

Rewards

Australian Vinyls cuts water use by 50% with new treatment plant

A new water treatment plant at Australian Vinyls' Melbourne site will achieve a very significant water recovery efficiency of 73%, enabling the site to cut its use of Melbourne's water by approximately 326 ML achieving a 50% reduction in total use, and improving production efficiency from around 4.5 KL per tonne of product to 2.2 KL.

This substantial cut in water use and production efficiency is possible through a Rewards grant, a program delivered through the partnership between the Plastics and Chemicals Industries Association (PACIA) and EPA Victoria.



Australian Vinyls cuts water use by 50% with new treatment plant

The company is the sole manufacturer of PVC resin in Australia for processing into everyday products such as pipes, flooring, cable, hoses, profiles and packaging. The company's strong focus on reducing water consumption had already cut potable water use from 6.7 kL per tonne of PVC in 2001 to 4.5 kL in 2007.

However, in 2007 Australian Vinyls recognised that the next level of cuts could only be achieved through complicated and expensive water treatment and recycling, however the technology to recover water from the PVC production process did not exist anywhere in the world.

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Australian Vinyls is this country's sole manufacturer of polyvinyl chloride (PVC) resin, which is made at a large site in Laverton in Melbourne's west.

PVC is made in water using a batch suspension process, and is a key plastic in the manufacture of pipes, flooring, cable, hoses, profiles and packaging. It also plays many roles in water catchment, treatment, use and re-use processes.

Australian Vinyls is a proud signatory to PACIA's Sustainability Leadership Framework for Industry.



Case study

Rewards

New technology a design challenge

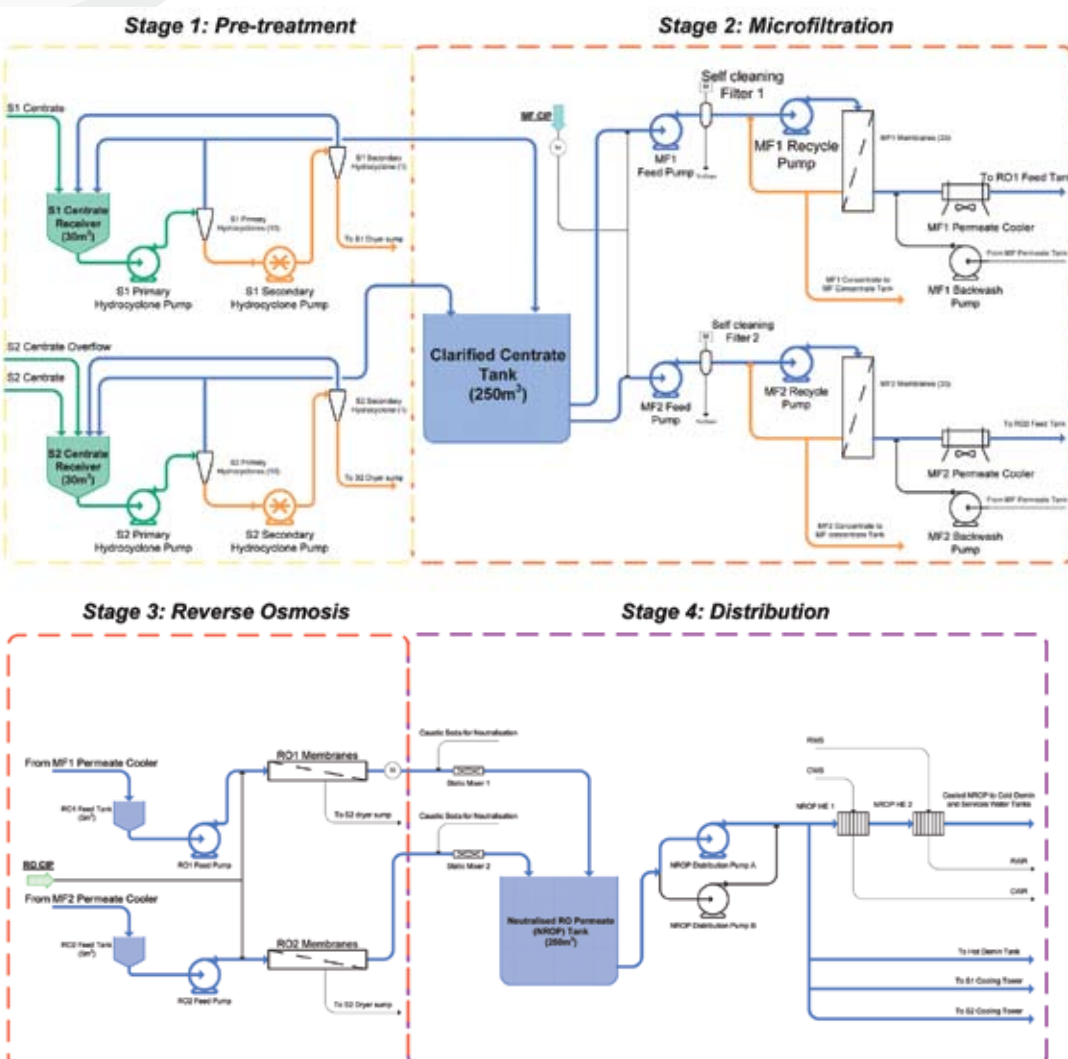
The company realised it needed to design and test via a water treatment pilot plant if it was to achieve a step change in its potable water use. To minimise the risk and cost Australian Vinyls applied for and received funding of \$110,000 from Rewards, a sustainability program delivered through the partnership between the Plastics and Chemicals Industries Association (PACIA) and EPA Victoria.

