



# ENVIRONMENTAL RESPONSIBILITY

*While all manufacturing has an impact on the environment, we're committed to minimising ours. One of our primary goals at Ceramic Industries is to reduce factory energy consumption by 20 to 30% - we think it's a bold but achievable target as a responsible manufacturer. Further afield from the factory floor, our products themselves are designed to be sustainable and to reduce resource consumption in your home.*

**Read about some of the initiatives we've committed to.**

ECO INITIATIVES • BROCHURE





# M A N U F A C T U R I N G

● **Energy Consumption**

We've invested in some of the most energy-efficient equipment in the world, and designed our processes to minimise wastage.



● **Heat Recycling**

Kilns that fire ceramic products require a great amount of heat. Traditionally, this heat is vented back into the atmosphere, but Ceramic Industries recovers some of it, recycling it for other processes. For instance, the Betta factory's kiln recycles its heat to warm the water that's used in the drying cycle. This recycling has resulted in a 12% saving in gas consumption from the gas-fired boiler, and emissions are likewise reduced. Meanwhile, the latest generation EKO kilns from Sacmi have been installed at the Gryphon factory. These kilns use energy that would traditionally be wasted in the kiln to pre-heat the combustion air, also minimising gas consumption and emissions.



● **Lighting**

Sometimes simple efforts – like replacing old light bulbs at our factories and offices with energy efficient bulbs – can produce impressive results. At our Vereeniging plant alone we've achieved an electricity saving of 1.8GWh per year, equivalent to 1800 tons of CO2 emissions. Of course, it's not always necessary to leave the lights on all the time, so motion sensors activate them only when they detect movement in a room. Clear roofing panels enable the use of natural light instead of electric bulbs

during the day, which, besides saving energy, create more productive, happier workspaces.

● **Motors and Automation**



Ceramic Industries has replaced motors that drive machinery in our plants with new, energy-efficient motors. In addition, the new factories use electrically powered AGVs (Automated Guided Vehicles) and LGVs (Laser Guided Vehicles) instead of traditional diesel forklifts, further reducing our reliance on fossil fuels, and our emissions.

● **Stack Installation**

To reduce our emissions as much as possible, we installed dust-scrubbing or filtering equipment wherever dust is created in the manufacturing process. This works by filtering out airborne dust before it reaches the atmosphere, most of which is recycled back into the process.

● **Water Consumption**



We've redesigned our production processes to reuse water wherever possible. The Pegasus factory has reduced its consumption by 200 000 litres per day, while the Betta factory has managed to reduce its consumption by 28%. Our evaporative cooling towers (which cool through losing water by evaporation) have been replaced with closed-circuit radiators to cool the hydraulic press oil, thereby saving water.

Waste process water is flocculated for settlement, and the water is recovered

from the resulting sludge via a filter press. This water is then reused in the manufacturing process with the result that zero water is dumped as effluent from the tile factories.

We've replaced our traditional rotary printing machinery, which required extensive washing between runs to clean the equipment. High Definition Inkjet printers have been installed at all our factories, reducing the need for this washing.

In addition, the new factory has been designed to harvest rainwater, which is collected in catchment dams for use in our ceramic production.

● **Design Innovation**

At Ceramic Industries, we're always researching new design techniques that help us reduce our resource consumption. Thanks to this kind of innovation, we're able to produce thinner tiles that use less materials and less energy, while still ensuring the same strength and resilience. Body and glaze formulation improvements also lower the melting point of the clay mix, enabling production of the same strength and quality at lower temperatures.

● **Resource Recycling**



We realised that much of the by-products and waste materials that result from our manufacturing processes were perfectly usable. At Betta, the minerals in glazes are settled from process water and reused in manufacture. Unfired or 'green

scrap' is recycled into the body preparation to form new tile or sanware bodies. Fired vitreous China scrap is crushed and ground into powder and reused as raw material for sanware once more. Not even dust goes to waste - we recover it through extraction and incorporate it into tile and ceramic bathroomware products, too.

Besides recycling manufacturing materials, we reuse and recycle the wooden pallets on which our products are transported and stored. We also make sure all of the packaging for our products is 100% recyclable. Scrap steel is collected and recycled, and waste packaging material is sorted into cardboard and plastic and removed from site to be recycled too.

In our bathroomware factories, perspex and scraps from the manufacture of acrylic baths are collected and sent back to Taiwan for recycling. Acetone used for

washing and cleaning equipment in resin processes is also collected and recycled locally, as is dirty oil.



● **Topological Restoration**

While the aluminium silicates that make up most of the raw materials in ceramics are among the most abundant in the earth's crust, we treat their extraction with great care. All of our quarries are concurrently rehabilitated, restoring the original fauna and flora to the site wherever possible. At end of mine life, these quarries will become wetlands or park areas.

● **Training & Community Engagement**

As an industrial manufacturer, we have to be conscious of our place within the community. We do our best to keep channels of communication open, and attend to concerns from the public. It's one reason we take part in quarterly Air and Water Quality Forums, where we engage

with community organisations, government departments and other producers.

