

# WASTE EVALUATION SHOWS SAVINGS



## Key outcomes

### Savings (p.a.)

<b>Management of Total Dissolved Solids (TDS)</b>	<b>\$140,000</b>
<b>Water and energy management</b>	<b>\$4,000</b>

### Volume reductions (p.a.)

<b>Potable Water</b>	<b>1000 kL</b>
<b>Trade waste</b>	<b>700 kL</b>
TDS in trade waste stream	100 tonnes
<b>Energy</b>	<b>50 tonnes CO<sub>2</sub>-e</b>
<b>Raw materials</b>	
Hydrochloric acid	240 tonnes
Caustic soda solution	10%

### Other benefits/impacts to consider

- OHS benefits
- Improved quality of wastewater
- Ability to use wastewater within the process

### Further information

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## Huntsman believes environmental improvement 'is just part of doing business'.

Huntsman is a global manufacturer and marketer of a range of chemicals, with its West Footscray site focused on the manufacture of petrochemical products, including styrene, polystyrene and polyester resin.

Currently the relevant processes result in the use of substantial amounts of potable water and energy, and the production of wastewater (including salts) and solid waste.

Huntsman operates under an EPA licence and has a trade waste agreement with City West Water, meeting all necessary conditions. Its West Footscray site agreed to participate in a voluntary study aimed at identifying opportunities to achieve reductions in trade waste generation, potable water consumption and prescribed industrial waste.

With support from City West Water and EPA, a consultant was appointed to investigate opportunities for Huntsman to improve resource efficiency at the Footscray West plant.

Initial analysis of the processes included extensive sampling, a two-week on-site placement of a consultant and additional site visits as required. Regular meetings and ongoing communications between all relevant stakeholders (including equipment and process suppliers) were maintained, ensuring a comprehensive understanding of systems and processes and an appropriate exchange of information. Each waste stream was considered in relation to the waste hierarchy (focusing on to how avoid it being generated ahead of minimisation), along with the cause, current management practices and environmental impact.

The team at Huntsman, including staff from production engineering, plant operation and the health, safety and environment team,

provided the consultants with valuable insights into its operations. This enabled a detailed understanding of waste generation on site, and presented opportunities for rethinking systems and processes. Two key findings found have had a significant impact on future operations and associated profitability.

### Management of TDS

Huntsman identified that it was possible to send a spent caustic soda solution from the process plant direct to the effluent treatment plant, which eliminated a neutralisation step. Investigations as part of the EPA/CWW study confirmed that acids and alkalis used in the process to adjust pH were major contributors to TDS. The study quantified that sending the spent caustic soda solution directly to the effluent treatment plant would result in total savings of approximately \$140,000 annually. These savings would be achieved by eliminating the use of 240 tonnes of hydrochloric acid, reducing the consumption of caustic soda solution by 10 per cent and preventing the discharge of up to 100 tonnes of TDS a year to sewer.

### Water and energy management

An energy audit found that the pump currently used for water-cooling on the air compressors was inefficient in both energy and water consumption. Replacing the pump saved over 1,000kL water and 50 tonnes CO<sub>2</sub> a year, with a payback period of less than two months and savings of \$4,000 per year.

With the implementation of the above recommendations and a number of other options being considered, progressive improvement in environmental performance is sure to continue at Huntsman.

'Reducing our salt and effluent discharge is just one of the ways we are contributing to a sustainable water supply for Victoria.'

**Noel Ryan**  
Environment and  
Sustainability Manager



# 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](http://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/casestudies](http://www.epa.vic.gov.au/casestudies)