

# Clarity.

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ArdaghGlassPackaging 

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## Glassmaking in a pandemic

Consol, like almost every company around the world, has been affected in myriad ways by COVID-19 and the measures taken to curb its spread. Tragically, we lost friends, family and colleagues, whom we remember and miss every day.

### As a business, we also managed to record some noteworthy achievements

Early on we met with our people and agreed that we needed to find a way to keep our people safe and our plants running, balancing lives and livelihoods.



Our operations teams kept our plants running amidst stringent hygiene protocols, lockdowns and curfews with the guiding principle that we should strive to make our work environment as safe as possible.



Our supply chain managed to secure and deliver necessary inputs throughout the various lockdown restrictions, which saw both local suppliers and borders close or come to a standstill.



We agreed with our people to implement salary and wage sacrifices to keep the business trading and prevent retrenchments. We are happy to report that we were able to make good on these short payments to our employees in January this year and there were no retrenchments in the South African operations. This has been key for us to be able to supply our customers when demand recovered.



We became experts on travel regulations and permits, issuing them electronically to enable our critical staff to travel to work in South Africa and support the recovery of our operations throughout Africa.





## Our determination to remain at the forefront of technology and development in the industry did not falter.

- In what was a first for Consol, we commissioned our new C1/1 furnace and our first tandem machine (see it in action on [page 10](#)) with only remote support in this mammoth task from the original equipment manufacturers.
- We undertook critical furnace maintenance in-house when it became clear that neither materials nor critical skills could travel from Europe thus extending the lives of furnaces to avoid them being closed indefinitely.
- We executed a complex product-development process, launching several new products and delivering world-first innovations in the light-weighting of large bottle formats for a few of our major customers.

### And our customers' needs were front of mind throughout

- COVID-19 restrictions and consumption patterns resulted in great turmoil and variability in demand forcing our customers to stop and start lines and change priorities. Our operations and planning teams navigated unprecedented colour and job-change programmes to maximise customer service and assist our customers with their recovery plans.
- Our sales team managed to keep customers calm and their filling lines running to keep their businesses from faltering.
- We led the way in communicating the actual impact of South Africa's alcohol bans on secondary and tertiary industries, and the very many people who depend on them for their livelihoods, as well as the country's industrial capacity.

### COVID-19 imposed lockdowns

- What has become even more evident during the COVID-19 imposed lockdowns is the interconnectedness of our value chain, demonstrating that the alcohol industry comprises far more than the alcohol manufacturers and retailers, and that collaboration yields greater impact.
- We contributed to the South African alcohol industry's purchase of PPE for frontline workers and established a fund, alongside other glass-industry stakeholders, to support glass recyclers when their livelihoods were severely compromised.



Any failure in this environment would have debilitated the food and beverage industries for months and would have caused even more economic casualties. We would not have had the stock available to take advantage of a recovery in markets when alcohol sales were reinstated. Nor would our customers have had the confidence in us to back their filling plans in glass.

The reopening of alcohol sales has allowed the glass packaging industry to return to full operation for now, and it is making a slow but steady recovery. Retail sales supporting our SME customers have thankfully boomed as more people choose home consumption and small craft industries are increasingly looking to pack their products in glass.

We don't know for certain what the future holds; the pandemic will likely be with us for some time to come. But we are hopeful, and unified, and ready to face the next step in this historic challenge.





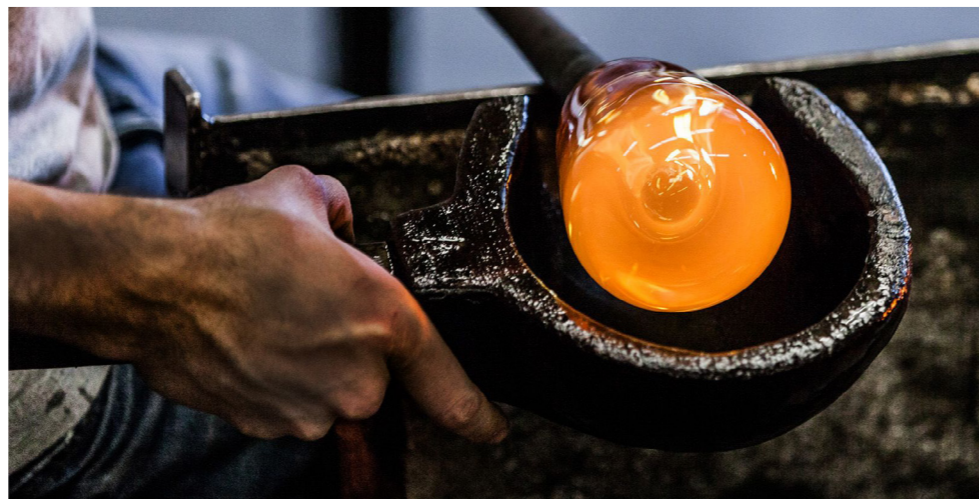
## Glassblowing: an ancient art still practiced today

