A good trashing

Giving wheelie bins the treatment

Few things are subjected to as many climatic extremes and as much routine stress as the wheelie bin. While some people carefully wash their bins – known in the trade as mobile garbage bins (MGBs) – most of us treat them with casual disrespect. And of course nothing can save them from the heat, the cold and the rough handling of vehicles.

It is for this reason that SULO MGB Australia tests sample bins on a weekly basis. SULO, which has cornered the Australian MGB market, has the only NATA-accredited MGB testing facility in the country.

The facility is located in a corner of SULO's $40 million-plus manufacturing plant at Somersby on the NSW Central Coast. According to SULO, the factory is the most highly automated large tonnage injection moulding plant in Australia. As you walk through the near-deserted factory, it's easy to believe.

The plant operates 24/7 and is serviced by just three people at any one time. High-density polyethylene (HDPE) pellets are pumped from the plant's silos, often mixed with up to 30% recycled plastic and/or reprocessed MGBs as well as one per cent colourant. The mixture is then piped into one of the plant's four injection-moulding machines. There a gigantic screw barrel heated to 260˚C melts the plastic and forces it into a mould clamp.

When it is cooled the MGB is plucked into existence by a robotic arm. It is then hot-stamped with a serial number and the relevant council's logo, perhaps fitted with a radio tag, and stacked 14 high, all without coming into contact with a human. Lids (which are made separately) and wheels (which are bought in) are usually attached at point of delivery for ease of transport.

The moulding process takes a brisk 60 seconds, and the result is a bin that with its smooth and shiny convex surfaces comes close to being a beautiful thing.

The plant as a whole produces 900,000 two-wheeled bins a year in various sizes and colours. (The company's larger four-wheeled specimens are imported from SULO in Germany).

The bins have a five-year warranty but usually last ten years or so, some a lot longer, particularly if they are well cared for.

Some however last only a few days, even hours. These are the ten or so bins that end up in SULO's small but well-equipped testing facility every week. SULO's Manufacturing and QA Manager, Thorsten Voss established the facility, which was accredited by NATA mid last year.

"Accrediting SULO was swift and easy," says Vinod Reddy, NATA Senior Scientific Officer, Mechanical Testing. "A solid working relationship was established in the process and the whole thing went smoothly. They clearly understood the compliance requirements of ISO/IEC 17025."

Having its own NATA-accredited facility provides a cost-effective and convenient means for SULO to comply with the Australian Standard (AS4123 (2008), Mobile Waste Containers) it was instrumental in establishing.

To ensure consistency in the production process, SULO's Quality Control Technician Paul Render subjects at least two of the sample bins to a drop test, two to an impact test and at least one to a stress test. More tests are conducted for large contracts or if the customer requires them.

The drop test involves filling the bin with ballast to 40 per cent of its nominal volume (96kg for your average 240-litre bin), raising it to a height of three metres and dropping it four times, either flat onto its base or at an angle.

The impact test requires the bin to be cooled to minus 18-20°C before dropping a five-kilogram weight from 80 centimetres on to various sections of the bin, particularly its weak points such as the handles and the injection point on its base.

The stress test involves immersing the bins for 48 hours in a solution of water and three per cent detergent, heated to 70°C. This accelerates stress in the moulding, simulating years of aging.

The MGBs aren't expected to emerge unscathed from these tests but they cannot crack, must still be pull-able and so must retain their general functionality.

'The bins aren't expected to emerge unscathed from these tests but they must retain their functionality'.

In addition to these mandatory tests, Paul also checks for weight and volume, consistent wall thickness, and axle and handle diameter. He also tests the strength of the bins' hinges and axles, and on occasion leaves samples in the sun for an extended period to test for the effects of UV.

More stringent tests are used when there is a major modification to a mould. SULO uses specialised equipment to lift and drop the MGB 1000 times for three and a half hours. The bin is then given a drag test to ensure it can still be pulled. Paul is also in the process of building a hot box which will be used to subject the bins to 95°C over three days.

"Everyone likes to think they make the best product," says Paul. "Now we like to think we can prove we do. Reputation is an important thing. We need to make products that are fit for purpose. We believe we do that and we believe we have the facilities to prove that. It gives us confidence in our bins."

SULO's Quality Control Technician, Paul Render prepares an MGB for a drop test.

SULO's MGBs already comply with the German DIN EN 840 product certification, which was used as a basis for the development of AS4123 published mid last year.

"Now that the standard's been released we're promoting that because we have quite a bit of competition from Asia in the form of product that's cheaper but isn't built to any standard," says SULO's Product Manager, Vienna Butt.

"We use accreditation to get certified but also as a tool within the marketplace. We set a benchmark for our products as the market leader, so we will promote the fact that we have a NATA-accredited facility and that our bins will be certified to the Australian Standard."