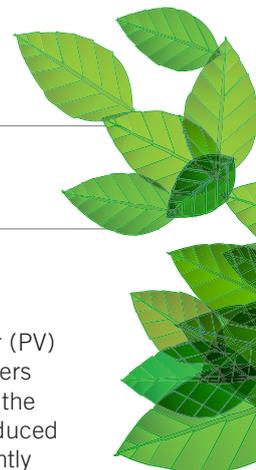
We also feel a duty to raise awareness on environmental issues and educate those around us. Community events, like the municipal fun run we support, serve to educate the public about clean air and monitoring, and are an important aspect of our environmental efforts. We also contributed to the Siphwiwe Healthy Living Conference, which engaged with high school learners on ecological and related health matters.

We're encouraging small entrepreneurs with an environmental aspect to their tasks to expand their businesses, too. Our paper recycling partner is one such person we're engaged with, helping her to develop her business so she'll be able to offer services to other operations in the area.

## BETTA FACTORY SAVES ENERGY

The Solar project has been commissioned at Betta. The project converts energy from the sun into electrical energy. During the daylight hours, when the sun is shining, Betta's electricity consumption from Eskom is reduced. The Solar (PV) installation will supply the factory with just under 1 MVA (975 KVA). While the investment into solar panels and inverters is a large investment, there are long term saving that will be achieved. In our drive to be environmentally responsible, the project offers significant savings on our carbon footprint as we reduce consumption of electricity that is normally produced from heating by burning coal which pollutes the air. To reach our ambitious environmental goals, we need to be constantly innovating. Among the exciting plans for the future are rooftop solar panels. These will eventually be used to reduce the power drawn by our factories and offices from the national grid.

In our efforts to further enable our factory to operate in an environmentally responsible manner, we have started with our water reticulation project. This project is aimed at reducing our municipal water consumption. This involves extracting water from 5 boreholes, treating the water and supplying the actory. This will see a reduction of approximately 45% of municipal water consumption. 2018 & beyond is exciting for us because we are constantly investigating ways to reduce our operational expenses and taking care of our environment.



## OUR PRODUCTS

Long after they've left the factory floor, our products continue to be environmentally responsible.

### • Bathroomware

#### Water-Saving Toilets

- Save Water
- Save Lives
- Flush for good

Toilets can be responsible for up to 30% of household water usage, so it's vital to make them as efficient as possible. Dual flush toilets have become incredibly popular in Asia, Europe, Australia and now South Africa. Most toilets sold today include a dual flush option – one for solid waste and one for liquid waste. Naturally, flushing liquid waste will use much less water than flushing solid waste.

The old single-flush systems can use up to 9 litres of water in every flush. Our dual-flush toilets offer the choice of a long flush (6l) or short flush (3l), both of which offer considerable savings. By replacing a standard toilet with a dual flush toilet, you could save almost 70% of the water you'd ordinarily use.

Our latest innovation includes new systems that use only 4.5 litres in a long flush, and 3 litres in a short flush – that means a family of four can save a swimming pool's worth of water in a year.

### • Water Usage on Betta Toilets

*Compare the water usage on some of the toilets in the Betta range:*

### • Tips for Water Conservation

With South Africa facing a water crisis,

everyone has a part to play in preserving this essential natural resource. Here a few pointers:

#### ❶ Check valves and pipes for leaks.

A small drip from a worn valve can waste dozens of litres of water per day. Larger leaks can waste hundreds litres of water.

#### ❷ Don't use the toilet as an ashtray or wastebasket.

Every time you flush a cigarette butt, facial tissue or other small bit of trash, flush of water is wasted. Rather dispose of them safely in a rubbish bin.

#### ❸ Check your toilets for leaks.

Put a little food coloring in your toilet tank. If, without flushing, the colour begins to appear in the bowl within 30 minutes, you have a leak that should be repaired immediately. Most replacement parts are inexpensive and easy to install.

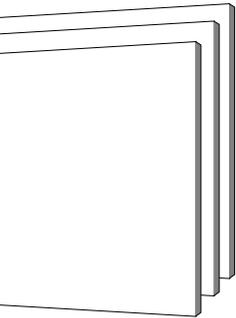
## • Tiles

### Sustainable, recyclable, clean

Tiles are among the most environmentally friendly wall and floor coverings available. While many vinyl tiles and synthetic carpets are derived from oil and other petrochemical by-products, most ceramic tiles are made from clays and minerals found abundantly in the earth's crust.

Ceramic tiles are unrivalled in longevity as a floor covering, sometimes lasting hundreds and even thousands of years. Since they need to be replaced less often than other floor coverings, they're less of a drain on natural resources. And once you do decide to dispose of them, there's no danger of environmental contamination, since they are chemically inert.

Because they're extremely durable, tiles are not easily damaged by dirt and everyday use. Cleaning requires very little water and detergent, so once they're installed they don't make many demands on resources.



## ENVIRONMENTAL VALUES

**At Ceramic Industries, we've made environmental responsibility a top priority. We feel it's our duty to use resources sparingly, to minimise our ecological impact, to safeguard the earth and to encourage these values in others.**

That's why we've made sure that when you choose a product from Ceramic Industries, you're choosing more than world-class style – you're also choosing one of the most environmentally responsible ceramic products in the world.

## FUTURE PROJECTS

### Carbon Calculation

As part of our ongoing efforts, we'll be entering into a process to calculate our carbon footprint on an annual basis, which will allow us to measure our improvement.

[www.ceramic.co.za](http://www.ceramic.co.za)  
Tel: (016) 930 3600  
Email: [info@ceramic.co.za](mailto:info@ceramic.co.za)

