

WATER EFFICIENCY OVERVIEW – W1

Eco-efficiency resources for the food processing industry

Tips on securing your water supply, saving water and money



Australia is the world's driest inhabited continent. Drought and high population growth, especially in Southeast Queensland (SEQ), have put unprecedented pressure on the region's water supplies. The increased scarcity of water supply in SEQ lead to the enforcement of unprecedented water restrictions. This included the introduction of compulsory water efficiency management plans and ensuing compliance measures for businesses in the region. The situation in SEQ demonstrates the growing awareness that water is a scarce and vital resource.

Many companies are realising that water conservation also makes good economic sense with some local authorities moving towards full cost recovery to supply freshwater and treat wastewater. At first glance water bills may not seem significant but when the costs to purchase, treat, heat, cool, pump and dispose of the water are considered, improving water efficiency can provide significant savings.

THE TRUE COST OF WATER

The true cost of water starts at the water meter. However, tradewaste charges applied to the discharge of water from processing plants can cost more than the water supply itself. In addition, if hot or cold water is used then energy costs also need to be included. Saving process water can save dollars.

<i>Water supply cost for 1kL of water^a</i>	\$1.39
<i>Heating water from 200C to 800C requires 70 kWh of energy</i>	
<i>Electricity cost of 70 kWh x \$0.10/kWh^b</i>	\$7.00
<i>Trade waste costs for disposal of 1kL of water^c</i>	\$1.94
Total cost for 1kL of heated water	\$10.33

^a BCC water supply costs for between 201–300kL

^b 10c per kWh as a contestable tariff for food processors

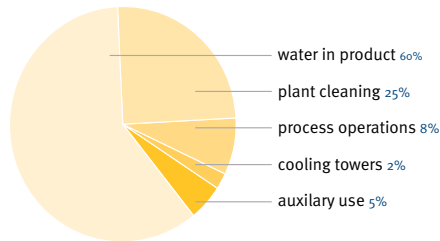
^c BCC tradewaste charge category C for average food processor wastewater composition

Typical distribution of water usage in food processing factories

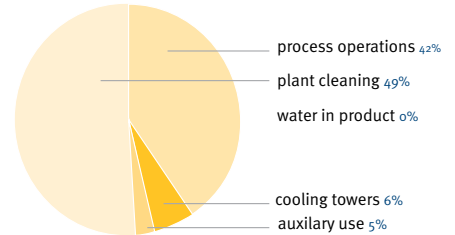
Water is often not only a raw ingredient for many food processors, but is also essential for processing, cleaning and the operation of utilities. The amount of water used by food processors varies greatly depending on the type of processing (see Figure 1), however, they generally consume relatively large amounts when compared with other manufacturing groups. As demonstrated in Figure 1, process operations and cleaning are often the largest users of water in food processing facilities.

Figure 1: Typical distribution of water usage in food processing factories

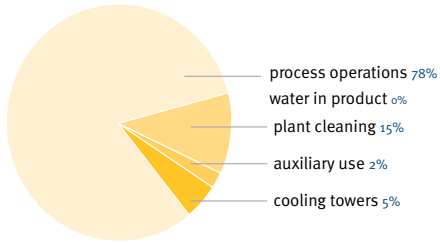
Typical distribution of water use in a beverage plant



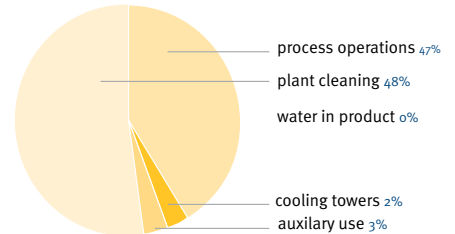
Typical distribution of water use in a dairy plant



Typical distribution of water use in a vegetable processing plant



Typical distribution of water use in a meat processing plant



This series of water-related fact sheets describes opportunities for businesses to improve their water and cleaning efficiency as well as possible water reuse and recycling initiatives.

W1 – Water efficiency overview

W2 – Water efficient processing

W3 – Alternative water sources

W4 – Cleaning efficiency

W5 – Clean-in-place systems

W6 – Cleaning and sanitising options

W7 – Wastewater efficiency

W8 – Resource recovery from wastewater

W9 – Other treatment options

This series of fact sheets provides examples and suggestions to the modern food processor on how to achieve both economic and environmental benefits from eco-efficiency. Visit the project website www.ecoefficiency.com.au for more ideas and case studies.

The eco-efficiency for the Queensland food processing industry project is an initiative of the Department of Tourism, Regional Development and Industry and the Environmental Protection Agency with technical information provided by UniQuest through the UNEP Working Group for Cleaner Production.