

CASE STUDY

WATER MINIMISATION

Littore Family Wines Moorabool Valley, Victoria

Littore Family Wines near Geelong has limited water supply and no current offsite options for reuse or disposal. Several measures are used to reduce unnecessary water wastage.

The site crushes about 14,000 tonnes, plus an external winemake of about eight million litres. The site has two bottling lines rated at 10,000 and 5,000 bph, respectively, as well as a small softpack line. Water use is 24 ML, for an annual production of 18 million litres of product. This 1.3 L water/L wine benchmarks favourably against 3.1 L/L for all wineries with bottling lines and is 50% of the water use for wineries with bottling lines in a comparable size class (Kumar et al 2009).

Both the winery and packaging area have implemented a range of simple measures to cut water use, including:

- All winery hoses are equipped with Camlock fittings, and have fire hose nozzles (pressure activated).
- Centrifuge hood cooling water is recycled and cooled through a small plate heat exchanger.
- RDV vacuum pump water is also recycled and cooled. The RDVs were purchased with integral cooling systems, and a simple buffer tank and small pressure pump are used for the recirculation.
- In the winery most drains are the Taylor-type, which are all drained through a slotted screen basket to minimise solids going into the waste stream.
- Solids are generally caught before going onto the winery floor, to avoid using water to move solids:
 - dry cleaning (broom and shovel) is practised wherever possible;
 - when emptying must lines liquid is passed through a large-slotted screen basket to catch solids remaining in the lines; and
 - a pigging system is planned to make this process more efficient.
- All tank-cleaning is assessed before beginning, and water rinseable cleaning agents such as Cleanskin are used where possible to remove a citric wash and second water rinse from the cycle.
- Some treated winery waste water is accumulated into a tank and used during the vintage period for cleaning trucks and the main traffic and processing area floors.
- In the packaging areas the water for the vacuum pumps is all recycled.
- Conveyors are dry, with some having dry lubrication systems (Garvey accumulation tables).
- Warming tunnel water is treated in order to maximise the time the water can be held in the unit.



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Wastewater is treated through a sequencing batch reactor and then stored in a dam. This water is then used to irrigate gardens and the adjacent vineyard.

Reference

Kumar, A. Frost, P., Correll, R. & Oemcke, D. (2009) *Winery Wastewater Generation, Treatment and Disposal: A Survey of Australian Practice*. CSIRO Land and Water Science Report Series ISSN 1834-6618

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Drovers Dog Estate Vitners

Drovers Dog is a fictitious name for a real winery that crushes 30,000 tonnes per year (Goss 2006). Between 2001 and 2005, it was able to reduce wastewater production from approximately 2.6 L/L water/wine to 1 L/L, and reduce BOD production from almost 9 kg/t tonne to less than 4 kg BOD/t.

The cleaner production processes used to reduce these loads included:

- screening in the winery to prevent the ingress of wet marc and skins into the wastewater system, with a 75% reduction in nitrogen to wastewater; and
- minimisation of wine loss in cellar operations, with a reduction of 2,888 kL of wine loss, along with an almost a two-thirds reduction in the potassium to wastewater.

Savings at Drovers Dogs included:

- \$51,000/year lower water bill;
- \$52,000/year lower power bill; and
- more than \$2m more wine available to sell.

References

Goss, P. (2006) *Cleaner Production: It's Easier Than You Think*. Winery Engineering Association 2006 National Conference – Engineering For The Competitive Edge.

Goss, P. (2006) *Cleaner Production: It's Easier Than You Think*. Maximising the Value – Maximise Returns Through Quality and Process Efficiency, Australian Society of Viticulture and Oenology Seminar Proceedings.

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