AGWA Process Efficiency Case Study 2

Wine Industry - Yalumba

- **Metric analysis**
- **Automation**
- **Continuous processing**
- **Fermentation efficiency**

Australian Government
Australian Grape and Wine Authority

ESTD Y 1849
YALUMBA
AUSTRALIA'S OLDEST FAMILY OWNED WINERY

Process Efficiency Opportunity	Outcomes
Measurement of metrics	Analysis of existing metric data
	Equipment optimisation
	Identification of project to increase the efficiency of all five process efficiency measures
Automation	Increase of metric data
	Equipment optimisation
	Increased process, materials, labour, energy and water efficiency
Continuous Processing	Increased process efficiency
Fermentation efficiency	Increased process efficiency
	Increased materials efficiency

Process Efficiency Outcomes	Outcomes
Production speed efficiency	Increase throughput
	Decreased cost
Materials efficiency	Decreased waste
	Decreased waste treatment costs
	Decreased wine loss
	Consistent product = greater markets
Labour efficiency	Utilising staff more efficiently
	Decreased labour costs
Energy efficiency	Decreased energy costs
Water efficiency	Decreased water costs

Yalumba is Australia's oldest family-owned winery and one of the country's largest wine exporters.

The Yalumba facility was struggling to fill orders and needed to increase production capabilities and increase process efficiencies.

The winery undertook a significant automation project and changed its focus to production efficiency. In doing so a continuous production flow processing facility was created which allowed the use of principles such as 'just-in-time' to deliver grapes to the site and increase processing efficiency. This automation ensured production flows were constant and reduced waste on site.

The objective of the management team was to increase process efficiencies and create a consistent product despite the seasonal variability of grape receival. This was seen as a key principle for Yalumba as their customers wanted consistency from a label and expected it to taste the same year after year. This meant it was necessary to understand the grape feedstock parameters including acidity, sugar, aroma and colour. The next step was changing recipes to suit the changing feedstock of the winery. The only way this could be done efficiently was by increasing process control and process automation.

By taking this step to increase process control, it was possible to optimise conditions to increase fermentation rates and ensure a high volume of throughput. This meant controlling temperature and minimising oxidisation. The focus then moved maximising the speed of the crushing and pressing steps to move the grape juice into fermentation tanks.

Arrays of automatic systems were used for the control and measurement of winery processes throughout wine production. This allowed the winery to control everything from variable speed drives on screw feeds, crushers, pumps, presses, agitators, temperature, as well as thorough control of fermentation rates.

The benefits for this system are numerous and the facility has the ability to produce a consistent product and has greater production control. This has allowed the facility to use key resources efficiently such as labour, energy, materials, water and maximise production speed. The automation has allows the refrigeration systems to be highly efficient by using off-peak loading to reduce both electricity cost and power consumption by both utilising the increased efficiency of night time ambient temperatures and by maximising the efficiency of loaded refrigeration compressors.