

Cleaner Production Case Study

Cleaner production involves reducing the consumption of raw materials (including water and energy) and reducing the volume and toxicity of waste and other emissions.

Industry:

Aerospace

Hawker de Havilland (Boeing)

Hawker de Havilland manufactures component parts for aircraft and exports approximately 95% of its output. The company has major contracts with the world's leading aircraft manufacturers such as Airbus, Boeing and Lockheed Martin.

Company characteristics

Hawker de Havilland is an Australian company and a wholly owned subsidiary of The Boeing Company. The company employs 1,330 people at two sites: 550 people work at the Bankstown site, Sydney, and 780 at the Fisherman's Bend site, Melbourne.

Environmental successes

This is one of a series of case studies featuring companies that participated in the Department of Environment and Conservation (NSW) \$5 million 'Profiting from Cleaner Production' – Industry Partnership Program.

NSW companies are discovering that cleaner production not only protects the environment but also reduces operating costs, streamlines processes, boosts profits and improves staff engagement and morale.

Aircraft manufacturer flying high with cleaner production

'Hawker de Havilland has proved that cleaner production is not only an investment in the triple bottom line, but makes perfect operational sense by yielding pragmatic, sensible outcomes.'

Michael Jupe, Hawker de Havilland.

What did they do?

Recover aluminum swarf

Hawker de Havilland entered into a contract with a metal merchant to install a new briquetter to compress aluminium swarf (shavings) into dense bricks, which are then collected and removed off-site for recycling. Cutting fluid is separated from the aluminium during compaction. This system has replaced an older process that produced large coolant-impregnated blocks that had to be manually lifted from the machine. The new process minimises occupational health and safety (OH&S) risks associated with manual handling.

Recovering the swarf has yielded substantial benefits:

- approximately 500 tonnes of swarf are recycled per year, using a cost- and OHS-effective process.
- 250,000 litres of cutting fluid (comprising oil and water) will be reused per year.

Improve recycling

The company has put concerted effort into recycling materials which were previously sent to landfill.

Cardboard

Using an improved collection system and a compactor, more than 31 tonnes of cardboard are recycled per year. Import boxes have been redesigned and used for export, thus saving the manufacture, use and disposal of the original box.

Plastics

Savings achieved through cardboard recycling encouraged the company to look at plastic recycling.

In the first year 12 tonnes of plastic were diverted from landfill to recycled products, equating to an approximate volume of 800 m³. Similar initiatives and associated reductions have been applied to wood and steel waste.

Colour-coded sorting system

Colour-coded wheelie bins were introduced to encourage better separation of recyclable material. Separate bins are now available for aluminum, steel, paper, plastics wood, composite materials, co-mingled service and general garbage. The company estimates that when all initiatives and systems are in place, recycling will account for 85% of all 'waste' — a tremendous achievement.

Work with a supplier to improve packaging

Up to 14 large boxes arrived from America every month, each 1 m³ in volume. They contained aircraft balance weights, which used to be held in trays made from silica-impregnated expanded plastic. This was not recyclable and went to landfill.

The company asked the supplier to replace this packaging with a cardboard tray based on a 'McDonald's-style' drinks holder. The supplier came up with a new packaging design which not only protects the product but has resulted in the following savings:

- reduced waste fees — 300 m³ of plastics not sent to landfill per year
- reduced packaging fees and airfreight costs, and greater potential for cardboard recycling.

Reduce power consumption

The company conducted a formal survey of its power consumption. As a result:

- all lights are turned off when they are not required, resulting in lower electricity consumption
- to achieve an agreed lower max. demand quantity to cut expenditure, gas heaters are turned off unless



Compressed blocks of swarf ready for recycling. Energy required for off-site re-smelting is reduced because the density of the brick has been increased, and greenhouse gas emissions are also reduced because coolant has been removed.

required, and a lower temperature setting has been selected so costly over-runs are avoided

- leaks in the compressed air system have been addressed.

Why did they do it?

What began in 2001 as a simple project to compact and recycle cardboard and plastic has been transformed into a million dollar bonanza for Hawker de Havilland, encompassing aluminum recycling, the recovery of machining cutting fluid and other resource savings.

By working with suppliers and treating all waste as a resource, Hawker de Havilland is well on its way to reducing waste by 85%.

Hawker credits much of its success to working with like-minded metals manufacturers in a group that was facilitated by the Advanced Manufacturing Centre.

What are the environmental gains?

Diverted from landfill each year:

- 12 tonnes (800 m³) of plastic
- 31 tonnes of cardboard
- 300 m³ of silica-impregnated plastic.

In addition:

- 500 tonnes of aluminium are recycled per year
- 250,000 litres of cutting fluid are available to be reused per year

What are the costs and savings?

	One-off costs		Savings per year
Recycling unit	\$30,000 *	coolant purchases	\$85,000 **
		coolant disposal	\$70,000 **
		aluminium reclamation	\$400,000
Cardboard compactor	\$5,000	cardboard recycling	\$10,000
Cardboard box redesign	nil	cardboard box purchase	\$80,000
Plastic recycling	nil	plastic recycling	\$6,000
Packaging materials	nil	packaging re-design	\$25,000
		packaging disposal	\$2,000
Freight	nil	freight reduction	\$235,000
Power consumption	nil	power consumption	\$30,000
Water meters & leaks	\$48,000	water consumption	\$80,000
Totals	\$83,000		\$1,023,000

* Equipment installation costs **Anticipated savings. Coolant recycling yet to be implemented.

- energy consumption has reduced by about 10.4 million kWh per year from aluminium re-smelting alone (and greenhouse gas emissions are reduced).
- 60 million litres of water are saved per year
- transportation is reduced.

fixing underground leaks, not visible on the surface, which will result in significant savings. The use of on-line computer monitoring and sub-meters will enable Hawker de Havilland to find leaks within 24 hours or less. Other process initiatives like spray rinse and flow restrictors have been introduced. All up savings are a reduction of approximately 5 million litres per month, a 50% drop in usage.

Where to now?

Cleaner production is now an accepted practice and a valuable part of Hawker's overall business strategy. Many other initiatives are planned—here are just a few examples.

Ultrasonic cleaning

The company is evaluating the replacement of potentially harmful chemical solvents, such as trichoroethlyene, with a technology that uses ultrasonic sound waves coupled with a biodegradable solution to dislodge grease, grime, oil, paint etc. from machinery and parts. Other uses being investigated are removal of sealant from reusable pins and the removal of paint from tins to allow metal recycling.

Water

With the support of Sydney Water's 'Every Drop Counts' Program an initial survey has uncovered a need for sub-meters. Work has begun on

Compressed air

The company will carry out an ultrasonic survey of the compressed airline system. Leaks can account for 5% to 10% of running costs, equating to approx. \$20,000 per annum. Hawker de Havilland is replacing worm drive hose clamps with crimped clamps which are far superior for eliminating leaks on flexible hoses.

More information

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