

# stainless steel

the journal of the southern africa stainless steel development association



ISSUE 3: 2023

## SUSTAINABLE STAINLESS! A GREENER FUTURE AWAITS

### A RECYCLING HERO SCRAPS THE GRID

### BATTLE OF THE SIPS!

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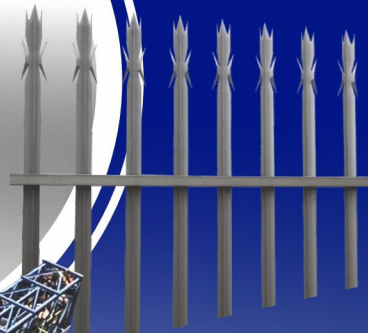
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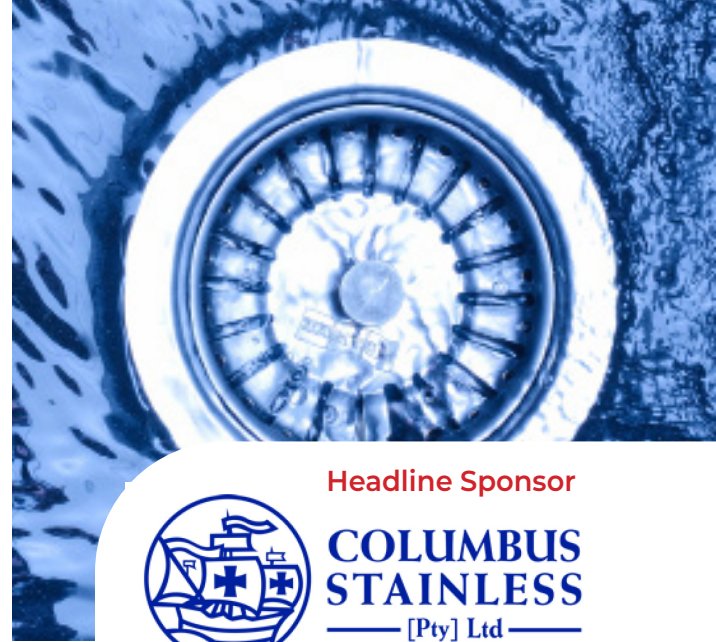
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# Contents

- 1 SASSDA Perspective**  
Why stainless steel is a 'hero metal' when it comes to sustainability
- 3 Market Intelligence Round Up**  
The Best of the GPS eNewsletter
- 7 State of the Stainless Steel Nation**  
Fighting for the right to supply local parastatal projects
- 9 Education & Training**  
Unleashing local potential through world-class Training
- 11 Global Webinar Report Back**  
Utility ferritic Stainless Steel's role in SA's stainless industry
- 14 Industry Insight**  
The price of carbon emissions a lot steeper in the face of increased EU regulations
- 15 Member News Cronimet**  
Stainless steel is a game changer in reducing carbon emissions
- 17 Market Intelligence**  
Zambia: A rising economic powerhouse
- 19 Professional Profile**  
Curiosity and collaboration are the secrets of success
- 21 Technical Case Study**  
Why Stainless Steel is the logical choice for electrification projects in corrosive locations
- 25 Technical Case Study**  
Battle of the 'sips': Unleashing the power of Stainless Steel in water solutions
- 29 Industry News**  
2023 Manufacturing Indaba Report Back – Unlocking opportunities and shaping the future
- 31 Sassa News**  
2023 Gauteng Golf Day: A Triumph of Industry Collaboration and Excellence
- 32 Member News**  
Columbus Stainless Steel awarded SAIW gold medal for pioneering 3CR12 stainless steel
- 33 Obituary**  
John Rowe: a lifetime of dedication to the stainless steel industry

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# Stainless Steel is a 'hero metal' when it comes to sustainability

In an era defined by increased greenhouse gases and an increase in global warming, the world has seen an urgent shift towards sustainability in various industries and sectors. Amidst this flux, stainless steel has emerged as a 'hero metal' given its stellar environmentally friendly credentials in various applications. As a result, it is set to play a critical role in the future development of South Africa to make it a sustainable living space for its citizens. This issue of the Stainless Steel Magazine therefore shines a spotlight on sustainability and the responsibility of our industry to make the environment safe for future generations.





One of the aspects grabbing international focus and the subject of our interview with Cronimet MD **Bernard Maguire** is the superior recyclability of stainless steel. With Worldstainless.org estimating that 96% of all stainless steel is recycled couples with the fact that recycling doesn't degrade stainless steel's quality and that this versatile material can be recycled repeatedly without losing its inherent properties, this reduces the demand for raw materials and minimises the environmental impact associated with mining and extraction.

### Lasting the distance

Another key aspect of stainless steel's sustainable strengths is its longevity and durability given that products made from stainless steel, have a longer lifespan, reducing the need for frequent replacements. This longevity contributes to resource conservation and waste reduction over time. If treated well, stainless steel will remain pristine for decades whilst giving full functionality and non-toxic performance.

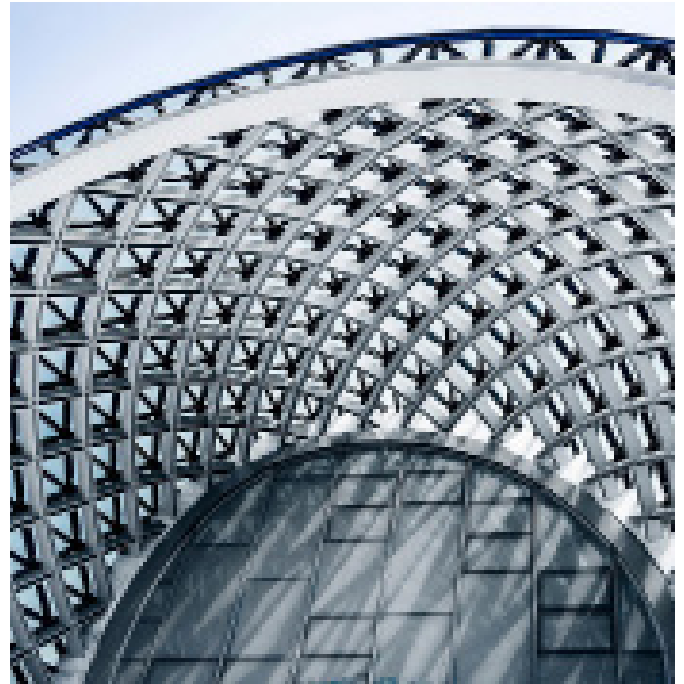
The corrosion resistance of stainless steel - evidenced in this issue's Columbus Stainless 3CR12 Case Study – proves stainless steel's ability to provide a longer life for products and structures, reducing the environmental impact associated with maintenance and replacements.

