Snapshot Report

Carton Handling and Storage Best Practice Guide for Small-Medium Smallstock Processors

For the Australian Meat Processing Industry

Project Code
2021-1276

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Project Description

This Best Practice Guide provides and overview of current solutions and the latest technology available in the world in order to assist small-to-medium-size facilities processing 456 to 3,420 carcasses per day to achieve best in class performance. Many of these solutions are inspired by industry. In numerous cases organisations have overcome issues common to many, and in other cases, this Guide has identified cost effective solutions that could be implemented industry wide to overcome more universal issues.

Some of these universal issues shared across the industry include labour shortage, lifting and repetitive strain injuries, energy cost increases, labour cost increases, forklift interaction risks, carton handling issues and carton & pallet presentation issues.

The guide does not only look into equipment to improve the plant, but also the social and environmental aspects of the workplace.

The guide also details gaps in the marketplace, where cost-effective solutions are currently not available or viable, to drive technology and innovation in these areas and further support the industry as a whole.

Project Content

The objectives of this guidebook is to:

- Education to AMPC processors and providers on what is best practice and how to achieve it, and
- Documentation of possible training, software and technology solutions applicable now and in the future.

The project is phased in 2 stages:

Stage 1 – Site Studies and Data Gathering

- Work with a range of small to medium Smallstock processors within Australia,
- Review current site operations, activities and storage methods on site and over teams meetings,
- Brief and manage site investigations including product survey's and process equipment capacity and time studies.

Stage 2 – Completion of Technology and Options Analysis

- Evaluate, compare, and interpret data collected from small to medium Smallstock processors within Australia,
- Grade all issues in terms of severity and consequence,
- Determine applicable technology and methods that can mitigate common issues,
- Evaluate solution with existing practices and feasibility,
- Procure estimated costing for solution.

In the engagement of stage 1, 8 sites participated in the study and site evaluation of this project. The findings from these sites had allowed to draw common points and issues faced by every site while also allowing the project to evaluate distinguishable sites with great practices in place. Data collected for this project is greatly supported by these sites:

- M.C. Herd VIC
- Tallangatta Meat Processors VIC
- McPhee's Export Meats Pty Ltd VIC
- Gathercole's VIC
- Wagstaff VIC
- L&G Meats VIC
- Hillside Meats WA

- Dardanup Butchery Company WA

Data captured from the sites are evaluated to identify common and problematic themes of the industry, establish a KPI of efficiency by comparing the sites' current practices and performances, and determining expectations of future practices and appetite for growth to determine appropriate solutions for the industry.

Solutions are formulated based on the relevant issues of the industry. Each solution goes into details on the issues that it achieves to mitigate, functions, variety of solution, current trends and development, substitution reasoning for replacement of current solution/technology, benefitting parties, limitations and challenges, and a general approximation of payback.

The solutions are also graded based on the effectivity of each solution against each issue to assess the effectiveness of the solution to a plant on a high level overview. Each solution is assigned to a safety hierarchy of control that assesses the reliability of how the risk that each solution can effectively control.

Project Outcome

The study was able to determine the predominant issues that are shared across the industry.

CHART 1 – SAFETY AND OPERATIONAL CONCERNS AND THEMES FROM THE SITE STUDY AND DATA GATHERING PROCESS

Staff shortages, energy cost concerns, manual handling injuries, and slipping hazards are one of the highest safety and operational concerns for the industry.

Solutions were also evaluated and graded based on their general effectiveness for the plant. Each solution is measured on how effective it can mitigate each issue and the effectiveness grades on the respective issues are summed to make up the overall effectiveness of the solution.

