



### General Outcome

Arnotts Biscuits Limited has significantly reduced solid waste removal from its Marlestone site gaining real financial savings to the company.

Initiatives to reduce product variation and introduce leaner production led to extensive savings. Arnotts reduced waste from one biscuit making line by 61% (2006-2007) through efficient use of ingredients, processes and equipment providing annual savings up to \$250K each year on that line.

The company keeps waste disposal costs down further by enlisting local enterprises that see food waste and cardboard as resources.

### Background

The Campbells Arnotts Manufacturing Strategy (CAMS), implemented on the site, is primarily an educational approach aimed at reducing product variation and minimising wastage.

In November 2005, a team of 20 Arnotts' employees from one biscuit line went "off line" for two days to analyse their process in detail and workshop ways to reduce waste. The workshop undertook a 'root cause and effect analysis' and identified some low cost process improvements.

Implementation of the 5S program provided additional impetus. The 5S Framework requires every work group to Sort, Set in Order, Shine (clean/maintain etc) their equipment and Standardise and Sustain their work methods.

### **A team approach can identify big improvements and build ownership."**

Bill McArthur, CAMS Coordinator

### Project Activity

Local businesses were contacted to identify those interested in 'harvesting' food and cardboard waste from the manufacturer.

Activities associated with change over of types of biscuits were reassessed and streamlined.

Improvements aimed at reducing errors in early steps of the process reduced consequential wastage down the line.

Water efficiency, waste minimisation and recycling initiatives are constantly updated and communicated through team meetings and reinforced with visual tools such as colour coded bins and shadow boards for correct placement of tools.

The company has installed low-flow hand wash taps that halve water consumption. By August, further water efficiency initiatives will be installed including flow restrictors, sensors and changes to toilets that will result in an estimated savings of \$33,465.

Following an audit funded by Zero Waste SA under the Integrated Resource Efficiency Program, IREP, Arnotts plan to establish an education program for workers in resource efficiency, with particular focus on simple ways to reduce energy usage.



### Company Objectives

Continuously improve performance in all areas, eliminating waste wherever possible.

### Zero Waste Support

Funding and Expertise in Waste Management Review

### Identified Opportunities

- Waste
- Energy
- Water

### Annual Savings

Improvement workshop on one biscuit line

Resource savings \$250K

Waste reduction 61%

General waste disposal savings by recycling waste 75%

Anticipated Water Savings after water efficiency initiatives \$33.5K

### Investment

Training time per worker 5S 8 hrs

Waste Reduction Workshop 2 days

Process improvements to improve biscuit line \$12.5K

Planned Water Efficiency Cap Ex \$92.5K

### Benefits

- Significant cost savings
- Integration into current programs
- Enthusiastic staff involvement
- Meeting market expectations
- Improving market perceptions

### Waste Minimisation Initiatives

- Quality focus leading to reduced food waste
  - Reduction in resource input
  - Improved processes reducing errors and rejections
  - Waste Audit
  - Arranging 'harvesting' of waste streams by other businesses
  - Improved quality of wastewater discharged to sewer
- Related Links and Tips: Konrad's Story – Useful Waste

### Energy Initiatives

- Reduced energy consumption through improved productivity and streamlined change over
- Upcoming initiative on training in energy saving

### Water Initiatives

- Water efficient hand washing taps
- Upcoming flow restrictors, sensors and changes to toilets

### Work Methods and Staff Initiatives

- Campbells Arnotts Manufacturing Strategy (CAMS)
- 2-day workshop to reduce waste on one biscuit line
- 5S Implementation across all production teams
- Education Program for Workers

Related Links and Tips: Team Story – Savings 5S System



### Konrad's Story- Useful Waste

Prior to 2003, the Arnotts Marlstone facility disposed of almost all of its waste to landfill. This was a significant cost that the company realised could be reduced by intelligent recycling.

For Site Services Team Leader, Konrad Frankee, recycling is easy. "The Yellow pages is always a good place to start." he says. Over the last four years Konrad has categorised wastes into consolidated groups that form useful resources to specific industry sectors. High quality food waste is purchased by animal feed companies. Lower grade food waste is collected free of charge by composting operations. Other waste such as cardboard is collected by waste contractors for recycling at a significantly lower cost than disposal to landfill.

In this way 60% of all solid waste generated is seen as a resource by other companies and is collected free of charge or as a purchase. Waste contractors collect 15% of the site's solid waste for recycling. This diverts 75% of the total waste from the site away from landfill, generating significant savings.

The company is embracing waste reduction as part of its Campbells Arnotts Manufacturing Strategy. This has seen a 37% reduction in the amount of food waste generated by the site, July 2006 and June 2007, despite a slight increase in production over that time.

### Team Story - Savings

Arnotts produces more than 80 varieties of biscuits at its Marlstone site. This requires flexible production within the strictest food standards. Arnotts aims to eliminate waste wherever possible and maximise effective equipment use.

The company trained identified teams of employees in 5S, and conducted additional detailed workshops that aimed to reduce variation and process produced waste.



The 5S system offers continual improvement and is a component of lean manufacturing. Other teams have received training in the principles of Leaner Production and have applied this tool to reducing waste from specific processes.

As a result:

- Change over time following production runs of a particular biscuit type have halved. The change over process was analysed and streamlined. Some tasks can be done while biscuit production is still occurring. Equipment is now more efficiently used and energy savings per biscuit have resulted.
- Reduced errors in initial steps on all biscuit making lines have led to fewer errors in latter parts of the biscuit making process, improving productivity and reducing wastage.
- Wastage from one biscuit making line has been reduced by 61%. A workshop identified and implemented low cost process improvements. More efficient use of resources such as raw ingredients and equipment and reduced wastage are saving \$250K per year for that biscuit making line alone.

Bill McArthur, CAMS Coordinator, 5th from right with the biscuit making team he led in a process improvement workshop. According to Bill, "In an environment where customers drive demand for numerous high quality specialty lines, we need to be efficient with our production and agile with our changeovers. The better we are at these things, the greater our capacity is to produce high quality biscuits and eliminate waste. ...A team approach can identify big improvements and build ownership."

Analysis of Arnotts waste profile shows that implementation of CAMS has worked to reduce the amount of food waste generated by the site by 37% between July 2006 and June 2007, despite a slight increase in production over that time.