



Saving energy in the confectionery manufacturing industry

Introduction

If you operate a small to medium sized confectionery manufacturing facility, then this fact sheet could help you to:

- save energy and money
- increase efficiency
- improve your environmental performance!

This fact sheet provides a range of practical and cost effective energy saving options. Some offer immediate savings and other associated benefits while others involve an upfront cost that can be recovered within a few months or years.

With energy costs expected to increase due to climate change policies and other measures and pressure to reduce greenhouse gas emissions, confectionery manufacturers can save money and help the environment at the same time!

Major energy uses

The most energy intensive activities in confectionery manufacturing are hot water and boiler systems, cool rooms, cooling towers, cooking systems, and conveying systems.

Conching, heating and tempering and other processes also use energy but may be specific to particular types of confectionery, such as chocolate.

Benefits of saving energy

Improving energy efficiency can benefit your business and the environment by:

- reducing energy costs through actions such as purchasing more efficiency equipment
- reducing the environmental impact of your business through minimising energy-related greenhouse gas emissions
- extending equipment life, reducing operating costs and avoiding downtime through increased energy efficiency and improved maintenance regimes
- improving your business' reputation and employee satisfaction by promoting an environmentally responsible image and providing an improved work environment.

Things to consider when implementing energy improvements

Implementing energy saving actions may require forward planning and some changes to the way your business operates. For example:

- Proposed changes may need to be discussed with managers, workplace safety representatives, unions, insurers and suppliers to ensure that they will not impact negatively on security or food hygiene, safety and other standards.
- The quality and consistency of products must not be compromised by energy saving options. For example, adequate warm-up periods must be accommodated to ensure that equipment is operating at the correct temperatures required for production. Reducing energy use should also not impact on meeting air extraction requirements.
- Employee training and management involvement are key to the success of energy reduction measures.
- Ongoing monitoring of energy use is important to identify problems early and to measure (and reward!) improvements. Key performance measures (e.g. energy consumed per dollar sales) can be used to gauge the cost of energy inputs and savings achieved across the whole business or for individual jobs or processes.
- The easiest time to save energy is generally when building or renovating premises and purchasing new equipment.

Some common energy saving opportunities for small to medium sized confectionery manufacturers are provided in the following table. The costs, savings and payback periods are provided as a rough guide only. They include estimates of up front costs such as capital, labour and installation, but do not include ongoing costs unless these are fundamental to the option itself (e.g. improved maintenance regimes).

The suitability and benefits of each option depend on the nature and size of your business and the scale of application. You should also check that they comply with local environment, safety and other requirements.

Even if you have considered similar actions in the past, they may be more cost effective now as the cost of many technologies has gone down while the cost of energy has increased.

* <5% total energy saving	** 5-10% energy saving	*** >10% energy saving	
\$ up to \$1,000	\$\$ \$1,000 - \$10,000	\$\$\$ \$10,000 - \$50,000	\$\$\$\$ \$50,000+
PROCESS CHANGE		MAINTENANCE	EQUIPMENT / PLANT UPGRADE
OPTION	COST	ENERGY SAVING	PAYBACK PERIOD
Establish optimum warm-up times for ovens and install timers so that ovens reach the appropriate temperature at the start of operations.	\$	*	< 1 year
Purchase energy efficient appliances and equipment (especially refrigeration) to save power and money over the life of the appliance.	\$	*	2-4 years
Integrate energy efficiency into operating procedures (e.g. close cool room doors and minimise forklift movements in and out of temperature controlled areas.	nil	*	Immediate
Revise the facility layout to separate hot and cold processes (e.g. refrigerators and ovens) or install plastic curtains between them.	\$	*	3-5 years
Size extraction fans correctly and turn them off when not required.	nil	*	Immediate
Check that oven and fridge door gaskets and seals are in good repair, and ensure that refrigeration compressors are well charged.	\$\$	*	Immediate
Optimise refrigeration systems, including reviewing temperature settings, ensuring that cooling elements are not frosted and cleaning the condenser.	\$	*	< 1 year
Maintain pumps by cleaning filters regularly and maintaining impellers.	\$	*	2-3 years
Maintain motors by checking bushes and bearings annually and replacing as	\$	*	2-3 years
Increase boiler system efficiency by regularly tuning the burners and maintaining the boiler tubes. Use a blow down system that is set to TDS levels and recover energy from flash steam and flue gases.	\$	*	< 1 year
Maximise natural ventilation instead of fans and air extraction where feasible. Remove excess heat by installing vents in hot areas such as kitchens at the ceiling level.	nil	n/a	Immediate
Insulate hot water storage tanks, chocolate tanks, steam and hot water/product pipe work, ovens and other hot surfaces where possible.	\$	*	< 1 year
Insulate hot and cool rooms at the top, sides and floor (e.g. use an insulating rubber covering on concrete floors).	\$\$	*	2-3 years
If a boiler is used for steam heating steam traps, install a condensate return system to reduce the energy required to heat cold water inputs.	\$\$	*	< 1 year
Use renewable energy sources to reduce power bills (e.g. solar hot water heating) or generate energy on-site (e.g. photovoltaic panels).	\$\$\$	*	2-5 years

Further information

If you would like further information, or to talk to someone who can help get you started, please contact Ai Group's Energy and Sustainable Business Helpdesk on **1300 733 752** or at sustainablebusiness@aigroup.asn.au or visit the Ai Group website at www.aigroup.com.au.