Case Study: Kay Brothers Winery

KAY BROTHERS
McLaren Vale

Government of South Australia
Green Industries SA

SOUTH AUSTRALIA

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>
> **STEVE TODD, KAY BROTHERS WINERY**

Lean production breeds a new culture

Lean production, by whatever name, can bring some sweet results. That's the experience of McLaren Vale's Kay Brothers Wines, which has seen a whole new culture of continuous improvement develop after its exposure to a methodology many might associate more with manufacturing than winemaking.

"We see lean production as an umbrella term to cover a whole lot of things such as reducing waste, working more efficiently and putting everything in its place," said general manager Steve Todd. "I'm sure some lean advocates would say we're not doing it right, but we're doing it right for us."

"Right" includes savings of around $15,000 in the first year and a "to do" list of more than 40 new projects that everyone from the front office to the winery, the cellar door and the vineyards is keen to get to.

An engineer by training, Steve worked in a variety of roles in the food and IT industries in his native England and Australia before arriving at Kay Brothers in February 2014.

His timing was perfect. Not only was the winery approaching its 125th anniversary (a milestone that would further entrench its reputation at home and abroad as a producer of premium wines) but the opportunity to start doing things even better was there to be grabbed.

In November of that year, Green Industries SA (GISA), the SA Wine Industry Association (SAWIA) and Adelaide-based business productivity specialists 2XE jointly launched a six-month Efficient Wineries Program offering free training to interested wineries.

The program was based on a written guide to lean production in a winery context prepared by the industry's national body, Wine Australia, with input from 2XE.

"I'd come across lean; I'd never practised it but it was a familiar concept in terms of what the principles are," Steve said. "I saw the advertisement, it was just after I started, and I admit I wasn't sure how it would apply to a wine business. But I went to the first information session and I was hooked."

In the wine industry everything happens around vintage, so Steve had to wait a few months to get things moving. Vintage 2015 was about understanding new concepts, developing new approaches and workshopping a list of ideas.

The arrival of a new winemaker, Duncan Kennedy, added even more impetus, and by the 2016 vintage a list of projects was ready to roll in the winery. So pleased is everyone with the outcomes, that lean production will move to the vineyards in 2017.

"Small wineries are probably guilty of thinking it's just for big companies but it's not... And, it doesn't have to be massive changes. It's about thinking differently and getting the guys involved in thinking differently. That's where we started, and I quickly handed it over to Duncan and his team in terms of this is what we want to do."

– Steve Todd, Kay Brothers Winery

A system for all needs

Lean production aims to increase resource productivity by minimising resource use and maximising production. That means looking at everything in terms of efficiency and waste – wasted time, money, effort and energy among them.

There are established protocols and systems but, as Kay Brothers quickly found, once you have the concepts in place you can take what you need and leave what you don't.

"We had a formal process that we were following; without it, it would have been difficult to understand what we talk about with waste," Steve said. "2XE were very practical but not definite; it was clear we could tweak things to suit us. They came down and talked us through some of the typical tools so the guys could understand what we were talking about."

It also meant employees didn't see it as a threat when strangers appeared in their part of the winery asking questions about what they were doing and carrying out time and motion studies. In most cases it was the employees themselves who had suggested the project because they felt things could be done better.

"It worked really well," said Duncan. "It got our whole team from top to bottom thinking about continuous improvement. Every time, doing an operation in the winery, thinking how can I make this more efficient. It just gets you more motivated and gives you a pathway that you can follow and some processes and protocols – a framework or template."

After the employees had brainstormed a list of possible projects or areas that needed attention, based on the 2XE methodology, James McIntyre from 2XE worked with Duncan to categorise them as big, medium or small, hard or easy, cheap or expensive. Which ones could be done straight away and which would require Board assistance or outside support?

"We had a traffic light system with three columns for difficulty to implement, benefit and cost," Duncan said. "Three greens meant go now; ones with reds still look at them but work out when. From there we created a timeline of when things would happen. Ticks mean project completed. I put it up in the smoko room where everyone could see it, follow progress and suggest new ideas."