### Emission commission

In addition, examples of how stainless steel can offset its production emissions compared to other materials reside in its functional performance in specific applications. We recently saw the implementation of the EU's Carbon Border Adjustment Mechanism (CBAM) regulations that aim to lower the environmental impact of steel being used in the European Union. The implementation of the regulations caused some debate, but the fact remains that carbon footprints need to be reduced where possible. In this issue, we will discuss a recent and insightful study by Oxford University on the effects of the CBAM regulations on the South African steel industry.

### Water saver

In a country such as South Africa where water conservation remains critical, the corrosion resistance of stainless steel reduces the need for water-intensive maintenance activities, such as rust removal and painting. This indirectly contributes to water conservation by minimising the frequency of these processes. As such stainless steel will play an integral role in reducing the wastage rate of processed water in South Africa from levels of around 38% to less than 10%. Stainless steel also plays a vital role in hygiene and disease control in various sectors including medical equipment and food processing. This reduces the risk of contamination and the need for disposable materials, aligning with sustainable practices. In water applications,



stainless steel can in many cases replace plastics to improve life cycle costs, but we also look at the issue of micro-plastic contamination of water sources in this edition of the Magazine.

### Competitive cost

However, it is one thing to proclaim the sustainability of a material, but it is important to be able to calculate its true impact of a material on sustainability and costs for future generations. The true performance of a material over a prolonged period can only be assessed through a science-based analysis, such as Life Cycle Assessment (LCA) or Costing (LCC). Stainless steel has a highly favourable life cycle assessment, considering its durability, recyclability, and low maintenance requirements. This type of analysis helps quantify and understand the environmental impact of a material throughout its entire life cycle. It also illustrates and measures a material performance under specific conditions and time periods. In most of these calculations, stainless steels remain unbeatable.

Overall, by incorporating stainless steel into various industries and applications, there is potential for a positive impact on sustainability and environmental conservation. It is therefore essential for industries to continue exploring innovations and practices that further enhance the sustainable attributes of stainless steel and we hope this issue sheds some valuable light on this and other sustainability-related topics.

*Enjoy the read!*

**Michel Basson**  
Sassda Executive Director

# The best of the GPS e-newsletter

Each month Sassda rounds up a selection of global and local market intelligence articles that are sent to our members in an easy-to-read package of content. They're designed to highlight pockets of potential growth in demand for stainless steel. Here are some of the best articles from the last few issues...



## Coega Steels Mill project in Eastern Cape to provide rolled metal for manufacturing

Coega aims to establish a state-of-the-art R160-Million rolling mill facility project in the Eastern Cape, to be built by next year. CEO of Coega Steels Hassan Khan says that the facility's modern machinery and cutting-edge technology would catalyze the local manufacturing sector, supplying reliable and efficient sources of steel and finished products to vital industries such as construction, automotive, and infrastructure development... [Read more](#)

## LNG goes off the boil, but long-term prospects are good

A recent in Stainless Steel World has stated; "The gas squeeze may have eased, but in the medium and long term, demand for LNG is likely to increase. The pattern of trade is changing, with Russia selling more oil and gas to India and China to make up for the markets it has lost in Europe. Meanwhile, Europe is importing more from the USA and Qatar, and even far-off Australia. Germany, which was slow to reduce its dependence on Russia, may have difficulty finding enough energy to power its industries; Italy on the other hand, whose national Eni has many investments in northern Africa, is better prepared... [Read more](#)



## Hope on the horizon as construction industry adds 104 000 jobs

South Africa's construction industry has added 104 000 jobs to the economy, outstripping trade by 12 000 new jobs. This comes as the country celebrates a 0.3% decrease in the unemployment rate, according to the Department of Statistics' quarterly labour force survey for the second quarter of 2023. Eben Meyburgh, CEO of GVK-Siya Zama, one of South Africa's largest privately owned construction companies, says this could be a sign of a turnaround after years of turmoil... [Read more](#)





### New R1.4-Billion shopping mall taking shape in South Africa

Development is progressing on the new 50 000 square metre shopping mall at the heart of a massive new precinct taking shape in KwaZulu Natal. Westtown Square is a R1.4-Billion retail centre being built in the Westtown Precinct, which will anchor the wider Shongweni Urban Development project, valued at R30-Billion. Westtown is a mixed-use precinct within a managed urban environment that has secured and approved development rights of approximately 520 000 square metres of bulk floor area in Shongweni...

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### Steel industry vital for SA's industrialisation, Majola says

Trade, Industry and Competition Deputy Minister Fikile Majola has stressed the impact of the local steel industry and its importance to South Africa's industrialisation, and the challenges that the sector is facing from local and global pressures, emphasising the need to build an "inclusive sector" that contributes to the economy... [Read more](#)



### Billions in automotive investment pouring into SA

South Africa is experiencing a multi-billion-rand automotive investment boom with the news that multinational automotive group Stellantis has confirmed its intention to invest R3-Billion in South Africa to establish a state-of-the-art greenfields automotive plant at Coega in the Eastern Cape...

