

Rewards

Qenos meets water treatment challenge with holistic solution for trade waste

Qenos is Australia's sole manufacturer of the raw plastic materials ethylene and polyethylene, and its Victorian Altona site is Australia's largest manufacturing petrochemical and plastic complex.

Comprising three large manufacturing plants it uses and produces large volumes of water and trade waste. From 2002 it became a leader in sustainability in the plastics industry, cutting water consumption by 30% and trade waste by 46% over four years.

Determined to pursue a step change and preserve Melbourne's precious water supplies, Qenos identified that further water savings might be achieved by treating and reusing some 400 ML annually of 'sour water' trade waste from the Olefins ethylene refinery, one of three adjacent plants in the Altona Complex.

However, Qenos needed to test an initial complicated concept for water treatment, and in order to minimise risk and maximise success at its unique site it sought and received funding of \$98,000 from Rewards, a program delivered through the partnership between the Plastics and Chemicals Industries Association (PACIA) and EPA Victoria.



Qenos Water Treatment Plant



Qenos is Australia's local polyethylene supplier and manufacturer, with sites in Altona (Victoria) and Botany (NSW).

Polyethylene is a basic building block for most plastic products manufactured in Australia for household, business and agricultural use. It is highly versatile, stable, lightweight and has a long life. Many polyethylene plastics are recycled or remoulded for a new life.

Qenos is a proud signatory to PACIA's Sustainability Leadership Framework for industry.

Concept tests prove challenging

"Our initial concept, which involved removing contaminants with a pentene solvent wash, proved unsuccessful as the water was found to still be unsuitable for use in our cooling towers," says Chris Hutchins, Environmental Engineer with Qenos.

"Nevertheless, the Rewards grant enabled us to investigate a range of alternative treatment options with

minimal risk and costs. We finally moved away from a plant-specific solution to a holistic approach across our Olefins, Plastics and Resins sites."

The solution lay in water treatment and exchange across the sites, starting with the transfer of Olefins sour water to Qenos' existing biological water treatment plant located at the site.

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Case study



Rewards

This first stage involves installing equipment to send up to 50% of the sour water to the treatment plant, then using this recycled water to replace potable water in the Plastics and Resins cooling towers.

After an initial evaluation period of up to six months to

prove the treatment technology, the treatment plant capacity can be increased to accept the full volume of 400 ML/year of sour water. A return line will be installed for the extra volume of treated water to be sent to the Olefins cooling towers.

Victorian Government contributes \$2.5 million

A major plant and equipment upgrade costing \$5 million will see this proven program of resource efficiency implemented in two stages, with the Victorian Government contributing half of the total cost.

Qenos has also identified a number of technical projects that will need to be completed before the reuse scheme is fully operational.

- The Resins plant waste water stream, which is currently sent to the Plastics treatment plant, can be treated on-site and reused in the Resins cooling towers. This creates greater capacity in the treatment plant to receive more of the sour water from the Olefins plant.

- Improved control of the sour water facilities at Olefins will minimise the level of soluble organics in the water sent to the treatment plant.
- An instrumentation upgrade will improve stability of the existing sour water stripper, maintaining consistent water quality for the treatment plant.
- A conversion plan is needed to condition the treatment plant for Olefins water, and to manage potential odour and sludge issues.

In a further step in its sustainability program, Qenos has reached agreement with City West Water to receive up to 6 ML/day of recycled water following a major upgrade at their local Altona Treatment Plant (from 2011). Significantly, this will reduce the company's annual potable water consumption by about 2,000ML to almost zero.

Key outcomes

Rewards funding:	\$98,000
Potential water saved through recycling	
Stage 1, annual potential	150 ML
Stage 2, annual potential	400 ML
Trade waste water reductions	45%
Cost savings (at 2009 prices)	
Potable water	\$560,000
Trade waste	\$300,000
Full scale capital investment	
Qenos' contribution:	\$2.5 million
Victorian Government contribution:	\$2.5 million

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Interested in other PACIA Leaders?

PACIA has published a number of case studies, some of which showcase the actions of companies to improve their sustainability and others focus on key business strategies across companies. These can be found on our website www.pacia.org.au



The REWARDS partnership

Plastics and Chemicals Industries Association (PACIA) and EPA Victoria (EPA) signed their second Sustainability Covenant in April 2009, confirming their ongoing commitment to work together with PACIA members in the development of innovative sustainable business solutions.

The Rewards program is funded through the Sustainability Covenant. It provides financial support for Victorian plastics and chemicals companies to implement the Sustainability Leadership Framework.

The Rewards program supports companies to investigate, research or pilot significant projects that will create a step change or transformation for the site, company or industry.



The Sustainability Leadership Framework

The Framework is both a comprehensive tool kit with useful information and also a program of support for member companies. The number of companies who are signing up to integrate sustainability into their business is growing as more companies take action to lead and adapt to changing conditions. We welcome enquiries on the Framework program.

For further information:

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PACIA and Rewards

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