The big change, he said, was that "instead of just talking about stuff we now measure it". Instead of just saying that something takes too long or we could do it better they actually monitor it and time it and talk through a solution.

Not all ideas are practical, but no-one is ridiculed or ignored for suggesting them. "Put a structure around something and you create a culture," Steve said.

Most importantly, employees have developed the skills to do processes such as time and motion studies or Value Stream Mapping, which aren't as complicated as their names might suggest. Where help is needed, Steve or Duncan can always call 2XE for a chat or get further advice from SAWIA. Sometimes paid external assistance is required, but only once the project has passed the traffic light test.

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> **DUNCAN KENNEDY, KAY BROTHERS WINERY**

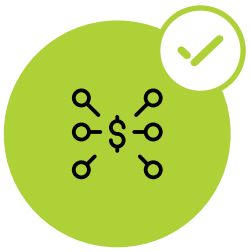
Lean production in action

Three projects that Kay Brothers put top of its list sum up the potential and the diversity of the lean approach. They vary greatly in complexity but have four things in common:

BROUGHT ABOUT REAL CHANGE TO THE PRODUCTION PROCESS

REQUIRED LITTLE OR NO COST TO IMPLEMENT RECOMMENDATIONS

SIGNIFICANTLY INCREASED RESOURCE PRODUCTIVITY



BENEFITED THE OVERALL OPERATION OF THE BUSINESS, NOT JUST SIMPLE RESOURCE EFFICIENCY IMPROVEMENTS

LEAN AND GREEN

A number of the projects – some completed, some still on the list in the smoko room – are environmental in nature, while others have produced indirect benefits through reduced energy or water consumption.

USING MACHINERY AS INTENDED

The location of the variable speed gearbox on the winery's grape hopper required the operator to move from their station to alter the auger speed to match the crusher and must pump capacity and avoid juice and grapes overflowing onto the ground. In reality, operators chose the easier option of just turning the motor off when the speed got too high. This not only put excessive strain on the motor and gearbox, it didn't prevent spills because the speed was rarely optimal; the motor was either on or off.

A Variable Speed Drive with a soft start that could be installed next to the crush and must pump cost just $3000. The operator now had full control without moving, meaning only one person was needed to manage the crush station rather than two, and there were less spills, meaning less time and water needed for cleaning up. And using the machinery as planned increased the electrical efficiency of the auger motor and the life expectancy of the motor and gearbox.

Outcomes

↓30% LESS ELECTRICITY CONSUMED

Additional savings

LABOUR	33%	=	35 HRS
WATER	33%	=	500 L
WASTEWATER	33%	=	500 L
ELECTRICITY	30%	=	300 KWH

Note: Values measured over a single vintage period.

Outcomes

↓57%

REDUCTION IN LABOUR COSTS

Additional savings

WATER	**33%**	=	**2475 L**
WASTE WATER	**33%**	=	**2475 L**
FORKLIFT USE	**33%**		
ELECTRICITY	**33%**		
LABOUR	**33%**	=	**18 HRS**

Note: Values measured over a single vintage period.

RECONFIGURING A PROCESS

The winery's six-step basket press process was complicated, involving three pressings of the filter cake to extract wine from grape skins, and regularly created a bottleneck, which slowed everything down. A Value Stream Mapping (VSM) exercise was conducted with staff to analyse the process, identify where "wastes" could be eliminated or reduced, and identify three individual projects to improve the process.

As a result, pressing mats were used to increase the amount of wine extracted with each pressing, the lifting hook was changed so a single operator could attach the basket to the forklift, and the press tray design was altered to eliminate changeover time. For a total cost of $1100, a full press cycle was eliminated, increasing the rate of processing, and a significantly easier system was created, allowing one operator to complete processing steps.