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### Tesla taps stainless steel for long-awaited Cybertruck

Tesla is sourcing some stainless steel panels for the exterior of its new Cybertruck from Finnish supplier Outokumpu Oyj, which has worked to accommodate the electric vehicle's unconventional design, according to people familiar with the matter. The materials will be shipped to Tesla's assembly factory in Austin, marking a major product shift for Outokumpu, the people said, asking not to be identified because the contract is private. The Helsinki-based company is Europe's largest producer of stainless steel, and is well known for working with automakers when making exhaust systems... [Read more](#)





### SA manufacturing sector needs to find 'glocalisation' opportunities

As consumer behaviour and preferences change in the wake of sustainable options, coupled with incoming decarbonised goods trade regimes, it is worth considering more "glocalisation" opportunities for the South African manufacturing sector. This was the consensus reached by a panel on globalisation and localisation during the second day of the 2023 Manufacturing Indaba ....

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### Transnet & Eskom's failures have cost South Africa R200-Billion says Sars boss

South Africa's Medium-Term Budget Policy Statement reveals a concerning under collection of revenue. Sars commissioner Edward Kieswetter says rolling blackouts and a struggling freight rail system are the culprits, causing a significant contraction in net revenue despite a 7% increase in gross revenue. The mining sector's profitability decline, marked by a 55% drop in provisional corporate tax collections (R24.6-Billion), is also a major contributor, impacted by lower commodity prices, global growth weaknesses, increased power cuts, and logistical challenges in the first half of 2023/24..... [Read more](#)



### Kinetiko Energy and IDC to Develop South African LNG Project

Gas exploration company Kinetiko Energy - through its subsidiary Afro Energy - has signed a non-binding Term Sheet with the Industrial Development Corporation (IDC), to co-develop a Joint Venture for the production of the country's largest onshore Liquefied Natural Gas (LNG) project. Announced on 22 August 2023, the first phase of the project will deliver 50 MW of gas-equivalent energy and is expected to be developed over two to three years. The total cost of the project's first phase will comprise \$57.8-Million in equity from the IDC and \$30.8-Million in debt through Afro Energy for a total of \$88.6-Million...

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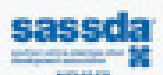
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# Stainless Steel sector fights for the right to supply parastatal projects

Sassda recently received excellent media exposure when it released information on its stance on the procurement of stainless steel or lack thereof in major government projects. What follows is the official news release that was distributed to the media ...



The use of local stainless steel is crucial to driving demand and the subsequent beneficiation of this highly prized metal but work still needs to be done to cement the correct specifications of South African stainless steel components in key strategic projects.

This is the view of the Southern Africa Stainless Steel Development Association (Sassda) which together with the local demand-creating structures of the Steel Master Plan (SMP) has identified and placed a focus on the following projects that can positively impact the local conversion of stainless steel.

Sassda Executive Director **Michel Basson** stated; “We firmly believe that increased local conversion of stainless steel is not just essential; it’s a game-changer for our industry and the national economy. These projects are our industry’s stepping stones to fostering local demand and boosting the stainless steel sector”.

## **Eskom transmission towers**

Based on the need for local components in government projects, a key focus of the SMP Local Demand structures

has been on applying strong pressure on Eskom to engage more openly regarding the supply of transmission towers. The criteria for allowing local industry to participate in the supply of these items and/or its components and have firm targets for local content is still debated.

However, in the interim Sassda has seen an opportunity to submit a change in the material specifications to allow for the use of South African 3CR12 stainless steel which is widely used across the globe in corrosive applications as a cost-effective alternative. This submission by Sassda - and its key members - based on Life Cycle Costing principles was received favourably by the committee but still needs to be accepted by Eskom.

## **Bailey bridges**

Another government project with good potential for the use of stainless steel is the proposed construction of Bailey Bridges in rural areas. These are used in emergencies or as temporary structures for planned events. They are particularly useful in rural areas in the event of natural disasters like floods.



“During the consultation process with government departments, we once again used the opportunity to submit that 3CR12 stainless steel should be used in corrosive environments to ensure the optimum lifespan of the installations. The submission was received in a positive light and will be taken forward,” reported Basson.

## Hollowware

Sassda’s research also shows that more than 10 000 tons of finished hollowware products e.g., pots, pans, cutlery etc., are imported to South Africa annually. This is in stark contrast to the early 2000’s when the local hollowware sector efficiently met 80% of domestic demand. By 2008, this figure plummeted to less than 50% and today it stands at a mere 10%.

Basson reported; “The Steel Master Plan still sees value in resurrecting the industry and, as such, Sassda has started to research and update the information on local demand and local capacity. By determining and potentially addressing the gap, a sizable local demand can be created for stainless steel hollowware products in South Africa with job creation attached to this growth. “

## Automotive

While investigations are ongoing to ensure the maximum volumes of stainless steel used in the local manufacturing of vehicles, there might also be room for creating more capacity for stainless steel products.

Basson explained; “A major challenge hindering cost-effective production in the hollowware and cutlery industry is the demand for highly efficient automated processes. Fortunately, we see an opportunity for collaboration with the automotive industry, which boasts advanced technology and automation capabilities that can help us overcome this hurdle and revitalise our sector.”

Notably, certain legacy companies in the automotive sector possess large presses which were historically dedicated to automotive production. However, as the automotive industry diversifies in response to emerging

trends such as electric vehicles, these presses are sometimes idle. “Together with NAAMSA, we’re exploring opportunities to leverage this spare capacity to produce semi-finished holloware components. This strategic alliance aims to empower the hollowware industry by providing access to advanced technology and diversifying production capabilities,” said Basson.

## Beer Kegs

There has also been a commitment from the formal brewing industry in South Africa for the procurement and use of locally-made beer kegs within the context of competitive pricing and quality. The Department of Labour has accepted a local standard for beer kegs. This standard is based on the German equivalent and stipulates stainless steel as a suitable material for the application. The grade used in the food and beverage industry, including beer kegs, is Grade 304 stainless steel.

