AGWA Process Efficiency Case Study 1

Dairy Processing Industry

Murray Goulburn Co-operative Co. Limited

Australian Government
Australian Grape and Wine Authority

Devondale WHOLLY AUSTRALIAN

Murray Goulburn Co-Operative Co. Limited

Process Efficiency Opportunity	Outcomes
Measuring Metrics	Analysis of existing metric data
	Installing new metric measurement capabilities
	Boiler Optimisation
	Energy Efficiency
Automation	Automation of data collection for metric analysis
	Boiler use optimisation

Process Efficiency Outcomes	Outcomes
Energy Use	Decreased boiler energy
	Decreased gas
	Decreased costs

Process Efficiency Savings	Percentage process saving	Cost savings (per annum)
Boiler use optimisation (administrative change)	**4%**	**$180,000**
Evaporator / dryer start-up (administrative change)		**$23,000**
Steam condensate insulation	**3.3%**	**$200,000**

Murray Goulburn Co-operative

The Murray Goulburn Co-operative (more commonly known by the dairy brand name Devondale) is Australia's largest dairy food company. This company was selected for a trial by the Commonwealth Government to undertake an Energy Efficiency Best Practice pilot program. The aim of the pilot was to understand the benefits of creating an Energy Management Team and the impact this would have on site energy consumption.

The project began by creating and training a site-based Energy Management Team (EMT) through a series of workshops. Once this team was developed and trained, they gathered data on energy use across site. During this step the team discovered they only had a limited amount of data available to base their decisions on. The EMT developed and implemented a list of projects that would enable them to gather important information about energy use on site so they could more thoroughly understand and evaluate their energy use. Once completed, the team determined the largest energy efficiency gains would be found in projects targeting the boiler system. The team then proposed several projects to increase the efficiency of this boiler system.

Rob Jurg, the then Waste and Yield Manager for the site stated: 'We have a wide range of monitoring equipment as part of our waste and yield program, but when it comes to understanding our energy use we have very little monitoring equipment in place. Data is essential in helping us understand the way we use energy so we can then work out how to improve our efficiency.'

This three boiler improvement projects included:

1. Improving steam-raising efficiency through improved communications with the boiler house.
2. Improving start up procedures for the evaporator and dryer.
3. Improving condensate return, fixing steam leaks and improving lagging.

The outcome from the first project was a significant administrative change to steam raising efficiency. After the project was implemented, the average loading on the boiler increased from 30% loading to 60% loading. This resulted in a 4% increase in steam raising efficiency which alone saved $180,000 per annum in energy costs.

The second project involved an administrative change to the start up procedure of both the evaporator and dryer plants. These changes eliminated the need for turning on equipment too early and therefore wasting energy before production began. This resulted in an annual savings of $23,000 per annum in energy costs.

The third project focussed on insulating the steam condensate piping which was estimated to increase the condensate steam temperature by 20°C. This increase in condensate return temperature was estimated to increase boiler efficiency by 3.3%. The potential savings from the project was estimated to be around $200,000 per annum once the changes had been implemented.

The first two projects required administrative changes only to boiler processes to increase energy efficiency and decrease cost. It was only though measuring and analysing energy efficiency data the projects to improvement production efficiency could be discovered. The third project was focussed on basic maintenance and some improvements to the system, but this would not have been possible without understanding energy use on site, and where losses were occurring.

The tangible benefits for the project are significant with cost reduction of close to $400,000 per annum. Additional benefits also came from this project in the form of a focus on process efficiency for all staff. This was by staff understanding site operations more thoroughly and having greater involvement in operational improvements. In addition, staff gained valuable experience which the business could benefit from well into the future.