INTERNATIONAL FLAVORS AND FRAGRANCES

EFFICIENT FOOD INGREDIENTS

> 'Nothing we do is so important that it cannot be done safely, while maintaining quality and meeting our responsibilities to protect the environment and conserve resources.'
>
> **IFF corporate statement**

Key outcomes

Of the total reductions in potable water use, the contributing factors are improvements to maintenance activities (75%), initiating water recycling (12%), Clean In Place optimisation (9%), and staff training (4%).
Trade waste load reductions of 46% chloride, 28% total dissolved solids and 21% sodium.

Savings (per annum)

- Energy savings of approx. $8000.
- Potable water savings of approx. $9000.
- Trade waste savings of approx. $12,000.
- Solid waste disposal savings of approx. $5000.

Volume reductions

Reduction in greenhouse gas emissions – 250 tonnes of CO_2-e per annum.

Return on investment

Recovery of implementation costs – 9 months.

Other benefits/impacts

- Improved plant operation.
- Increased recycling and reduced waste to landfill.
- Improved OH&S outcomes.
- Less product wastage, so more product to market.
- Reductions in CO_2 emissions.

Improved resource efficiency will save this food ingredients manufacturer an estimated $34,000 per year.

International Flavors & Fragrances (IFF) manufactures and distributes a wide range of liquid, powder and compound flavours to the food industry across Australia. The Dandenong South plant produces over 9500 tonnes of product annually, of which 75 per cent is packaged as powder.

In partnership with EPA Victoria, South East Water Limited (SEWL) engaged a consultant to conduct a resource efficiency study investigating how IFF can reduce potable water usage and improve the quality of its trade waste, especially targeting total dissolved solids (TDS).

The study, funded through the Trade Waste Partnership program between EPA and SEWL, identified 28 opportunities for improved efficiency that included:

- potable water reduction
- trade waste reduction in volume and load
- reduced energy usage
- improved plant operation, including solid waste management.

Data from previously installed water meters in strategic areas of the plant was used to conduct a series of water mass balances at various stages of the production process. Over 75 per cent of water usage was attributed to plant sanitation and subsequent discharge through the plant's trade waste system. This provided the potential to reduce potable water intake by over 25 per cent.

The savings in both water and trade waste costs are estimated at $21,000 to the bottom line at 2009 prices. Recommended improvements to the waste water treatment plant have also contributed to more efficient operation and ensure compliance to trade waste agreement specifications.

The study was reviewed by IFF's Global Senior Management and considered to be a company benchmark in line with the company's Global Environment, Health & Safety Policy.

Implementation so far

With the help of the consultant, IFF resurrected its internal Environment Committee, which continues to meet twice a month to discuss how to improve waste management and reduce water and energy usage. Staff have responded well to this initiative and potable water use has already dropped significantly.

Some basic actions have included the use of dry cleaning techniques, such as vacuums and scrubbers and wiping down equipment with an alcohol solution. IFF has concluded that the quality of its product has not been compromised in any way.

IFF has also installed 10 new water meters. These feed directly into the Hydroshare monitoring system, an online, real-time monitoring and reporting system developed in part by SEWL.

Changing to more efficient forklifts and the need for less hot water has led to a five per cent reduction in gas and electricity use, and reduced CO_2 emissions by 50 tonnes per annum.

Changes to the way waste is collected onsite have also increased recycling of cardboard, polystyrene and plastics from 8 m^3 to 23 m^3 per month and reduced waste to landfill by 20 tonnes per month.

EPA VICTORIA

Victoria The Place To Be

IFF International Flavors & Fragrances Inc.

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SAVE WATER, SAVE ENERGY, REDUCE WASTE AND SAVE MONEY! — HINTS AND TIPS

Save Water

Understanding where water is used and lost in your business provides opportunities to quickly save water.

- Can existing processes use less water? Vacuuming, sweeping and high-pressure trigger nozzle hoses can be just as effective as cleaning with water.
- Review tank & system cleaning processes to identify opportunities to automate or amend to minimise water required for cleaning.
- Minimise water use in cooling processes by recycling cooling water, using fogging nozzles instead of running mains water, and shutting off flow when not in use.
- Identify opportunities to reuse or recycle your rinse, waste and greywater – the final flush may be able to be used as the first rinse.
- Establish a regular preventative maintenance program for water pipes to ensure blockages are removed, and leaks and overflows are minimised.
- Reduce water pressure where possible to minimise volume of water lost to leakage.
- Install rainwater tanks for irrigation use.
- Use non-potable water for appropriate end-uses in place of potable water (for example, dust suppression, on-site toilet flushing).
- Replace existing fixtures with more water efficient fixtures (for example toilets, taps and equipment).

Save Energy

Energy source and use has significant impact on profitability, productivity and greenhouse gas emissions.

- Install variable speed drives (VSDs) on pumps and other equipment.
- Optimise your boiler performance with regular maintenance and tuning and consider insulation, fixing steam leaks and installing economisers.
- Optimise your compressed air systems through insulation, fixing air leaks and optimising operating pressures.
- Review your plant lighting including efficiency of lighting, motion and day sensors and removing unnecessary lighting.
- Ensure your hot water system is insulated and running at an optimal temperature.
- Explore heat recovery options in industrial processes such as collecting condensate for use as feedwater for your boiler or using waste heat for space heating.
- Assess your heating, ventilation and air conditioning (HVAC) by adjusting your thermostat dependent on the weather (26 °C in summer and 18 °C in winter). Ensure systems are switched off out of operating hours.
- Regularly review plant equipment as upgrading equipment can often improve productivity and deliver energy savings.

Reduce Waste

Reducing waste can save your business money as well as saving valuable resources and helping the environment.

- Choose products with less packaging and purchase raw materials in bulk to minimise packaging.
- Plan ahead and avoid waste by matching raw material quantities to batch sizes.
- Educate and involve all staff in waste minimisation projects with rewards for new and creative approaches.
- Regularly review causes of 'off-spec' product and adjust systems and processes to minimise these occurrences.
- Establish 'take back' loops with suppliers such as packaging waste, product, which is faulty, or at the end of its useful life.
- Minimise product residue in packaging by removing more raw materials.
- Avoid product spillage through installing conveyor and gutter guards.
- Evaluate product design and manufacturing processes to find ways to avoid producing prescribed industrial waste.
- Investigate whether your waste could be used as a resource elsewhere and find opportunities for reuse.
- Share recycling resources with other businesses in your community to reduce cost. For ideas, see www.wasteexchange.net.au.

Leadership and Life Cycle

Learning how to manage your product or service life cycle more effectively can uncover a wealth of business, environmental and social benefits.

- Life Cycle Management supports evaluation of design and business decisions with the goal of reducing impact over the entire life of a product.
- Encourage innovation and work with colleagues and business partners to discover new ideas and solutions for improving sustainability.
- Actively seek information to better understand and address life cycle issues as they impact your specific business operations.
- Encourage staff from all levels to get involved by establishing an environmental committee.
- Beginning at product design, assess the life cycle impact of your product or service, looking at all activities that go into making, selling, using, transporting and disposing of a product or service.
- Train employees in specific Life Cycle Management skills.
- Investigate the use of life cycle tools such as Life Cycle Assessment and Ecological Footprint.
- Explore outcome-focused partnerships with your suppliers and customers to enable product and service delivery with the least possible environmental impact.

These are just a few of the opportunities available to improve profitability, productivity and your business environment. For other helpful weblinks and information on what other businesses are doing to improve their resource efficiency and sustainability visit www.epa.vic.gov.au/bus/resource_efficiency/casestudies