UTILITY EFFICIENCY OVERVIEW – U1

Eco-efficiency resources for the food processing industry

Save energy, water and money

Utilities in food processing plants commonly include:

- boilers to produce hot water and steam
- refrigeration to cool and preserve raw materials and products
- cooling towers to remove heat from the process or product or to reject heat from refrigeration/ air conditioning systems
- compressors to supply high pressure air for cleaning and pneumatic tools or for raising the temperature or pressure of refrigerants
- motors to supply mechanical energy for processing equipment
- pumps to move gases, liquids or slurries
- fans to cool products and equipment
- lighting for illumination.

Utilities can incur significant running cost in food manufacturing so it is essential that their operation is optimised and that they are regularly serviced and maintained. The build up of solid deposits for example in cooling towers and boilers not only reduces their efficiency but can cause expensive mechanical damage.

Careful selection and design is also essential. Compressors and motors usually consume their purchase price in electricity every year. While high-efficiency alternatives may be initially more expensive, energy savings often quickly recover the extra cost.[1]

Even the location of utilities can impact on their efficiency. Where space allows, utilities should be located as close as possible to where their product is to be used. For example, cooling towers should be located near refrigeration units. Similarly, locating utilities near equipment or processes which can use the by-product also improves efficiency. For example, locating refrigeration units close to equipment that can use the waste heat from the process minimises energy loss. Similarly, for compressors, the condition and temperature of air intake is very important. Locating compressors in clean and cool areas can save up to six per cent of the compressor's power.[2]

1 Australian Greenhouse Office, 2008, Motor Selector Software
www.environment.gov.au/settlements/energyefficiency/motors/motorselector/m2.html
2 Sustainable Energy Development Authority, 2008, Smart Compressed Air Calculator
www.energysmart.com.au/wes/Displaypage.asp?flash=-1&t=20087857&PageID=53

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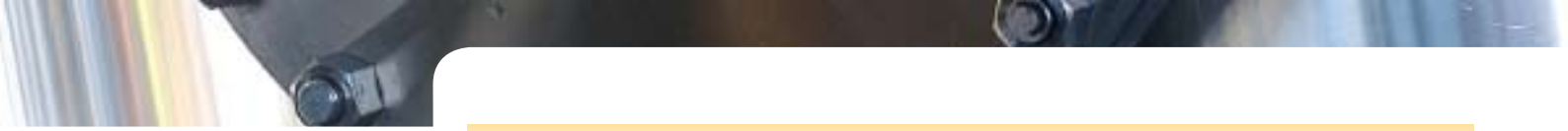

Many food processors engage a third-party service provider to manage their plant's utilities. This makes use of the provider's specialist expertise and allows food processors to focus on their core business. It is important however that food processors have some understanding of how their utilities operate in order to work more closely with service providers and to adequately verify their performance. Processors may even wish to consider a performance-based contract related to reducing water or energy consumption. It is essential that service providers know efficiency is a priority.

This series of fact sheets provide a basic explanation of how utilities operate and suggests a wide range of possible eco-efficiency opportunities.

The following fact sheets are available:

- U1 – Utility efficiency overview
- U2 – Cooling tower efficiency
- U3 – Boiler efficiency
- U4 – Compressed air efficiency
- U5 – Refrigeration efficiency
- U6 – Motor, pump and fan efficiency
- U7 – Lighting efficiency

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.

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This series of eco-efficiency fact sheets will demonstrate the importance of water in a modern food factory and suggest areas where savings can be made. The project website www.eco-efficiency.com.au has more ideas and case studies on water savings across the food industry.

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