



PVC STEWARDSHIP CASE STUDY

Sustainability makes good

✓ best practice manufacturing

“Welvic will continue to look for opportunities to reduce manufacturing costs and improve sustainability.” Operations

Manager, Michael Starcevic

Bottom: PVC resin alone, Top: PVC resin blended (or compounded) with red dye and other additives that provide the physical properties that are required of the end product.



Introduction

PVC COMPOUNDING

Did you know that pure PVC resin is not a particularly useful material? What we've come to know as vinyl or PVC product is in fact a blend of PVC resin and various additives, called PVC compound. It is the compatibility of PVC molecules with a broad range of additives that makes it such a versatile product, one that is found in many different applications.

Each blend of PVC compound is specific to an application, depending on the requirements of the end product. Sometimes it needs to be flexible or rigid, transparent or opaque, colored, resistant to UV rays or heat, conducting electricity or insulating from it. Each of these characteristics can be added by mixing specific additives with PVC resin.

WELVIC AUSTRALIA

Welvic Australia is a producer and supplier of PVC compounds. They support many industries, from footwear, packaging and sporting equipment to building and automotive components. Welvic blends PVC resin and additives, melts the combined materials and then cools and cuts the final product into granules. Welvic customers process the granules through extrusion or injection moulding machines to make their end products.

Over 20,000 tonnes of compound is produced at Welvic's Deer Park site in Victoria. Four compounding lines and a dry blend powders line service customers around Australia.

A story of change

As a founding member of the Vinyls Council of Australia's Product Stewardship Program, Welvic

Goals

- Provide 'fit for purpose materials, on time and at lowest cost'
- Standardise operational activities
- Drive continuous improvement and innovation through a focus on Welvic culture and people.

Achievements

- 2 years LTI free
- 99.8% of Welvic product delivered in-full and on time
- 80% reduction in customer complaints
- 70% reduction in oven electricity use and 20% reduction in overall energy consumption.

Member status

- VCA member since its creation in 1998
- Founding member of the Australian PVC industry's Product Stewardship Program
- Over 20,000 tonnes of compound produced in Victoria annually



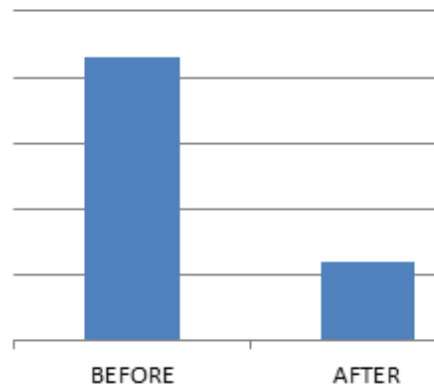
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Electricity use, ovens

Energy saved after upgrading oven insulation and operating procedures

Operations Manager
Michael Starcevic..



is working to enhance the sustainability of PVC production in Australia. The company has made many changes to improve, standardize and measure their business practices over the last four years.

STANDARDISATION

Lean Six Sigma methodology has been introduced to improve quality, reduce waste and meet Welvic's customer promise to provide *"fit for purpose materials, on time and at lowest cost"*.

'Lean-Six Sigma' methodology encourages a collaborative team effort to improve business performance by systematically removing eight types of 'waste' from the production system: defects, overproduction, waiting, non-utilised talents, transportation, inventory, motion and extra-processing.

A new Enterprise Resource Planning system coordinates all aspects of product management, from customer orders, product planning, cost, manufacturing delivery, marketing and sales, inventory management to shipping and payment.

WORKING TOGETHER

Management and employees have worked closely to create Welvic's vision for a sustainable future.

Key performance indicators for safety, environment, quality and resource efficiency have been introduced to drive performance. Communication and standardization are recognized as key to achieving durable cultural change, and Welvic is committed to bringing its employees along on the journey.

Reaching out, Welvic has partnered with key business programs to drive their change program:

Australian Apprenticeships and Skills Victoria provided assistance in the training and development of Welvic employees

Enterprise Connect's *Tailored Advisory Service* grant supported business benchmarking and further development of Welvic's business improvement strategy

Sustainability Victoria's (SV) *Smarter Resources Smarter Business* program, supported Welvic with a Resource Assessments grant and a subsequent Funding for Capital grant.

Welvic's collaboration with SV has led to a significant reduction in manufacturing waste and improved energy efficiency. SV's Resource Assessment of Welvic's facility highlighted opportunities to reduce loss of raw materials on the conveying system, amongst others. SV's *Funding for Capital* grant supported improvements in material handling, logic controller upgrades and energy management.

Outcomes

Welvic's efforts have delivered significant outcomes for the business.

SAFETY

From a historical rate of two injuries per month and two 'Lost Time Injury' (LTI) a year, Welvic has now been LTI-free for the past two years.

Further process improvements are underway, supported by employee training and safety compliance audits.

QUALITY

99.8% of Welvic product is now delivered *'in-full and on time'*. Historically around 85%, Welvic's key quality measure has leapt ahead due to improvements in machinery and maintenance, reduction in processing issues, workforce training, resource planning and minimising schedule changes.

Customer complaints have dropped from one per 52 tonnes produced to one per 256 tonnes produced. The significant improvement in customer satisfaction has allows employees to spend less time on complaints-handling and focus on further improvement activities.

RESOURCE EFFICIENCY

Energy consumption has been reduced by 20% and waste to landfill by 100 tonnes. A 70% reduction in the electricity use of Welvic's oven was achieved through improved insulation and operating procedures. Dust from the raw material conveyor system was also reduced using a new resin valve system, automatic bulk loading, new program logic controls and variable speed drives for blower fans.

Welvic plans to implement other recommendations from the Resource Assessment including manufacturing adjustments to further reduce process waste and rejects, reduce packaging and material movements by switching to bulk materials and upgrade plant lighting to LEDs. They are also working through opportunities to reuse pallets and recycle material vessels and waste oils.

The Vinyl Council of Australia applauds Welvic's efforts in manufacturing efficiency and demonstrating a clear business case for product stewardship.