"The pilot plant evaluation was complex and took approximately 18 months. The Rewards grant was extremely valuable, as it enabled our team of engineers and chemists to examine a number of design options for the plant."

"A particular challenge with the recovery of water from the PVC process is that suspended solids in the effluent are difficult to filter. Particles tend to adhere to the filter media, so the filtering process must be able to handle suspended solids with adhesive characteristics."

"The Rewards grant was extremely valuable, as it enabled our team of engineers and chemists to examine a number of design options for the plant."

Peter Cummins,
Senior Project Engineer of Australian Vinyls



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Case study



Rewards

The design solutions

"The grant enabled us to test different feed processes for water and a number of treatment systems before we selected the optimum three-stage water treatment process."

This process involved:

1. Pre-treatment to remove large and sticky suspended solids, through a combination of strainers and a hydrocyclone assembly
2. Microfiltration to remove the smallest suspended solids
3. Reverse osmosis to remove dissolved solids.

"The project was of immense benefit because of its flexibility in testing a number of complex options,"

Mr Cummins says. *"We were able to select the optimum site, inputs and configurations before settling on the final design and capital required for the full scale treatment plant."*

The total capital investment for the full scale plant will be more than \$5 million, with Australian Vinyls contributing over \$3.2 million and the Victorian Government \$1.8 million.

Australian Vinyls has established it can use the reclaimed water for boiler feed, cooling tower makeup and charge water for PVC production. pH and some temperature adjustments are required for these reuse applications.

Three important sustainability outcomes will be gained with this water treatment plant:

- Achieving high water recovery efficiency: the process required each step to perform to very high standards.
- Maintaining low energy use: careful selection of filter membranes was necessary.
- Minimising labour effort: the process needed to fit with other operations and labour requirements at the plant.

Key outcomes

Rewards funding:	\$110,000
Potable water use per tonne of product	
Current:	4.5 – 4.7 KL
Potential:	2.2 KL
Potential annual water recovery:	326 ML
Water savings	50%
Water Recovery Efficiency:	73%
Full scale plant capital investment:	\$5.024 million
Australian Vinyls' contribution:	\$3.2 million
Victorian Government contribution:	\$1.8 million

Rewards

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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