CASE STUDY

Energy efficiency learnings lead to holistic review of Global's processes & materials efficiency

A materials assessment has shown Global Roto-moulding Pty that even small, quick-win, but significant continuous improvement projects can make a big difference when it comes to addressing material waste due to product defects, as does on-going staff training that includes the 5S workplace organisation method.

Business snapshot

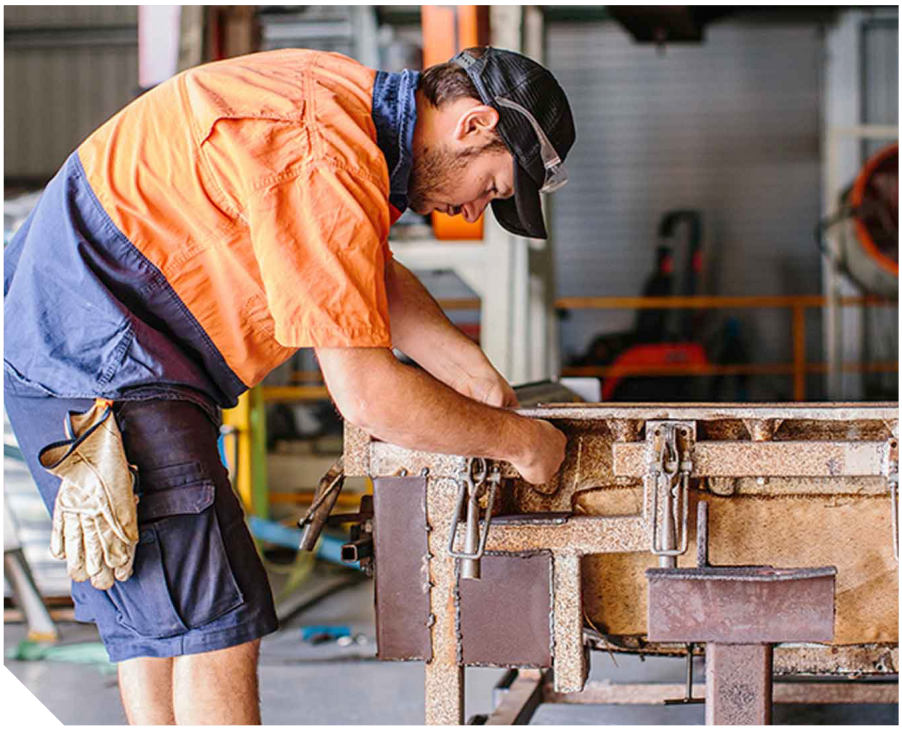
Global Roto-moulding (Global) designs, manufactures and distributes polyethylene water, diesel and fertigation tanks, and products for the mining, water, and agricultural industries. Established in 1998, Global has sites in Victoria and Queensland.

The Project

If you've ever been stuck behind a truck carrying an industrial water tank you'll know how difficult it is to reach your destination without being able to see where you're going. Seeing the road ahead is a key part of a successful business strategy. That's why – inspired by the results of a previous energy assessment that saw it reduce natural gas use by 50% and electricity by 32% – Global began a holistic business review to understand where they were and how they would get where they wanted to be.

The company manufactures industrial tanks using rotational moulding processes. This involves dosing polyethylene powder into hollow moulds, oven heating them and rotating resin powder through two axes to coat the inside of the mould. The resin powder melts and forms the desired tank shape.

But every business has challenges; one of Global's biggest was material loss due to the production of defective products that could not be used.



The solution

Unlike injection moulding, where one defect in thousands of products may be acceptable, with rotational moulding, short production runs meant frequent product changeovers. As a complex product may take many steps before completion, a defect could prove expensive.

With support from Sustainability Victoria's Resource Assessment Grant, a materials assessment was carried out.

Global engaged business assessors 2XE to, among other things, assess, identify and analyse causes of materials management deficiencies, product defects, and production bottlenecks.

A critical assessment finding was that operator error accounted for over 75% of defects and that errors were most frequent during mould preparation and plastic loading. The recommendation? Swift implementation of a Continuous Improvement (CI) system.

The results

To encourage CI and establish quick-wins while more comprehensive projects were scoped, several smaller, but significant, projects were put in place immediately:

- **Quality checking for early detection** of product defects saw staff complete jobs from start to finish, including checking the product for defects straight after removal from the mould
- **Implementing the 5S method**, a visual system of cleanliness, organisation and arrangement to support greater productivity, safety, and quality
- **Projects identified by staff** included yellow paint on moulds to easily see correct orientation, vacuum cleaners placed at stations to 'clean-as-you-go' and curb powder contamination
- **Projects identified by assessors** included cordless equipment in finishing area to stop staff moving products to tools & quick-grips replaced nuts & bolts to reduce time opening moulds.

"The energy plus the materials assessment were key in helping us improve operations," says Production Manager Ross Macgillivray. "Having someone outside the business review operations is invaluable. It can be hard to see the woods for the trees when you're in the thick of it."

"Another crucial change implemented to reduce materials loss was to staffing rather than material resources: we prioritised finishing," adds Ross.

If a fault is moulded into each product and that fault is not detected, more defective products are being made from that mould. Finishing the products as soon as possible after moulding means early detection of defects, and less downgrades. As a result, staff members are no longer taken from finishing stations and placed on moulds to cover staff absences there.

Only a few months after implementing that change, Global's overall product produced without defects (in relation to product count) has risen from an average of 95% to 97%.

Once all of the CI project recommendations are actioned, the assessors estimate that Global will see a 66% reduction in materials waste, which equates to a saving of $81,000 with a payback of less than 6 months.

Future plans

Global is currently scoping new Enterprise Resource Planning (ERP) software that will help the business to better manage operations from 2018.

Assessors also recommended additional training for all production staff, including 5S training, which enables workers to organise their workplace in a safe and efficient way to boost productivity.

"Having undergone a cultural as well as a knowledge shift," says Macgillivray. "More advanced training to change the way staff think about owning and solving problems, is crucial moving forward."

"Having someone outside the business review operations is invaluable."

Global's Production Manager, Ross Macgillivray

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