

Godfrey Hirst

C A R P E T S

savewater! awards®

MANUFACTURING CATEGORY WINNER &
AWARD FOR EXCELLENCE

05

SAVING WATER IN BUSINESS
AWARDS 2005

savewater! awards® 2005

Godfrey Hirst Carpets has been honoured as the winner of both the 'Manufacturing' category and the Award for Excellence at the 2005 Savewater Awards held on Friday 21 October at Melbourne's Plaza Ballroom, during National Water Week.

The Savewater Awards recognise and reward outstanding achievement in water conservation across Victorian businesses, community groups, individual and government department and agencies.

Godfrey Hirst Carpets has been recognised for saving more than 232kL of water per day by recycling water used in the carpet dyeing process. This represents a 32.5 per cent water reduction for its carpet dyeing operations, equating to 85ML of water over the course of the year, or around 85 Olympic sized swimming pools.

Current technology uses large liquid ring vacuum pumps to extract excess water from dyed carpet; during this process, a rotating ring of fresh potable water (called 'seal water') achieves the pumping action inside a cylindrical housing and is discharged continuously from each pump.

Godfrey Hirst Carpets have developed a system to capture and treat seal water so that it can be reused into each pump on a slowed-loop, continuous basis.

"A comprehensive environmental audit of our manufacturing processes identified carpet dyeing as the area with most potential for water saving," says Mr. Brian Cassidy, Engineering Manager at Godfrey Hirst Carpets. "Now we have found a way for the system to dramatically reduce the amount of water involved in carpet dyeing."

In order to get the system up and running Godfrey Hirst Carpets had to implement fibre removal systems, a heat exchanger/cooler tower system, continual monitoring equipment, extensive piping and plumbing networks and electrical control systems to ensure that the vacuum pumps never run without seal water. The substantial investment made by Godfrey Hirst Carpets exemplifies the companies ever growing commitment to both technical innovation and environmental sustainability.

Other Finalists in the category for 'Manufacturing' were Armstrong World Industries (Australia) Pty Ltd and Coca-Cola Amatil (Australia). Godfrey Hirst Carpets was rewarded for its demonstrated innovation and achievement in the reduction of water by being named the 2005 winner of the Manufacturing category.

Godfrey Hirst Carpets also received the 2005 Award for Excellence, which acknowledges the organisation that has made the greatest contribution to sustainability across all award categories.

Godfrey Hirst's success at the Savewater Awards comes on the back of the "Outstanding Achievement in Greenhouse Gas Abatement" awarded to Godfrey Hirst Carpets as part of the Greenhouse Challenge. Together these awards reflect the proactive and innovative approach taken by Godfrey Hirst in ensuring environmental sustainability.

This was the fourth year for the annual Savewater Awards with 10 categories and hundreds of participating organisations.

Contact:

Brian Cassidy

Engineering Manager

Godfrey Hirst Australia Pty Ltd

Tel: 03 5225 0274

2005 savewater! Awards

The Savewater Awards recognise and reward outstanding achievement in water conservation across Victorian businesses, community groups, individual and government departments and agencies

Now in its fourth year, the Savewater Awards have emerged as the leading water sustainability Awards in Victoria. The Savewater Awards has helped many companies and individuals spread the water conservation message and assist other members of the community to use water more efficiently.

The categories for the 2005 Savewater Awards were: Award for Excellence -> Manufacturing Award -> Service Providers Award -> Regional Business Award -> Government Award -> Primary Industries Award -> Education Programs Award -> Built Environment Award -> Garden Management Award -> Product Innovations Award -> Community Action Award.

The Awards Programme Criteria

To qualify for an award, participants needed to demonstrate significant reduction in (drinking quality) water use. This could be achieved through changed behaviour, rainwater capture and use, water recycling, use or development of water-efficient products, etc.

Entries were also judged on water conservation achievements, while also demonstrating commitment to achieving a range of sustainable outcomes. Participants were judged on the following criteria:

- Initiatives that have been implemented to become more water efficient. Including monitoring, measurement, reporting and risk management mechanisms.
- Environmental impacts that have been identified and addressed in implementing these initiatives, with a view to achieving a range of sustainable outcomes.
- Activities that have been undertaken to inform customers, suppliers, the public and associated organisations about your water saving practices.
- The level of staff and customer involvement and ownership of new initiatives.
- Third party partnerships that helped deliver a holistic approach to your water conservation efforts.
- Total water savings achieved and / or identified.



Above: Godfrey Hirst Carpets Engineering Manager, Brian Cassidy accepts the Award.

Above right: The 2005 Savewater Awards plaques and trophies won by Godfrey Hirst Carpets.

Selection Criteria – 2005 Savewater Awards

(The following document is an extract from the entry prepared by Godfrey Hirst as part of the winning submission into the 2005 Savewater Awards.)

Godfrey Hirst Australia Pty Ltd: Manufacturing Category & Award for Excellence

With the introduction of new technology, Godfrey Hirst proudly offers carpets that achieve acclaimed success within Australia and internationally.

The first stage in our water reduction program was a comprehensive external audit. This gave us a breakdown of the total inputs to and outputs from the plant, highlighting the areas that could potentially be reduced the most (for solid, liquid and gaseous wastes). A risk assessment was then done to identify the most significant target areas, which were then focused for further attention. The audit also identified the need for additional measurement, monitoring and reporting to accurately account for the water consumption in each process area.