A Western Cape based component manufacturer, Fabrinox, was identified by Sassda and the PtSA as a potential pilot producer. It is exciting to note that the required technology will be locally developed, built, and tested. The local material producer will form part of the project once the production process and manufacturing design are finalised to ensure that the material grades used can conform to the mechanical and other properties required by the manufacturing design.

Basson reported that the grouping of stakeholders is currently conducting a technology audit and capacity overview. and are also discussing the ownership and future use of the IP to be developed during the project. This process aims to create world-leading technology and is committing to a continuous development process of the project lifecycle.

Looking ahead Basson stated; “Overall, the potential for stainless steel in these projects is immense. Resurrecting and building these strategic stainless steel industries can lead to substantial demand and create accompanying job opportunities and economic growth.”





## Unleashing Local Potential Through World-Class Training

One of Sassda's core pillars is Education & Training to ensure the upliftment of stainless steel skills in South Africa and across the continent. In a recent interview with Engineering News, Sassda Executive Director **Michel Basson** outlined the association's current approach to this vital aspect of the work it does...

### ***What is the demand for education and skills development in the local stainless steel industry?***

For many years, the South African stainless steel industry has identified training and the development of productive and skilled staff as one of the major stumbling blocks to the growth of the industry. It therefore stands to reason that the role of a development association, such as ourselves, is to give the industry access to accredited and meaningful training that will address these hurdles. During the last few years Sassda experienced a large growth in students especially

during the pandemic where we innovated and offered far more online offerings, and this continued in 2022.

### ***Which programmes does Sassda offer in this regard? What do they entail?***

Sassda offers an array of training programs at various technical and academic levels to give access to all levels of staff in organisations. This would start with a short Introduction to Stainless Steel Course that would typically be aimed at administrative staff and complete newcomers to the stainless steel industry. Sassda also offers courses for shopfloor staff at fabricators on handling, storage and fabrication of stainless steel that can even accommodate non-literate staff members. On the more technical and academic level, Sassda presents a Fundamental and an Advanced Course accredited with a CDP rating which cover the metallurgy of the different grades, properties, corrosion mechanisms, Life Cycle Costing, and grade selection of stainless steel. The Advanced Course also offers a Columbus mill visit as part of the curriculum.

Sassda engages past the stainless steel industry to offer CPD-accredited workshops to the architectural, construction,



water, and mining industries. To remain as flexible and accessible as possible, Sassda presents these products in person and as an online experience.

Our courses and other training products can be customised and are aimed at educating and empowering people to sustain the growth of the local industry, but also to give training access to people who normally might be excluded. In so doing, we can add to the individual's self-worth and that is sometimes worth more than gold.

## ***How has Sassda worked with universities? Why is it beneficial for Sassda to work with tertiary education institutions?***

As an association, Sassda's role in education and training is different to that of industry-based institutes when it comes to our relationship with tertiary institutions. In terms of research and technology development, industry institutes play a major role in conjunction with universities. Sassda works with specific universities by presenting our Fundamental and Advanced Courses as part of the curriculum. We also present workshops to architectural departments at universities and technikons as part of technical training and awareness. Sassda also gives inputs

regarding industry requirements and the potential future impact on subject material to various entities in higher education. Interestingly, Sassda has also presented to primary school standards as part of technology as a subject.

## ***What are Sassda's long-term aims for promoting awareness of the importance of the stainless steel industry?***

Education, training, and technical advice remain critical in spreading awareness and information regarding the material and the industry. Worldstainless, the international development body, has research showing the relationship between a country's per capita use of stainless steel and its GDP. The higher the local consumption and use of stainless steel, the higher the GDP. It might not be similarly applicable to South Africa but increased local use and conversion of stainless steel can create sustainable jobs of around three to five jobs (or even more in some product ranges) per ton.

By creating awareness around the use of local stainless steel cutlery and hollowware we can, for example, annually localise 10 500 tonnes of currently imported stainless steel products. This could equate to between 30 000 and 50 000 potential new and sustainable jobs.



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# Ferritic Stainless Steel's Role in unlocking Sustainable Growth



Worldstainless regularly convenes its members to deliberate crucial aspects of stainless steel's correct and sustainable utilisation. Sub-committees, including Sustainability, Market Development, and Safety, facilitate in-depth discussions. The recent second-semester meeting conducted online from Brussels in October 2023, featured a presentation from Sasdda and focused on insights on stainless steel sustainability in Southern Africa...

## Setting the Stage: Sasdda's Vision for Sustainable Growth

Speaking at the recent Worldstainless webinar Sasdda Executive Director **Michel Basson** elaborated that Sasdda serves as a crucial platform for its members, collectively dedicated to promoting sustainable growth and development within the industry. The primary focus is on the conversion of stainless steel within the South African economy. Sasdda's strategic approach revolves around creating local demand through localisation, subsequently evolving these products and capacities into export-worthy commodities. However, the emphasis is on meaningful localisation, ensuring competitiveness in terms of both price and quality on a global scale.

The stainless steel market in South Africa finds its major consumers in the automotive, agri-processing, food and beverage, architectural, and general engineering sectors. Initiatives to localise production, such as beer kegs,



hollowware, and catering industry products, are gaining momentum. Yet, the challenge lies in not only sustaining these efforts but also ensuring the tonnage produced can replace lost markets and drive substantial local consumption.

## Challenges and Opportunities

A visual representation of the stainless steel market in South Africa, displayed since 2018, revealed a disconcerting trend of production decline since 2015. This decline was attributed to various challenges, including the decrease in exports to Europe, European Union Carbon Border Adjustment Mechanism (EU CBAM) regulations, lacklustre economic growth, consistent electricity supply issues, and a deficiency in domestic market share.

However, Sassa, under the gambit of the Steel Master Plan (SMP), sees a roadmap to navigate these challenges. The SMP, driven primarily by the private sector and facilitated by the Department of Trade, Industry, and Competition (the dtic), comprises two principal legs – creating local demand and progressing towards an export market. Sassa's mandate places a pivotal focus on local demand creation, emphasising its potential to yield more tonnage than mere localisation efforts.