**Glassblowing is nearly as old as human civilisation, but it still holds an almost otherworldly appeal. Watching a skilled glassblower coax a recognisable form out of a lump of molten glass called a “gob” is a magical, alchemical experience.**

What’s interesting is that the glass bottle that holds your beer, wine, jam or honey is produced using exactly the same process (only at a much, much larger scale).

When an artisan glassblower approaches a new piece, first they need to melt the raw materials – sand (silica), soda ash and limestone – in a crucible to form the glass, at a temperature of about 1 300 °C. Then they use a blowpipe to gather up the molten glass in a gob on the tip (just as you would honey using a honey-dipper). Then they roll the gob on a flat sheet of steel or marble called a marver, to cool the exterior of the gob and begin to shape it.

Air is then blown into the pipe, forming a bubble, while the blowpipe is constantly rotated to ensure an even shape. During this process the gob is regularly inserted into a secondary furnace, known as a glory hole, to ensure that the correct temperature is maintained. Finally, the resultant shape is cut off the blowpipe using shears, and the finished piece is annealed, or cooled in a controlled manner to ensure its durability.



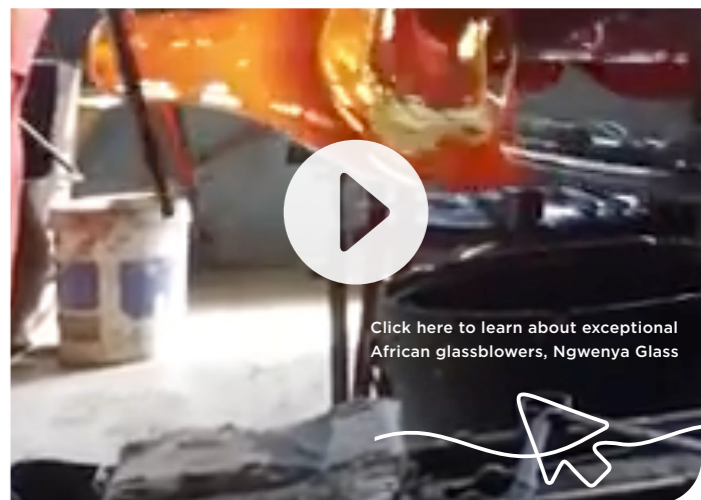
### Ngwenya Glass

#### Exceptional African glassblowing

Ngwenya Glass, in Eswatini, was founded in 1979 by Swedish Aid, who imported machinery and trained Swazis in the art of glassblowing. After liquidation in 1984, the Prettejohn family re-opened the factory in 1987.

Today the company employs 60 workers, including Head Glass Blower Sibusiso Mhlanga, who trained in Sweden. Under his leadership the team produces exceptional mouth-blown products – including light fittings, tableware and figurines – in demand the world over, all made from 100% recycled bottles

In industrial glass container manufacture, just as in artisanal glassblowing, raw materials are combined according to precise ratios and melted in a furnace at around 1 500°C. Individually sized gobs of molten glass are guided into moulds, and the opening of the bottle is formed. Compressed air is then used to inflate the glass into its final form, exactly as a glassblower would.



