compromises the ergonomics of the cutting task.

The objectives of this project are to:

1. Design and develop a method and device for tensioning lamb hindquarter legs apart to enable manual boning.
2. Configure the device in such a way as to enable the most ergonomic position for manual boning.
3. Develop a control method for the device which allows the boner to control the amount of tension applied at any given time while continuing with the boning task.
4. Incorporate any required safety systems to ensure the device can be used in production without exposing the operator to harm.

Project Outcome
With the engagement of AMPC, and its member's guidelines were developed to suit Australian product. The design and build of the Lamb Aitch Bone Manual Assist device was carried out in Scott's office in Christchurch NZ and the device was then shipped to Australia for trials.

The Head Teacher from the Meat and Allied Trades Department of Granville TAFE was engaged to conduct trials and provide feedback before trialing the device in a processing plant. Following his feedback a number of modifications were made mechanically and pneumatically to improve the usability and effectiveness of the device. The device was then sent to member site for trials.

Feedback from the site was that the device successfully alleviated most of the strenuous activities associated with manual aitch boning. However, it was found that the device clamp and arms are limiting access to and mobility of the product, thereby making it more difficult for the operator/boner to conduct the cuts accurately and in a timely manner. Moreover, the throughput rate on the device was measured at approximately 60 seconds per hindquarter, this is more than twice the processing time observed for the manual process (at less than 30 seconds).

Further improvements to the device we discussed and these would potentially have the effect of assisting the operator to more easily access all parts of the product, reduce strain and improve the quality of cuts. However, in its current configuration it is unlikely that the device will be able to achieve throughput rates that match or exceed the existing manual process and modification would most likely require a complete rebuild of the system.
It is therefore recommended that this project be closed at this point with the learnings gained from these processing trials applied to the development of a new, more flexible, easier to use and faster manual assist device.