## The Role of Utility Ferritic Stainless Steel

Within the SMP, Sassa has identified two projects with the potential to significantly impact local demand and export capacity. The Eskom transmission towers and rural steel bridges, requiring structural profiles, present an opportunity to develop rolling capacity in South Africa. The incorporation of stainless steel in material specifications for corrosive areas immediately addresses local demand

in mining and infrastructure industries. Additionally, the regional availability of stainless steel structural elements holds promise for applications in corrosive mining environments and coastal infrastructure development, including gas exploration and production in Namibia and Mozambique.

With private enterprises investing in large-scale renewable electricity generation and Eskom unlikely to return to its former energy generation capacity, utility stainless steels are cost-effective alternatives for coastal and other corrosive installations. Another opportunity has arisen from the growing impact of extreme weather conditions on existing infrastructure, prompting the government to endorse the Bailey Bridge concept for cost-effective repairs in corrosive areas. While these projects may not lead to sustainable consumption increases, they act as enablers for developing capacity for future infrastructure in Southern and East Africa.

## The 3CR12 Advantage: A Testimony to Endurance

Originating from Columbus Stainless in the late 1970s, 3CR12, a low-cost, corrosion-resistant stainless steel initially designed for the mining industry, is now found in structural applications in the mining, water handling, rail transport, sugar, pulp and paper industries, and general industry. The Marion Island weather base, built on a 3CR12 grating platform, stands as an early testament to the materials enduring qualities, with minimal impact on the ecologically sensitive environment.

While the current high cost and scarcity of welded profiles limit the general use of 3CR12 in structural applications, examples such as the Gateway Bridge in KZN



showcases its effectiveness. Unlike galvanised pedestrian walkways requiring maintenance every 5 to 7 years, the painted 3CR12 structure resists filiform corrosion, remaining untouched after years of service.

### **Debunking the Stainless Steel Cost Myth**

Addressing the perception that stainless steel is an expensive option, Sassda underscored the long-term cost efficiency of the material. Despite the high initial acquisition costs, these costs are offset by minimal maintenance and replacement expenses throughout the project lifespan. Comparatively, the initial costs of 3CR12 align closely with galvanised carbon steel, and the material's 96% recyclability further enhances its total life cycle cost efficiency.

### **A Call for Sustainability: Environmental Stewardship**

Despite the high carbon footprint associated with stainless steel production globally, it has a minimal environmental impact during installation and its unparalleled post-lifespan recyclability rate. This point was emphasised by a case study at a hydrometallurgical plant in Chile. Material selection

for a walkway across corrosive areas in the plant considered three options: Mild steel (the cheapest option), requiring coating maintenance every four years; 3CR12 (unpainted), requiring cleaning every 15 years with high-pressure water; and Lean Duplex (an expensive material with exceptional mechanical and corrosion characteristics) requiring cleaning every 15 years with high-pressure water.

In addition to highlighting the sustainability of life cycle costing, the message resonates that while stainless steel production in South Africa contributes to a high carbon footprint, its physical installation has minimal environmental impact. The material's post-lifespan recyclability rate stands unbeatable among other materials, making stainless steel a wise, cost-effective, environmentally friendly, and sustainable choice.

As Sassda advocated for utility ferritic stainless steel, the hope was for political will and a shared vision in the initial market space to drive these wise choices forward.

In the intricate dance between economic growth, industry development, and environmental responsibility, utility ferritic stainless steel emerges as a key player, unlocking opportunities for the South African stainless steel industry's sustainable future.





# The price of carbon emissions: A lot steeper in the face of increased EU regulations

Irshaad Kathrada, a South African student at Oxford University and the cousin of political stalwart Ahmed Kathrada, recently achieved distinction in his MSc in Sustainability, Enterprise, and the Environment. His noteworthy study, titled *Estimating the Impact of the European Union (EU) Carbon Border Adjustment Mechanism on South African Steel and Aluminium Industries* ([click here to see full paper](#)), delves into the potential ramifications of the EU's carbon border adjustment mechanism (CBAM) on South African exports in the steel and aluminium sectors

In a comprehensive approach, Kathrada collaborated with local entities, including Sassa, and generously shared the complete paper with the industry. Employing a mixed-method methodology, he utilised the gravity model of trade for econometric estimates, complemented by interviews with 21 stakeholders, spanning policy makers, producers, financiers, and academics.

The study forecasts a significant impact on South African exporters, estimating a potential decline in direct revenue ranging from 6% to 9%. Had the CBAM been in effect in 2022, this would have equated to a staggering loss of between \$114-Million to \$185-Million in sales for the year. Stakeholder interviews underscored additional threats, including heightened competition in domestic and alternative markets, alongside input supply shortages as global steel and aluminium markets adjust to reduced EU access.

While acknowledging the commendable ambition of the EU's climate policy, the study highlights potentially severe adverse effects for several countries, even those with limited direct exports to the EU. Balancing these impacts with the imperative to achieve net-zero emissions by mid-century becomes a critical aspect of the research.

Local assessment of the EU CBAM regulations on the South African stainless steel industry necessitates consideration of several factors. The industry's vulnerability hinges on the carbon emissions associated with its production processes, potentially leading to increased costs for exporting to the EU. Consequently, local companies may

need to implement adjustment strategies, adopting cleaner technologies and investing in renewable energy, energy efficiency measures, or other carbon reduction initiatives.

However, such adjustments come with financial implications, as compliance with CBAM regulations could elevate costs, potentially impacting the industry's competitiveness in EU markets. A thorough evaluation of the economic feasibility of implementing carbon reduction measures and their impact on product pricing becomes imperative.

Positive relationships between the EU and South Africa could mitigate immediate impacts through trade relations and negotiations. The South African government has the opportunity to engage with the EU in discussions on acceptable emission benchmarks, transitional periods, or other measures to facilitate a smoother adaptation to the new regulations.

