Snapshot Report

Hot Beef Cutting

Hot Beef Cutting Trial Study

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Project Description

The automation of beef scribing is a significant target area for the red meat industry. While there is a significant amount of previous work investigating the factors relating to performing these cuts on cold carcases, the considerations required for a hot automated beef scribing system, operating on unchilled, pre-rigor carcases, has not been investigated. This project sought to understand how hot carcases react while spine scribes are applied to the carcase, and to perform a preliminary exploration of the stabilisation requirements for performing the cuts, as well as whether the carcase moves in between cuts.

Project Content

This project was undertaken with a few main steps.

- Design conceptualisation of trial assembly to allow for assessment of hot beef carcase movement during and after placement of cuts.
- Design and build a trial setup to support hot beef carcase sides and allow an operator to place desired scribe lines.
- Selection and procurement of sensing equipment and mounting hardware to enable motion to be observed and measured.
- Organise trial at a processor site ensuring they are running hot beef carcase sides through the system. Report on results and learning.
- Analyse results for carcase movement after each cut using the different configurations.

These steps were undertaken and completed, performing on-site trials.

Figure 1- Trial Rig Design and Subsequent Assembly

Project Outcome

During the trials, the carcases were cut in different stabilisation configurations. Carcase movement experienced during, as well as in between, cuts was recorded and analysed. Based on these results the optimal backing board configuration was determined to ensure adequate carcase stability both during, and after, each cut.

Benefit for Industry

The main purpose of these trials was to help us understand how ROI can be improved by increasing the consistency and accuracy during scribe cut operations on a hot carcase, thus allowing yield to generate more value for processors in the industry. There were a few key take-aways from the trials conducted relating to cutting hot carcases: -

- The magnitude of carcase movement between and during cuts and whether the calculated cut positions needed to be adjusted between cuts.
- Requirements for support surface to ensure sufficient stability.
- Optimal support angle required to adequately support the carcase during cutting.
- Cut technique has a large impact on the carcase movement/stability during and after a cut cycle.

The next step is to transfer these learnings to an automated robotic cutting application which can perform these scribing cuts accurately by ensuring the carcase is sufficiently supported between each of the spine cuts.