Beef Anti-Sway

Beef Anti-Sway Concept and Trial Study

Project Code	Prepared by		Date Submitted
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Project Description

There are many barriers to adoption of new technologies within the red meat industry, including changes of processes and risk associated with all new technologies. In addition to this, a major barrier is the return on investment (ROI) of a system. One way that the return on investment can be improved for a system that recoups capital expenditure via yield gains, is through increasing the throughput of the system, allowing for the yield gain to multiply more rapidly. As a result, increasing speed of beef side indexing is a possible way to increase adoption of technologies, by reducing an automated system's ROI, and footprint. Throughout this project, multiple beef index control concepts and methodologies were developed, tested and analysed to understand the applicability of such methods to meat processing.

Project Content

This project was undertaken with a few main steps.

- ◆ Develop a concept to enable high-speed movement of beef carcases while controlling swing.
- ◆ Develop a trial setup for the concept.
- ◆ Perform initial factory trials using an appropriate analogue for a beef carcase.
- ◆ Install trial assembly at a processor site and perform multiple trials with actual beef sides.
- ◆ Analyse results for index speed and technology feasibility.

These steps were undertaken and completed, with on-site trials being performed at an Australian red meat processing facility.

Project Outcome

Throughout this project, a range of different variables were changed and analysed in order to identify the best index method. These variables included:

- ◆ Index methods
- ◆ Motion control algorithms
- ◆ Carcase orientations
- ◆ Carcase sizes
- ◆ Differing start conditions for carcases and the system setup

Through the trialling and analysis, the best index method was identified. However, due to its design, there are only a small number of meat industry processes which make this ideal arrangement feasible. The best indexing method allowing for a wider range of use-cases was also identified, including a development pathway for what it may look like for a commercial system and how the concept could be further developed.

Based on the results achieved, it is evident that this method of beef side indexing can be used for a range of possible automated solutions within meat processing plants, due to the quicker index time relative to older systems, where the index movement had to be slow to ensure carcase stability. This method would certainly decrease the ROI required, enabling easier adoption of technologies within industry.

Benefit for Industry

The results of this project indicate that the index times are significantly reduced when using a range of different motion control technologies. The index time for the motion algorithms were compared with index times without algorithms, which showed a dramatic increase of possible throughput due to the addition of such technologies to an

indexing automated system. By the introduction of advanced motion control technologies for beef side indexing, throughput can be significantly increased and the ROI for automated systems can be further reduced for easier adoption and a reduction of risk for a range of different machinery that require and indexing approach.

The next step is to develop a use case for index control indexing of beef sides into an automated machine, using one of the methods of indexing presented to further cement the use of this technology in industry. This, in turn, enables analysis on ROI differences due to the addition of this technology.