Given South Africa's position in the global market, EU regulations are poised to influence global market dynamics for stainless steel. The South African industry retains the option to explore alternative markets or collaborate with the EU on initiatives promoting sustainable production.

Despite the challenges posed by the CBAM regulations, South Africans are resilient and view them as a potential catalyst for technological innovation in the local stainless steel industry. This perspective suggests an opportunity for the development and adoption of cleaner and more sustainable production methods, reflecting the potential for innovation in a challenging area of production.



## Stainless Steel is a game changer in reducing carbon emissions

In a ground-breaking effort to reshape the stainless steel production landscape, Cronimet, a global specialist in stainless steel scrap, ferroalloys, and primary metals recycling, is leading a sustainability revolution. This stems from the company's innovative use of stainless steel scrap as a cost-effective and sustainable substitute for virgin prime material.

Stainless steel scrap - defined as a secondary raw material containing essential elements like nickel and chrome - offers a more affordable alternative to traditional primary materials.

Cronimet South Africa Director **Bernard Maguire** explains, "Traditionally, the primary reason for using stainless steel scrap was its cost advantage in the melting process. However, as the world grapples with serious CO2 emissions

issues and their long-term impact on the environment, we recognise the need for a paradigm shift."

Maguire also shares compelling statistics, emphasising that approximately 95% of all stainless steel scrap is reused, underscoring its crucial role in the circular economy's effectiveness. Recycling stainless steel scrap also emerges as a powerful tool in mitigating environmental concerns,





conserving natural resources, and diverting materials from waste dumps.

### A star performer in the circular economy

The recycling and reusing of stainless steel scrap is therefore a game-changer in the current environmental landscape, in the face of the growing pressure to reduce emissions. Maguire reports that greater investment into tests and algorithms to evaluate the advantages of curbing carbon emissions, has also proved the substantial environmental benefits of stainless steel scrap compared to mining nickel from the ground.

Stainless steel therefore takes centre stage in the circular economy given that the advantages of utilising stainless steel scrap are manifold, with cost-effectiveness and reduced environmental impact at the forefront.

However, the long lifespan and life cycle of stainless steel, a testament to its durability, also present a unique challenge. Unlike other materials ending up in waste dumps, stainless steel is diverted, remelted, and reused, significantly contributing to sustainability efforts. Maguire notes that this has created a global shortage of scrap stainless steel.

### Global view

Looking further afield, [recyclingtoday.com](https://www.recyclingtoday.com) states that a recent Cronimet Group Sustainability Report showed its business units recycled 1.57-Million metric tons of stainless steel in 2021. In addition, the company publicly announced plans to “reduce directly caused CO2 emissions across the Group by 2030 and become CO2 neutral in Scope 1 and 2, achieving the Net Zero standard of the Science Based Targets initiative (SBTi) by 2050.”

The company also expressed, “We are convinced that, as a company in the circular economy, we can make our contribution here, we aim to make a significant contribution to resource efficiency by returning valuable raw materials to the materials cycle. We want to go beyond this and make our corporate practices even more sustainable at every point: for the environment, our employees, our company, and for society.”

Elaborating on this global outlook, Maguire says the potential economic benefits and increased access to global contracts are driving Cronimet’s sustainability initiatives. However, he stresses; “Unlike businesses compelled by external pressures, Cronimet is not greenwashing; it is genuinely focused on sustainability and the difference it can make.”

***“Traditionally, the primary reason for using stainless steel scrap was its cost advantage in the melting process. However, as the world grapples with serious CO2 emissions issues and their long-term impact on the environment, we recognise the need for a paradigm shift.”***

### A substantial solar investment

In a bold move toward achieving a zero-emission target by 2030, Cronimet has adopted a group policy to primarily operate with solar energy. Following a significant investment over the last 12 months, the South African operation is now completely independent of the Eskom power supply grid. The commissioning of a new solar system by early 2024 will set Cronimet apart from many recycling companies, marking a crucial milestone in the journey toward sustainable practices.

“By harnessing solar energy we’re not only making a long-term business decision but also contributing to the larger goal of reducing electricity costs and minimising our carbon footprint,” concludes Maguire.

# Zambia: A Rising Economic Powerhouse

Nestled in the heart of Southern Africa, Zambia stands as a beacon of political stability and economic vibrancy. The country has consistently maintained a healthy macroeconomic environment, achieving an impressive average annual economic growth rate of 6% since 2003.

Rich in natural resources, particularly copper and cobalt, Zambia's mineral sector has long been a driving force behind its economic expansion. Beyond mining, the nation boasts fertile arable land, abundant hydropower resources, and a thriving tourism sector with immense potential for further development.

## Economic Landscape and Growth Sectors

Zambia's economic landscape is characterised by the symbiotic relationship between its key sectors. The agriculture sector, buoyed by good soil and expansive arable land, plays a pivotal role in food production and export.

The minerals sector, led by copper and cobalt mining, contributes significantly to the nation's revenue. Efforts to diversify the economy have led to a growing focus on manufacturing, adding value to mineral and agricultural products.

The tourism sector, propelled by the country's natural beauty, wildlife, and waterfalls, presents vast growth opportunities. Zambia's commitment to economic diversification is evident in various ongoing projects across key sectors.

## Agriculture Sector Initiatives

**Farm Block Development Programme:** This initiative, led by the Ministry of Agriculture, aims to provide land for large-scale agribusiness through private sector investment.

- **Nansanga Farm Block Core Venture:** A joint venture project spearheaded by the Industrial Development Corporation (IDC), involving the development of 12 hectares of land with an estimated investment of US\$230-Million.



- **Chikubilo Farm Block Development:** Focused on commercial farming, particularly cotton production in Lundazi, Eastern Province, covering 54,200 hectares of secured customary land.
- **Livestock Breeding Centres:** A conceptual project by the Zambian Government aiming to establish livestock breeding and artificial insemination centres across the country.