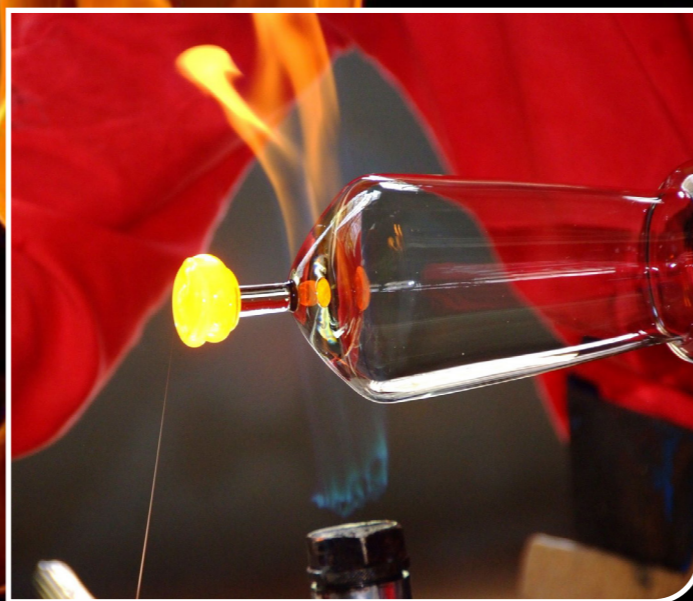


There are two distinct methods used to create glass containers on an industrial scale, as can be seen in the video alongside.

The first, known as the blow-blow method, is used for larger containers. In this process, compressed air is blown into the molten gob to create a cavity, resulting in a hollow and partly formed container. This is then transferred to the second moulding stage, where compressed air is used again to form the final shape.

The second is known as the press-blow method. This time a metal plunger is used to press a cavity into the gob in the blank mould before compressed air is used to form the final container. Variations in this method allow for either narrow or wide-necked containers to be formed.

Once the shapes have been formed, they are likewise annealed, and then go through several additional processes to strengthen and coat them for transport. They're tested for quality and branded according to the customer's requirements. Glassmakers – whether working at an individual or industrial scale – experience the same wonder and beauty. Their methods haven't changed substantially over thousands of years, but the magic of creation – from raw materials, through the furnace, to the finished product – never grows old.



## Women in Consol:

Melting is a fundamental, technically specialised component of the glassmaking process. The Group Batch & Melting Operations Manager is a crucial, key position within an operation such as Consol's. They advise on and manage operational challenges at all seven operating plants; devise and implement chemistry-related programmes and develop batch recipes to achieve desired glass conditions and colours; reduce costs; train new melting specialists; and improve emissions and other sustainability measures. Consol's Teslyn Daniels became the first woman in the company appointed as Group Batch & Melting Operations Manager in January 2020. Teslyn joined Consol in 2006 as a laboratory technician, and rose steadily through the ranks to become one of the most important technical specialists in the organisation, with overall responsibility for the 14 furnaces across Consol's seven sites in Africa.

Reflecting on what she has accomplished, Teslyn says:

“I feel truly honoured and I hope that it motivates many other women in the business to strive to reach their full potential. Getting to this point involved sacrifices and hard work, but overall the successes far overshadow these. At Consol, I believe that women bring new leadership styles and many other benefits to the company. Over the past 10 years we have not just seen women excel in our business, but I am happy to see that women of colour have also advanced. This shows that if we remain committed to a future in which impartial recruitment and promotion is practised then we will see more women move forward.”



Teslyn Daniels - Group Batch & Melting Operations Manager



## Consol's state-of-the-art technology hub



Consol's Clayville plant has always been our most technologically advanced factory, and a valuable proving ground for technological innovation. Clayville was the first to use a natural-gas furnace and the first to use 12-section machines, technologies that were subsequently rolled out across the rest of our operations.

We've recently introduced something quite special to Clayville's stable of technology: a 16-section tandem machine, custom built by Swiss company Emhart in conjunction with Consol and Owens-Illinois. The tandem machine produces up to 650 bottles every minute and up to 300 million bottles in a year, and feeds them from two production sources (hence "tandem") onto a single conveyor - a process that requires microsecond calibration and advanced process control systems.


To feed the tandem machine, Clayville's C1/1 furnace was recently rebuilt, having produced approximately 3 billion bottles from 2004 to 2020. That's 1.2 million tonnes of glass - the equivalent of 240 000 full-grown African Elephants, and way above industry norms. The newly rebuilt furnace is a world-class unit that improves our competitive advantage, increases our energy efficiency, and allows for the use of 80%-90% recycled glass.

