

# MONASH INDUSTRY TEAM INITIATIVE (MITI)

## PRODUCT LOSSES THROUGH FOOD PREPARATION PROCESSES

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### INTRODUCTION

The frozen packing line is a crucial asset to Burra Foods. It produces a number of high-demand, high-profit products. Over the past year, a number of major changes have been made to the packing lines. These changes include improved automation and temperature control. Because of these changes, previous data on the packing line is outdated and a measure of the performance of the updated packing line is required.

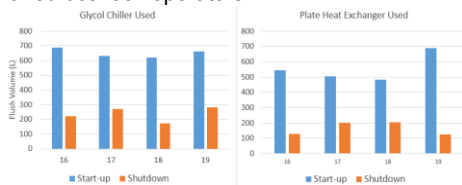
### PROJECT SCOPE

This project will investigate losses on the two frozen packing lines: Line 1 and Line 2. The Cream Treatment Unit (CTU) is within the scope, as it is an extension of Line 2. The focus of the investigation will be on the three main waste streams from the frozen packing lines, identified to be: losses to the drain; losses to the recovery tanks or rework/melt tank; and losses packaged as rework.

### PACKING LINE 1

#### FLUSH VOLUME INVESTIGATION

- Start-up and shutdown flush volumes varied depending on which cooling method was used, with average difference between the methods of 100 L.
- Flushing is a manual process, and so volumes varied between operators.



### PLANNED LOSSES

- Given the current process, this is unavoidable waste.
- Occurs during start-up and shutdown flushing of process lines.
- Losses to drain and recovery tanks

### PACKING LINE 2

#### START-UP & SHUTDOWN INVESTIGATION

- Start-up flush volume and composition is affected by time taken by operators to achieve in-spec product; as duration increases, product losses increase.
- Shutdown flush volume and composition varies less than start-up.

Operator	Average Start-up Duration
A	01:03:12
B	00:59:36
C	00:48:30
D	00:51:09
<b>Overall</b>	<b>00:55:57</b>

### PRODUCTION LOSSES

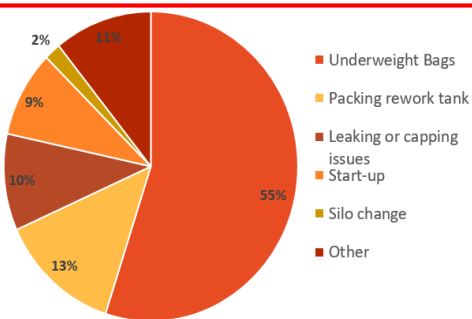
- Volume of waste varies greatly between different runs.
- Causes for waste also varies, with filler head and certain pumps identified to have reliability issues.
- Runs with a large amount of waste identified to have consistent but short stoppages.
- Average waste volumes varies depending on cooling method, with an average difference between the methods of 330 L.

### UNPLANNED LOSSES

- Occurs during production stage.
- Product lost to recovery tanks.
- Is typically product which meets specification.

### PRODUCTION LOSSES

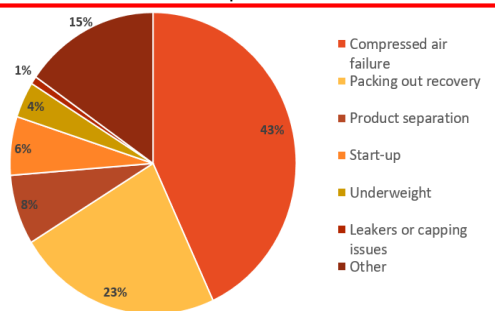
- CTU continuously manufactures product, which is immediately packed on Line 2.
- Waste volumes and causes for losses vary greatly from run to run.
- Average waste volumes vary depending on whether a buffer tank is used. Not using the tank results in 1100 L of more lost product, on average.
- Short and frequent stoppages were seen to increase the amount of waste produced.



- Underweight bags are product that meet specifications, but cannot be sold. A critical source of waste.
- Leaking is a significant and avoidable issue.

### PACKAGED LOSSES

- Losses include:
- Packaged product that is frozen and stored, and reprocessed at a future date.
  - Packaged bags that are emptied into recovery tanks, reprocessed more immediately.



- The compressed air failure rework was caused by a single event, resulting in great losses.
- Packing out recovery occurs when recovery tanks need to be empty.

### RECOMMENDATIONS

- Further automate flush process of Line 1 to improve consistency.
- Standardise operator behavior for Line 2 start-up procedure.
- Investigate the relationship between packing speed and packing reliability on Packing Line 1, in order to maximize profitability of the line.
- Investigate the regular use of the buffer tank for Line 2.
- Investigate and mitigate causes for underweight bags on Packing Line 1.