

CLEANER PRODUCTION

→ CASE STUDY



BORDEX WINE RACKS



Environment Protection Agency
Government of South Australia



BORDEX WINE RACKS AUSTRALIA

Business Profile

Bordex Wine Racks Australia is a South Australian owned wine rack manufacturer with a strong export focus as demonstrated by its winning of the South Australian Employer's Chamber of Commerce and Industry's Emerging Exporter Award. The company sells its uniquely designed product to restaurants, bottle shops and hotels in Australia and overseas. Employment at its Dudley Park factory has more than doubled since 1995 to reach 11 in 1998.

Financial assistance provided

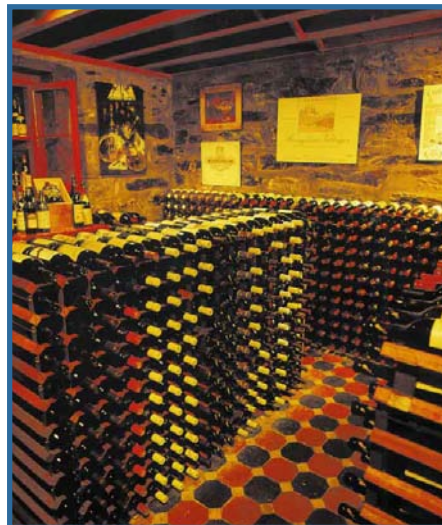
The EPA's Cleaner Industries Demonstration Scheme provided an interest free loan of \$30,000 to purchase new technology.

Technology implemented

Press machine, cutting machine and a Unipower induction oven.

Cleaner production motivators

Increase productivity, reduce energy costs.



TRADITIONAL APPROACH

- Steel strips for the ends of wine racks pass through a powder coating booth and then through infra-red ovens to be recoiled.
- Ovens use electrical power extremely inefficiently, requiring 40 kW of energy to run production line at 1 m per min.
- Fumes are emitted from curing powder coat when powder was heated to cure on to steel.
- The heating process required large volumes of water to cool heaters.



CLEANER PRODUCTION INITIATIVES

Benefits recommended and implemented

Adding extra press machine, extra cutting machine and the Unipower induction oven

The steel is purchased in coils, run through a press, painted as coils, heated by the induction oven to cure the paint, and then recoiled. In a separate process the steel is then cut into lengths by the cutting machine.

BENEFITS

ENVIRONMENTAL

Energy usage reduction

- New induction oven able to run production line at 2 m per min drawing only 5–6 kW (120 kW using the old system of heating).

Waste reduction

- Energy consumption minimised by more direct heat process. Heat not lost to surrounding air and far less heat energy lost through top of oven.
- Incorporated closed powder coating process uses 100% of the powder; no waste.
- Number of rejects from incorrectly cured steel reduced significantly.
- By recoiling automatically strip remains free of dust and dirt so not contaminated when painted; no accumulation of waste.

Water

- Fully enclosed water cooling process recycles 100% of water used; water wastage reduced substantially.

Air quality

- Induction oven heats steel and hot steel cures powder coat, therefore less fumes emitted from the curing powder coat than from convection curing.

ECONOMIC

Investment

- | | |
|--|----------|
| • Unipower heating equipment | \$38,600 |
| • Reel to reel press | \$7,500 |
| • Pneumatic steel guillotine | \$16,500 |
| • Water cooling plant for induction oven | \$3,200 |
| • Installation cost | \$6,000 |
| • Total | \$64,300 |
- (includes EPA contribution)*

Productivity

- Efficiency of process significantly increased.
- Production increased from 2 to 3.6 runs per 8 hr working day; a net increase in productivity of 80%.
- Potential exists for increasing speed of line to 2.5 m per min which would further increase productivity.
- The press and the computerised cutting machine can accommodate increased line speed giving 40% extra capacity.
- Approx 1 hr of labour per day is saved by elimination of manual rerolling of protective strip.

Savings, outcomes

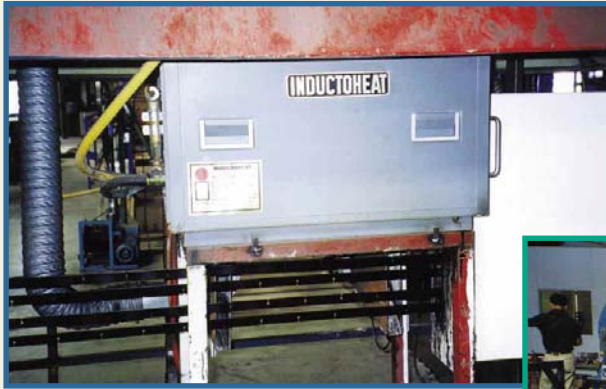
- \$5000 per annum savings in power consumption
- \$25,000 per annum savings in estimated productivity
- **Total savings of \$ 30,000 per annum.**

Payback period

- 2–3 years.

OHS

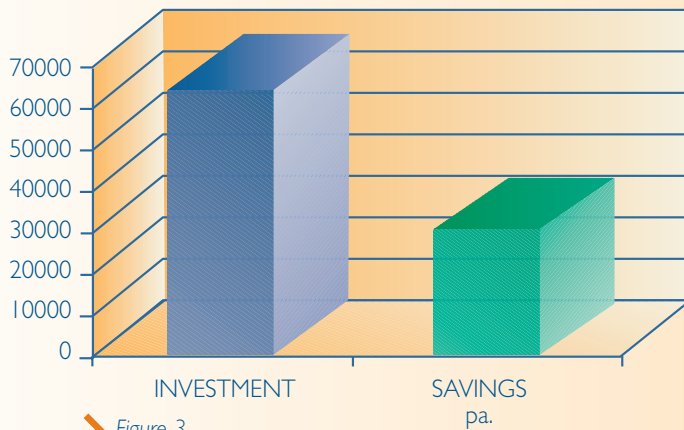
- Reduced fumes from the curing powder coat improved the OHS of employees.



➤ Figure 1.
Induction oven.



➤ Figure 2.
Powder
Coating line.



➤ Figure 3.
Comparison of investment and savings (\$ per annum).

WHERE TO FIND ADDITIONAL INFORMATION

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