

PROJECT TITLE

Robotic Removal of Button Bone and Flat Bone after Striploin Chine Bone Removal
– Stage 1 Practical Feasibility

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The current practice of removal of cutting out button and flat bones from a striploin beef primal piece requires manual effort and separation using a powered cutter as well as sharp knives. For the usual reasons of safety, efficiency and potential yield improvement, automating the practice is desired. A low-cost solution would provide an important contribution to the Australian beef sector. An important requirement by the industry.

The research has examined the feasibility of automating the manual task of button bone and flat bone removal from a beef striploin primal piece. The boning practices under consideration involve the use of a powered rotary wizard cutter for button bone removal and a standard butcher's knife to separate the flat bones.

Project Content

The project has included the following:

- Fixation solution and sensing options,
- Cutting tool options and their design for effective integration,
- First integrated experimental system.

Project Outcome

Video recordings of the task have been analysed and the variability of the striploins have been assessed. The approach to automation has considered methods of fixation and sensing to identify the profile of the bones of interest. The feasibility for sensing using low cost imaging and laser range sensing for robot guidance to perform separation of the button and flat bones has been reached and practically demonstrated using a unique robotic system. Sensory data, including force, imaging and range, as well as physical integration of all components with a cutting a tool has been achieved and practically tested on an experimental basis to assess feasibility, which has been reached.

The feasibility effort and the project as a whole have reached positive outcomes, establishing



the automation of the boning processors under consideration to become practical. Figure 1 presents the integrated set up for a first experimental system developed by BMC UK (bmcdevon@aol.com) under this AMPC funded project, which is a first of its kind.

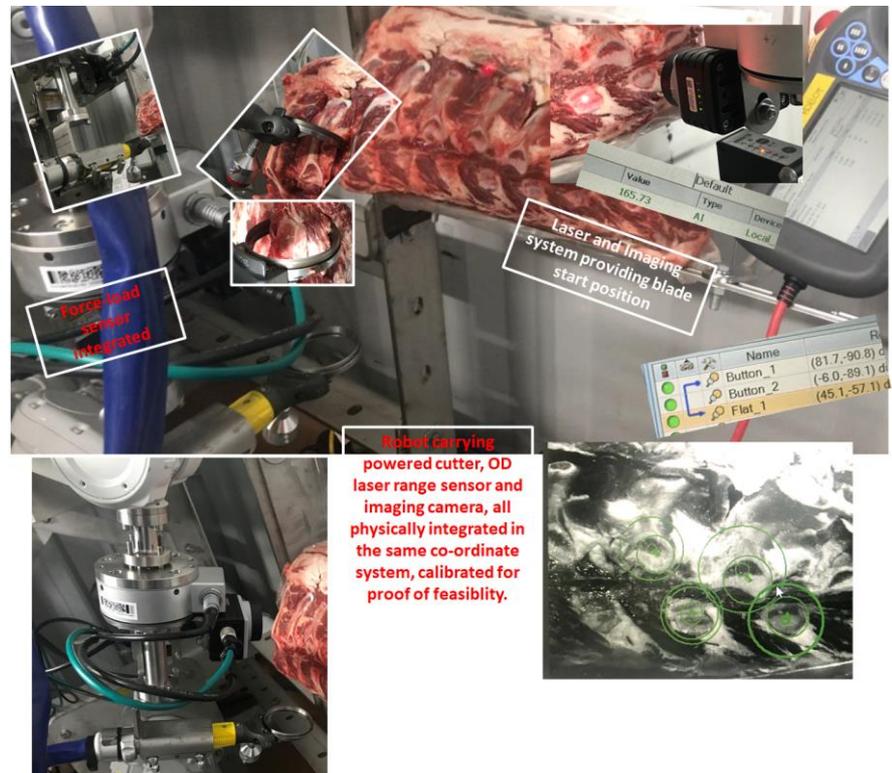


Figure 1: Stage 1 outcome for striploin button bone and flat bone removal as a first integration.

BMC would like to thank the following for their important contribution to this project:

- JBS Australia, Beef City,
- ABB Robotics Australia,
- University of Southern Queensland, Centre for Agricultural Engineering.

Benefit for Industry and recommendations

The benefits for the industry are envisaged efficiency and safety as well as improved yield, which remains to be evaluated after this feasibility of the solution as an integrated system.