In addition, the new approach improved the safety and reliability of the system, reduced spills and forklift moves, and improved wine quality by reducing its exposure to oxygen and bacteria.

REDUCING CLEAN-UP TIME

During crushing and destemming, a team member needed to be on hand to shovel stalks away from the crusher into a trailer for later disposal, and this created a large amount of mess on the crusher pad, which needed to be thoroughly cleaned. A VSM showed that clean-up (even only once a day) was in fact the most time consuming part of the whole process.

The solution was to modify some existing bins that could be used to collect the stems, preventing them from reaching the ground in the first place. The result – for no cost and little effort – was a significant reduction in clean-up time, water used and waste water generated, and gave staff more time for other tasks.

Outcomes

↓ 33%

REDUCTION IN LABOUR COSTS

Additional savings

LABOUR	**33%**	=	**7.5 HRS**
WATER	**50%**	=	**11,500 L**
WASTEWATER	**50%**	=	**11,500 L**

Note: Values measured over a single vintage period.

Steve mentions one small change that he said highlighted how old habits die hard. “The guys always used to pull the crusher out into the middle of the yard to wash it down. They said it was easier and quicker and I asked ‘is it, because now you have to wash down the whole yard afterwards, not just the corner where it was sitting. Let’s try it and if it works we’ll get the drainage in the corner sorted out’.”

It worked – making the whole process more efficient and requiring a lot less water for the yard clean-up.

Efficient Wineries Program

The Efficient Wineries Program comprised the following four group training sessions and five one-on-one support sessions:

GETTING STAFF TO THINK LEAN

- Identifying waste in the wineries – used to identify 'wasteful activities' that are not easily seen
- Identifying the right 'metrics' to measure and increase productivity – used to help wineries focus on how to measure productivity

IDENTIFYING WASTE IN THE PRODUCTION PROCESS

- 5S Workplace productivity – basic steps to 'make the job easier' by simplifying winery production areas
- Value Stream Mapping – used to analyse a process and identify easier and less wasteful ways to undertake the process

IMPLEMENTING WASTE-ELIMINATING PRACTICES

- More advanced tools to improve inefficient and wasteful winery activities

RE-THINKING PRODUCTION FLOW

- Tools used to maximise production flow and minimise waste
- Implementing continuous improvement to continually improve processes within the winery

History & Sustainability

Kay Brothers has been able to modernise its approach while staying true to its history, the integrity of its heritage-listed buildings and its commitment to sustainability.

Established in 1890, it is recognised as the oldest winery still in founding family hands in McLaren Vale. The original homestead is one of the oldest properties in the Seaview area of the region.

The first stage of the winery was completed in 1895, the press house was built in 1912, and the last significant addition was another storage building (now the cellar door) in 1920. A Celestial & Coq basket press installed for the 1928 vintage is still the winemakers' preferred option, nearly 90 years later.

The site has never been connected to mains water and so water efficiency has always been a major focus for the business. The vineyards were dry grown until the advent of the Willunga Basin recycled water system in the late 1990s. Kays were enthusiastic adopters of this technology and now use a sophisticated computer controlled drip irrigation system throughout the vineyard. The Willunga Basin system uses recycled water from SA Waters Christies Beach wastewater treatment plant.

Mains electricity was only introduced to the winery in 1952 and the Kay family was among the first to trial renewable energy when it installed a wind turbine. More recently, the company installed a 120-panel, 30kW solar panel system on the warehouse roof.

Many of the projects identified and implemented at Kay Brothers did not require a significant investment in money for implementation. Many of the projects could be implemented with little or no cost, and yet create great benefits for both productivity and resource efficiency.

The review of the winery involved all team members at Kay Brothers. Many of the ideas came directly from these team members, and so there was a high sense of ownership for the projects. This ownership increased the likelihood that these projects would be successfully implemented.

The greatest benefits of undertaking a 'lean review' were to look at existing operations and look for ways to increase efficiencies and to enable an external expert to look at the process from an external perspective.

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