### Hot facts

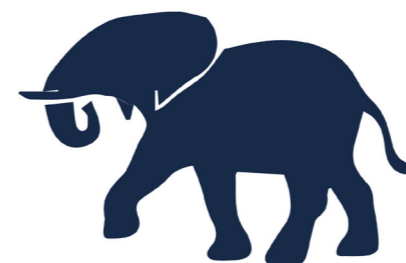
Between 2004 and 2020 the furnace produced approximately 3 billion bottles.



3 billion bottles



1.2 million tonnes of glass



**This is the same weight as...**  
240 000 adult African elephants



In another first for Consol, the C1/1 furnace has been kitted out with a robotic swabbing unit (above) and thermal imaging systems to ensure industry-leading quality control; technologies that again we expect to introduce to Consol's other operations. Clayville continues to set the bar for glass production across Africa - and worldwide.



# 2021 Packaging trends

COVID-19 has brought about significant and persistent changes in the way people consume and shop, and we've identified several trends influencing packaging solutions.

## Home consumption

At-home consumption is becoming a lifestyle trend as consumers avoid groups and travel. Consumers are still looking for premium experiences within the home environment in an attempt to bring a sense of indulgence to everyday routines. This behaviour is likely to increase the demand for premium packaging such as glass.



## Polarised pack sizes

We have seen increasingly polarised consumption between premium and mainstream depending on the occasion. Mainstream consumption is driving larger pack sizes, as consumers are shopping less often but purchasing enough to last between trips. At the same time consumers looking for a premium experience, but still mindful of cost, are purchasing smaller sizes for a taste of luxury at a lower price.



## Holistic wellness

Lockdowns, and the existential threat of a global pandemic, focused the world's attention on what matters: health, family, and meaningful work. Priorities were assigned and preferences reinforced. Glass's ability to ensure unadulterated contents places it at an advantage here, as does its purity and chemical stability.



## Calls for a healthier planet

A pause in productive activity has focused our attention once again on the harm posed to the environment by unrestricted human activity. We see more consumer-driven demand for reductions in carbon footprint, impact on environment and respect for nature. This expresses itself in increased anti-plastic sentiment, in favour of options causing less harm to environmental and human health.

## Trust in eCommerce

Social distancing and lockdowns have caused a pronounced, and durable, surge in online retail. Packaging needs to support this, becoming more eCommerce friendly, easy - and durable - to ship. Additionally, packaging manufacturing and consumer brands should think about how to ensure that their products stand out on a screen and enhance the "unwrapping experience".



## Innovative packaging for delivery

Packaging is becoming smarter in terms of ensuring quick and safe delivery, and value-adds for home consumption. This includes on-pack communication of sustainable attributes (i.e. recycled content, disposal, repurposing); tamper-proof closures to protect during transport; and smart solutions ensuring traceability, temperature and quality control.



## Digitisation at Consol

The world as we knew it has shifted, and we must adapt the way we work to keep up with these changes. The COVID-19 pandemic has shown how important it is to use digital platforms to automate, simplify and standardise the way we work.

### Employee communication

In March 2020, faced with the first wave of lockdowns and a greater need than ever before to maintain effective lines of communication with our people, Consol rolled out a new employee communication platform, GlassTalk. GlassTalk was initially used to convey breaking news and safety information about the COVID-19 pandemic, but has since grown to become the predominant platform for internal communications. Crucially, it's free of charge to users – GlassTalk is reverse billed, so employees pay nothing for data when using it.

### Human resources

Our IT team has been hard at work to develop digitised human resources systems that will help us to become more resilient and efficient. Our new online Talent Management platform consists of three modules that will allow Consol employees to take ownership of their development and career progression. These modules – Learning & Development, Performance Management and Career Management – empower our staff and support our objective of nurturing high-performing teams.



## Consol's commercial is "perfectly made" for Loeries Awards

Consol's TV commercial, *Perfectly Made for Each Other*, scooped a Craft Certificate for cinematography in the Film Craft category in last year's prestigious Loeries Awards. The highly acclaimed TV commercial was a finalist in five different Film Craft sub-categories, namely cinematography, direction, editing, original music and sound design, and special visual effects.

