



## Energy Systems Optimisation

### Durbanville Hills Winery

#### Agro-processing

## BACKGROUND

Durbanville Hills is a premier wine-making estate in South Africa. The farming and wine-making business is operated by the Distell Corporation, which produces wines, spirits, ciders and other drinks, and is listed on the Johannesburg Stock Exchange. It employs more than 4 200 people and has an annual turnover in excess of R7.9 billion.

The Durbanville Hills plant is typical of small wineries in that energy usage varies during the two distinct seasons: harvesting and wine-making season; and storage season. During harvesting and production, refrigeration, the chilled water plant and compressed air are the biggest energy users. Other energy-intensive processes include stalk removal, filtration, blending and moving wine between tanks.

During the storage season, the chilled-water plant is generally shut down and compressed-air systems only used to operate valves involved in mixing and blending between tanks. Refrigeration is still required for the cold-stabilisation process, in which white wine is chilled to near freezing point to prevent potassium bitrate residues forming when bottles reach consumers.

## KEY FINDINGS

In three years, Durbanville Hills implemented six energy-saving projects, cutting electricity costs from R155.19 to R97.61 per tonne of wine produced. GHG emissions were reduced from 103.37 to 87.60 tonnes of CO<sub>2</sub> per year per tonne of wine produced.

## IMPLEMENTATION

Through the Industrial Energy Efficiency (IEE) project, Durbanville Hills and its staff were introduced to energy systems management (EnMS) and energy systems optimisation (ESO). The company then approached the NCPC-SA for a site assessment, and has since had an in-depth investigation into its energy consumption done.

The site assessment by the NCPC-SA included a walk-through and survey of the plant; an analysis of energy consumption, costs and the performance of various systems; the identification of energy-saving opportunities; and a report for action and implementation

Recommendations were designed not to impair productivity, and to improve the competitiveness of the Durbanville Hills plant. As a result, six initiatives have been developed and put into place at the plant, and staff and management have used the findings to guide this implementation and ensure consistent savings.

## SUMMARY OF INTERVENTIONS

The initiatives recommended and developed for the Durbanville Hills Cape Town plant have since been implemented:

- Cooler pumps automatically switched off when empty
- Three ammonia plant compressors sequenced depending on loads
- Timing geysers to run off-peak
- Pressure control systems installed on water circulation pumps
- Daylights and automatic switches installed
- Compressed air pressure set-points re-set

## ENERGY-SAVING OPPORTUNITIES IDENTIFIED

Intervention	Capital cost (R)	Energy savings (kWh / annum)	Savings (R)	Estimated Payback period (years)	GHG emission reduction (Kg CO <sub>2</sub> /year)
Demand management	R 71 000	0	R 71 000	Immediate	0
Chilled water plant	R 150 000	198 000	R 154 000	1 year	178 000
Lighting	R 50 000	110 000	R 86 000	0.5 years	99 000
Compressed Air System	R 0	40 000	R 31 000	Immediate	36 000

## LESSONS LEARNT

- Durbanville Hills made energy a priority, and the energy team showed that the projects completed improved understanding of the benefits of ESO implementation
- Management involvement and buy-in is very important to ensure resources are made available for projects
- Raising employee awareness on energy matters and the benefits of efficiency is key
- Monitoring interventions and reporting to management helps reinforce the commitment, and provides security regarding the effectiveness of the decisions taken

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Enquiries



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