

# Saving energy in abattoirs & meat processing facilities

## Introduction

If you operate a small to medium sized abattoir or meat processing facility, including poultry producers, then this fact sheet could help you to:

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

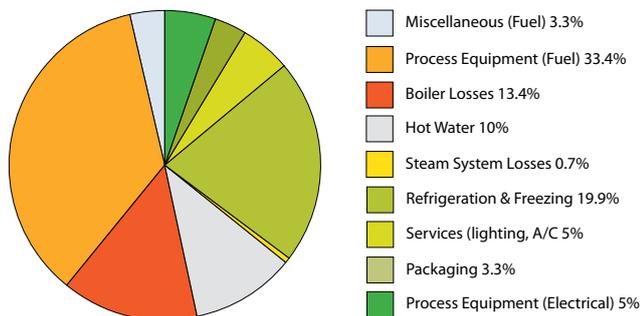
This fact sheet provides a range of practical and cost effective energy saving options. Some offer immediate savings and other associated benefits while others involve an upfront cost that can be recovered within a few months or years.

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

## Major energy uses

Meat processing facilities consume energy in: livestock holding; slaughtering and processing; monitoring and testing; cleaning; and packing.

Refrigeration is generally the most energy intensive activity in meat processing facilities. Other areas with scope to save energy include: air conditioning systems; hot water / boiler systems; compressors.



**Fig 1 Energy consumption in the Meat and Meat Products Manufacturing Industry**

(Source: NFE: Energy Efficiency Improvement Potential Case Studies – Industrial Sector, March 2004. Report prepared by Energetics for SEAV)

## Benefits of saving energy

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

- reducing energy costs (e.g. by purchasing more efficient 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 a safer and more comfortable workplace.

## 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 suit your refrigeration technologies and waste stream temperatures and will not impact negatively on the quality or consistency of products, and food hygiene or safety standards.
- Employee training and management involvement are key factors to the success of energy saving measures.
- Ongoing monitoring of energy use is important to measure (and reward!) improvements. Key performance measures (e.g. energy used per tonne hot standard carcase weight (tHTSCW) or production unit), can be used to gauge the energy costs and savings across the whole business or for individual jobs or processes.

Some common energy saving opportunities for small to medium sized abattoir and meat processing facilities are provided in the table following. 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
Optimise material flows through the factory. Linear processes may reduce production time, energy and cost.	nil	*	Immediate
Allocate budget for preventative maintenance to save energy and prevent disruptions from breakdowns and unscheduled maintenance.	\$\$	*	<1 year
Position heat exchangers for refrigeration systems correctly to maximise efficiency and away from heat sources where cool fresh air is available.	nil	*	Immediate
Size boilers and heaters according to their use. (A correctly sized boiler may operate at 85+% efficiency compared with 60-70%. A second hand boiler may cost more than a new one due to inefficient operation!)	n/a	n/a	n/a
Minimise air flow into cool rooms by maintaining seals around cool room doors and installing rapid roller doors or air locks with inter-locked doors.	\$\$	*	2-5 years
Insulate refrigerated process lines and implement regular maintenance.	\$	*	< 1 year
Maintain and service motors used for refrigerators, air conditioners, pumps and conveyors to save energy and reduce wear and tear.	\$\$	*	2-5 years
Identify and repair leaks in compressed air systems. Install an air recovery unit to collect and return exhausted air from valves to the system.	\$\$	*	2-5 years
Insulate boilers, hot water heaters, steam condensate and other pipe work, and valves.	\$\$	*	< 1 year
Use steam heating coils rather than live steam where practical so that steam condensate can be recovered.	\$\$	15%	< 1 year
Use solar heaters to heat water.	\$\$\$\$\$\$	*****	3-5 years
Recover waste heat from boiler blow down by installing a flash steam heat recovery system. Use timers or a TDS monitoring system to minimise first boiler blow down.	\$\$	*	2-5 years
Recover heat from exhaust gases of ovens used for meat processing or bone meal and monitor exhaust gas to avoid over drying.	\$\$\$	*	> 5 years
Use high pressure water for wash down to minimise energy and time.	\$\$	*	2-5 years
Replace inefficient equipment (especially refrigeration systems as these are generally the highest single energy user in meat processing).	\$\$\$	***	2-5 years
Install timers to switch equipment (especially air conditioners) on and off.	\$	*	

## 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](mailto:sustainablebusiness@aigroup.asn.au) or visit the Ai Group website at [www.aigroup.com.au](http://www.aigroup.com.au).