## Tourism Sector Transformation

- **Mulungushi International Conference Centre Redevelopment:** A major project led by MICC Limited and IDC, involving the refurbishment of the existing centre into a modern international conferencing facility with a US\$400-Million estimated investment.
- **Long Acres Lodge Redevelopment:** A planned transformation of Long Acres Lodge into a modern commercial complex, including a 5-star hotel, shopping mall, and office park through Public-Private Partnership (PPP).



### Key economic indicators...

Real GDP recovered to 4.6% growth in 2021 and 3.0% in 2022 after contracting 2.8% in 2020. The recovery was driven mainly by wholesale and retail trade, agriculture, and mining and quarrying. Inflation dropped from 22.1% in 2021 to 10.1% in 2022, driven mainly by the reduced food price shocks. The policy rate was maintained at 9.0% in 2021 and 2022, owing to inflationary pressures, weaker medium-term growth prospects, and vulnerabilities and risks to the financial sector.

*Source: Worldbank.org*

- **Twin-Palm Mixed-Use Real Estate Development:** A 32-hectare project near Lusaka’s Central Business District, combining commercial, business, residential, tourism, and leisure facilities.

### Transport Sector Infrastructure

- **Solwezi-Kipushi Road Project:** Upgrading the Solwezi-Kipushi road to bitumen standard in North-Western Province, including toll gates.
- **Mansa Airport Project:** The development of Mansa Airport into an international gateway to exploit tourism potential in the Northern part of the country.

### Energy Sector Innovations

- **Kapamba Hydro Power Station:** A 12MW hydropower plant project executed by ZESCO through an EPC contract.
- **Luapula River Hydro Power Scheme:** A massive project spanning seven different sites on the Luapula River, with the potential to generate 800–1,200 MW of power.

### Mining Sector Advancements

- **Copper City Industrial Park/Multi-Facility Economic Zone:** A project focused on value addition to copper and other mining-related activities in Kabwe District, Central Province.

### ICT Sector Developments

**Computer Assembly Plant:** A joint venture led by the Zambia Information and Communication Technology Authority to establish a computer assembly plant supplying schools in Zambia and the region.

As Zambia continues its journey of economic diversification and sustainable growth, these projects underscore the nation’s commitment to harnessing its abundant resources and creating a thriving environment for local and international businesses alike. The unfolding narrative of Zambia is one of opportunity, innovation, and inclusive development.

### Construction Sector Advancements

- **Redevelopment of Zambia International Trade Fair Grounds and Mukuba Hotel:** A project aimed at creating a world-class conferencing and exhibition facility and expanding Mukuba Hotel into a five-star facility.
- **Lusaka South Multi-Facility Economic Zone:** A 2,100-hectare economic zone in Lusaka, seeking partners for financing, development, and management.





# Curiosity and collaboration are the secrets of success

In this issue, we profile NDE National Supply Chain Manager **Jeanré Hanekom** whose career insights show the power of effective communication and adaptability as well as the importance of resilience. He also outlines the challenges facing the South African stainless steel industry and suggests innovative strategies for overcoming them...

***Please provide some background on where you come from, your school and tertiary education and where you first started working?***

I am originally from Gqeberha (Port Elizabeth) in the Eastern Cape where I attended DF Malherbe High School. While my initial career goal was to become an engineer, a transformative experience during some holiday work in the logistics field, led me to pursue studies in Logistics Management at the University of Stellenbosch. In 2008, I decided to further strengthen my expertise by achieving my certification as a Certified Supply Chain Professional (CSCP) through Apics. I began my professional career as a Supply Chain Manager at Fabrinox in Paarl, under the mentorship of the MD **André Visser**.

***What are some of the key projects, that you have worked on that have challenged you but also helped to shape your skills, experience and career advancement?***

NDE operates in the retail and distribution industry and maintaining optimal inventory levels is therefore paramount, as we take pride in ensuring stock availability to effectively manage our customers' expectations. Shortly before the onset of the COVID-19 pandemic, we made the strategic decision to introduce Demand-Driven Planning Software. The software's navigation became challenging due to the constraint variabilities arising from widespread supply chain disruptions caused by the pandemic. Fortunately, despite the expected initial challenges, implementing the new software was a success. We now benefit from improved inventory management and the ability to meet customer expectations more effectively. This is a core value at NDE.



***“Even when dealing with difficulties, the resilience of South Africa’s people highlights the importance of staying positive for the country’s improvement”***

***What is your current position and how would you describe a typical day on the job?***

I joined the NDE Cape Town team in 2008 as a Product Manager and have been with them ever since. Over the years, I've held various positions, progressing from Logistics Manager to Operations Manager. Currently, I serve as the National Supply Chain Manager and sit on the company's Management team.

I start my day by reviewing reports on sales, inventory, purchasing, and cash flow. A daily walkthrough of our facility keeps me informed about physical operations and connected to ongoing activities on the floor and with staff. Regularly addressing emails has become the norm in today's business environment, and no day is complete without attending a few meetings. I also travel around the country to NDE's other

branches to ensure that all aspects of our branch logistics and operational management continue to be first-rate. I work with several teams across the business, problem-solving on the go, and continuously refining our systems as the business grows.

***What would you say are the biggest i. work and ii. life lessons you have learnt thus far?***

Even though it may be considered cliché, the most significant work lesson I've learnt is the importance of effective communication. Clear, open, and honest communication fosters trust and collaboration. It also reduces misunderstandings and contributes to a positive work environment.

In addition, embracing adaptability has been crucial to my success. The ability to adapt to changes, whether in organisational structure, technology or market conditions, has allowed me to navigate challenges and contribute to solutions.

In my life, a key lesson has been the value of resilience. Life is unpredictable, and facing setbacks is inevitable. Developing resilience has empowered me to bounce back from challenges, learn from setbacks, and approach new opportunities with a positive mindset.

Another crucial life lesson for me has been the importance of maintaining a balance between personal and professional aspects of my life. The lines between these domains can easily blur, with potentially dire consequences for both your private and professional life if you don't consistently try to maintain this balance.