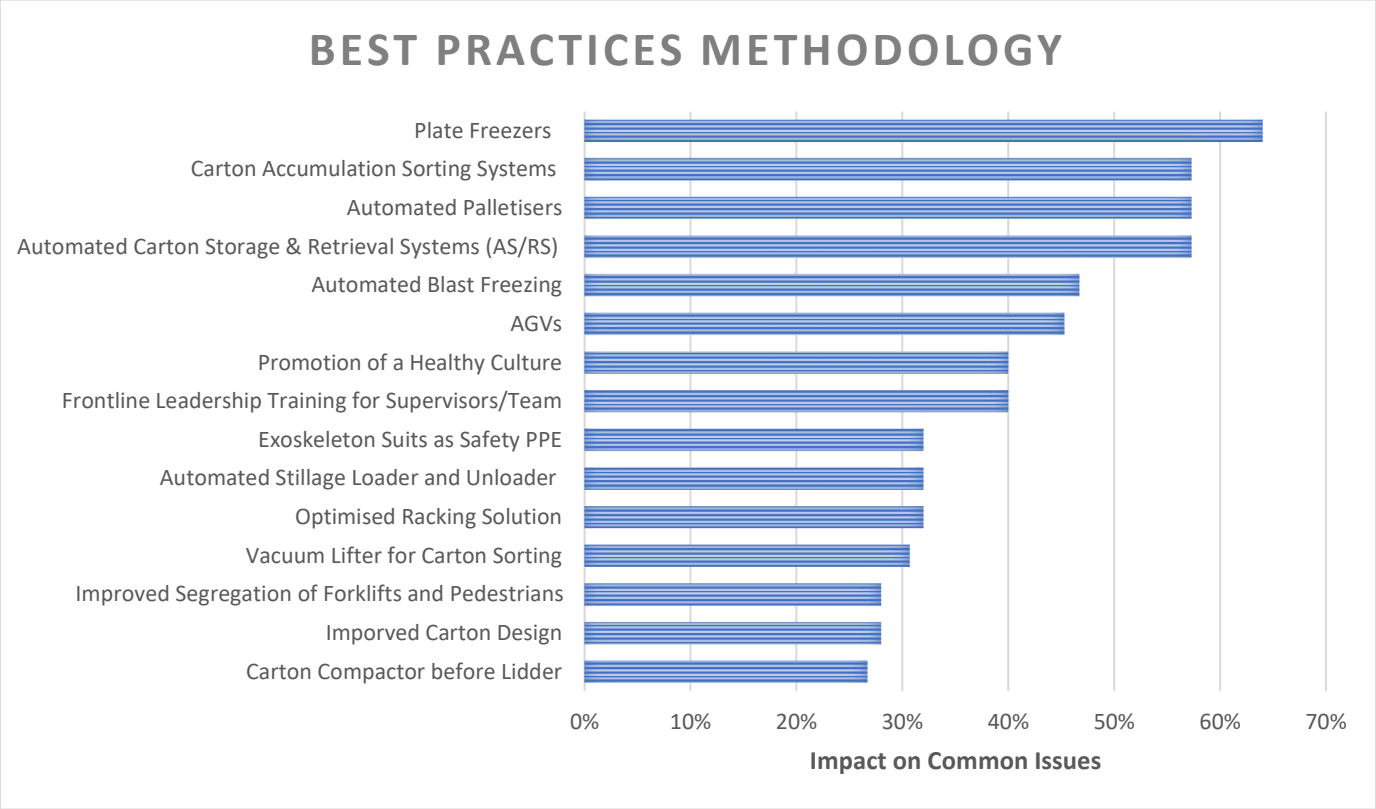

CHART 2 – RECOMMENDED TRAINING AND TECHNOLOGY SOLUTIONS

It is also important to note that this grading approach provides a high-level overview and only considers the relevant issues. The solutions must be assessed situationally as specific solutions may also tailor to specific plants better than others.

The guidebook also look into the potential Return of Investment. These are assessed on a high level basis and should only be used as references for indicative costings.

	Plate Freezers	Carton Compactor before Lidder	Carton Accumulation Sorting System with automated palletiser	Automated Stillage Loader and Unloader	AGVs	ASRS multi-shuttle with an automated palletiser
Capacity	2 cartons/min	15 cartons/min	5 cartons/min (up to 12 SKUs)	5 cartons/min	1 AGV (90m/min)	10 cartons/min
Simple Payback ROI (yrs)	**2 - 4**	**1 - 2**	**2 – 3.5**	**1 - 2**	**2.5 - 4**	**4 - 5**
Construction Costs	$300k to $500k	N/A	$140k to $300k	N/A	N/A	$500k to $800k
Equipment Costs	$850k to $1.2m	$200k to $300k	$ 1.1m to $1.6m	$320k to $560k	$330k to $520k	$2.2m to $2.9m
Labour Savings	$180k to $450k	$90k to $180k	$360k to $640k	$180k to $450k	$90k to $180k	$540k to $1.1m
Power Savings	$20k to $30k	N/A	N/A	N/A	N/A	N/A
Reduction in offsite storage costs	$30k to $60k	N/A	N/A	N/A	N/A	N/A

TABLE 1 – NOMINAL SIMPLE PAYBACK AND INDICATIVE COSTING FOR TECHNOLOGY SOLUTIONS[1]

[1] Disclaimer: These are budget costs and estimates that in some instances exclude installation and building works. Furthermore, the capacity of your site might be more or less than the costs depicted above. Please refer to the guidebook for more details.

Benefit for Industry

The guidebook is a go-to document for all small to medium size smallstock abattoirs and boning facilities with the desire to optimise and improve their carton handling and storage practices. The guidebook details contemporary solutions and the latest technology available throughout the world that will help small to medium size facilities achieve best in class performance.

Useful resources

Slice, 2020. *Slice Products.* [Online]
Available at: https://blog.sliceproducts.com/safety-hierarchy-of-controls

Victoria, W., 2017. *WorkSafe Victoria.* [Online]
Available at: https://www.worksafe.vic.gov.au/resources/safe-operation-cold-storage-facilities-handbook-workplaces