The area identified as having the greatest potential for water savings was the continuous carpet dyeing lines. These processes (a solid shade line and pattern line) utilised four large vacuum extracting systems to remove excess water from the carpet after dyeing and prior to drying. The current technology in carpet vacuum systems is the use of liquid ring vacuum pumps, in which a rotating ring of liquid (fresh portable water) achieves the pumping action inside a cylindrical housing.

The rotating ring of water (seal water) is kept separate from the highly contaminated water that is extracted from the carpet, and is discharged from each pump continuously (at a rate of 134 litres per minute each!). It was identified that if the seal was treated, it could be re-used back into each pump on a closed-loop, continuous basis, effectively turning machinery that used an extremely high amount of fresh water into one that used none (except system losses).

A project was undertaken to capture this seal water from each pump, remove the fine lint/fibre and heat that contaminated the water as it passed through the system, and return it back into the vacuum pumps on a continual, closed loop basis. This involved fibre removal systems, a heat exchanger/cooling tower system, continual monitoring equipment, extensive piping and plumbing networks and comprehensive electrical control systems to ensure that the vacuum pumps never ran without seal water.

The theoretical water savings that was realistically identified from the vacuum pump seal water-recycling project is outlined below-

Prior to these flow meters being fitted, it was estimated that the water usage for each pump was;

130L/min x 60 min/hr x 12hr/day x 5 days/week – 468,000 L per week

Using flow meters, each vacuum pump uses an average of 443,000 litres per week. This information was gathered over a 3 month period using the individual flow meters that were fitted to the fresh water supply pipes on each vacuum pump.

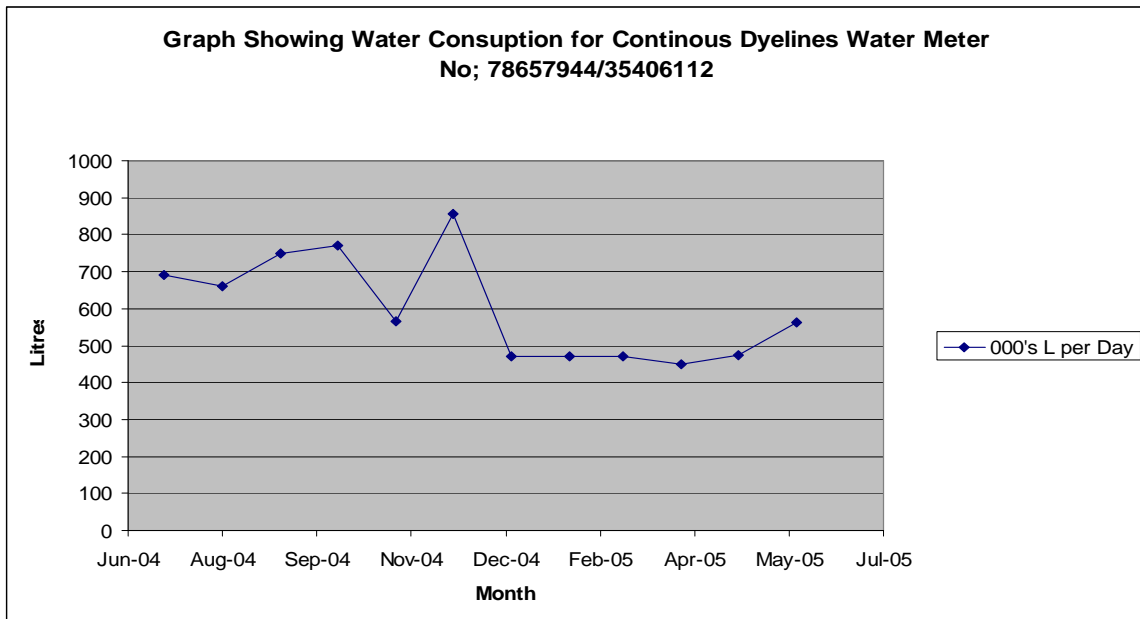
Given that the recycling system captures the seal water from each vacuum pump, treats it, and delivers it straight back into the pump, we expected that essentially all of the water measured above would be saved -

$$4 \text{ pumps} \times 443,000 \text{ L/week} \times 48 \text{ weeks/yr} = 88,600,000 \text{ L per year}$$

The system experiences some water losses through the cooling tower, evaporation, and exhaust carry-over. If we allow a 10% loss factor, the water saving is;

$$88,600,000 \text{ L} \times 0.9 = 79,740,000 \text{ L per year.}$$

As indicated by the below water usage figures supplied by Barwon Water for the past 12 months, the actual water reduction as recorded by the water meter that supplies the Continuous Dyelines area is-



As supported by the above table supplied by Barwon Water, the average daily water usage to the Continuous Dyeline's has dropped from;

715,411 L per day for July 04 to Dec 04
to
482,789 L per day for Jan 05 to Jun 05

This represents a total reduction of **84,907,110 L per year** or a percentage reduction of;
 $[(715,411 - 482,789) \div 715,411] \times 100 = \mathbf{32.5\%}$