Created using state-of-the-art technology and audio-visual effects, the commercial allows viewers to explore how the art of glassmaking is perfected to create vessels that will hold the finely crafted products of their customers.

The commercial involved working with microscopic and macroscopic lenses, as well as commissioning the world-renowned Chris Parks, a specialist in capturing chemical reactions. An original violin score, detailed sound design and a bespoke poem were vital elements in creating a soundscape as interesting as the visuals.



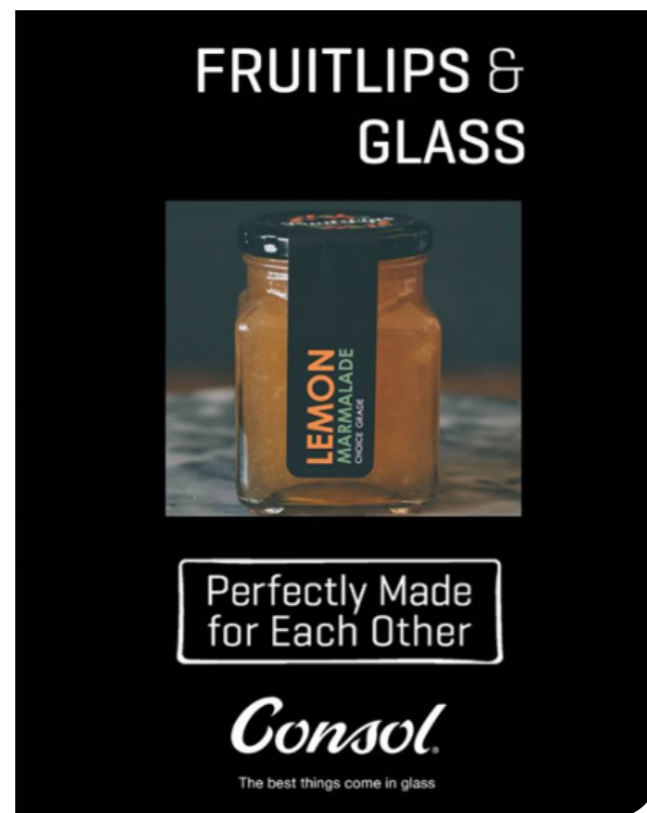


## Consol Collab supports SME partners

Helping SMEs to promote and grow their businesses has been especially important during COVID-19 lockdown periods when consumption was curtailed and small businesses faced exceptionally difficult operating conditions.

The Consol Collab initiative saw Consol profiling some of its smaller customers on its social media sites, giving them much-needed marketing exposure, showcasing the exciting range of products that is available in glass, and drawing attention to glass's versatility.

Since the launch of the initiative in July 2020 we have featured 11 Consol customers and reached over 1 million consumers across Consol's Facebook and Instagram pages.



## Glass banks: visible recycling, empowering small business

Glass is 100% recyclable and can be recycled endlessly without loss in quality or purity. Apart from making it a desirable sustainable packaging material, glass's recyclability has resulted in a thriving secondary industry.

Matome Phillip Rampya is the owner and principal driver of MPR Transport, a business set up in 2009 with support from Consol Glass to facilitate the delivery of recycled glass from glass banks across Gauteng to Consol's head office in Germiston, Johannesburg. The glass that Matome and other businesses deliver to Consol is used to manufacture new glass containers.

If you live in South Africa you'll probably have seen glass banks. They were introduced by The Glass Recycling Company (TGRC) to increase glass recycling in South Africa. The TGRC is

a non-profit organisation that was set up in 2005 following the signing of a Memorandum of Understanding with the Department of Environmental Affairs.

The glass banks themselves are manufactured in Pretoria, Gauteng, out of recycled materials. Their unique design means that they require a specialised vehicle to offload them. Fully stocked glass banks weigh upwards of 600 kg, so a truck with a built-in crane is used to lift them, disengage a locking mechanism, and empty the contents onto the back of the truck.

Glass banks play an outside role in making glass recycling visible, encouraging public participation, and supporting the success and growth of SMMEs like MPR Transport. To find a glass bank in your area and make a difference, visit [theglassrecyclingcompany.co.za/find-a-glass-bank](http://theglassrecyclingcompany.co.za/find-a-glass-bank)





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