***“I am determined to maintain a curious and inquisitive mindset throughout my career. I believe that staying continuously engaged and interested in the dynamics of our business is crucial for personal and professional development”***

***How do you hope to take your career to even greater heights - what are your plans for the future?***

Continuous learning! At NDE I have been fortunate to have been given exposure to various areas and disciplines of the business and not just the area of my expertise. This has enabled me to gain a holistic view of the inner workings of the company and has been hugely beneficial when it comes to making decisions. As a result, I am determined to maintain a curious and inquisitive mindset throughout my career. I believe that staying continuously engaged and interested

in the dynamics of our business is crucial for personal and professional development.

I have recently been presented with an opportunity to collaborate with a company in a completely different industry, stepping outside of my usual comfort zone. My strategy is to absorb as much information as possible, learn best practices, and embrace diverse ways of thinking. I intend to bring these insights back to NDE to continuously enhance our supply chain processes.

***In your opinion, what are the biggest challenges the South African stainless steel industry is currently facing and what are some of the innovative ways these can be overcome?***

In South Africa, the manufacturing sector has experienced a prolonged decline, attributed in part to our failing infrastructure, particularly concerning Eskom and Transnet. Regrettably, there are no quick fixes for these challenges. Addressing the manufacturing challenges in South Africa requires a comprehensive and collaborative approach involving various stakeholders, including the government, industries, educational institutions, and the private sector. Even when dealing with difficulties, the resilience of South Africa's people highlights the importance of staying positive for the country's improvement.

***What do you consider the most exciting innovations/product developments happening in stainless steel right now and what sectors hold the greatest potential for the use of stainless steel in the future?***

Whilst not a 'new' development, duplex stainless steel continues to attract increased attention as a result of its ability to withstand aggressive corrosive environments in industries like oil production, gas, and mining.

NDE was one of the first companies in Africa to procure duplex stainless steel for the mining industry in Zambia more than a decade ago, and we continue to be leaders in the industry due to our continuous supply of quality material from our world-class suppliers. Our in-house expertise allows us to assist our customers with making the best material choice for their specific applications and environments. While the initial cost of duplex stainless steel might be higher compared to alternative materials, the long-term advantages, including enhanced durability, minimised maintenance, and prolonged service life, often justify the upfront investment.

Identifying a specific sector with future potential is difficult to answer. The remarkable aspect of stainless steel has always been its versatility, finding applications across a wide array of sectors.

To read more about NDE go to: [www.nde.co.za](http://www.nde.co.za)

# Why Stainless Steel is the logical choice for electrification projects in corrosive locations



The lingering (mis) perception that stainless steel is a more expensive choice of metal needs to be extinguished for once and all. Granted, the initial cost of the material may be higher but as this classic 3CR12 stainless steel Case Study points out when it comes to structural applications, particularly those in coastal applications, its superior lifespan and corrosion resistance properties coupled with its minimal maintenance costs, make it the logical and quite frankly responsible procurement choice in key strategic projects...

## Sustainability and Life Cycle Costing: The 3CR12 Electrification Masts Case Study

Corrosion is the natural, gradual deterioration of metals reacting with their environment. It degrades the useful properties of metals and structures including their strength and structural integrity. In the ambient environment, most metal alloys tend to revert to their natural stable states. Carbon steel, for example, is made up of iron and a combination of other alloying elements. Without any additional surface protection, they tend to form a layer of rust (iron-oxide); which is brittle and exfoliates, exposing a new fresh layer of steel to be attacked. This cycle continues with devastating effects on equipment and structures due to resultant loss in through-thickness and inevitably causing perforation - and low life.

When choosing metals for longevity and low maintenance, stainless steel becomes the obvious choice. Stainless steel selection is primarily concerned with corrosion resistance in a particular environment. Aesthetics is often important and thus the ability of the stainless steel to resist discolouration becomes critical. Cleanability and hygiene considerations may dictate the stainless steel finish along with aesthetic considerations.

Stainless steels have a unique advantage in that a thin, tenacious, and self-repairing passive chromium oxide layer

forms on the surface of the steel. This oxide layer gives the steel its characteristic corrosion-resistant properties in most environments. The steel must contain at least 10.5% chromium for this passive layer to form. Stainless steels are known for their superior corrosion resistance and are used in the bare mill finish without the need for additional protective coating systems to enhance corrosion protection. This brings into consideration a concept known as Life Cycle Costing (LCC) - which takes into consideration the initial material input cost, fabrication costs, maintenance and refurbishment costs, cost of lost production due to downtime and replacement cost over a defined product lifespan. Stainless steels have higher input costs compared to some competing materials; however, because of the characteristic corrosion resistance in most environments, they can maintain structural integrity without the need for additional surface coating systems or corrosion allowances - which add to the initial costs of fabrication. Over the lifespan of equipment or a structure, stainless steels are often considered the most cost-effective, low maintenance, long-term and sustainable choice; due to less need for material replacement (new production) and being 100% recyclable and manufactured using recycled material.





## Resilient Rail

In 1982, 3CR12 electrification masts were installed for the railway line from Gqeberha (Port Elizabeth) to Barkley Bridge; that runs for over 30km of track from the harbour along the coast to the North End, moving inland.

During high tide and windy conditions, the masts are constantly exposed to the sea spray (as illustrated in the pictures below). For these aggressive coastal environmental conditions, conventional galvanised or coated mild steel was not deemed suitable for the 40-year-maintenance free life required. For this reason, the metal of construction selected was the utility ferritic stainless steel grade 3CR12 (1.4003), a world renowned alloy invented and manufactured exclusively by Columbus Stainless. This material bridges the gap between coated carbon steels and the traditional higher alloyed stainless steel grades.



**Figure 3 (a-b):** 30 year inspection – taking note of the sea spray on the structures. Note: The original forming marks can still be seen on the metal surface, signifying the negligible metal loss.

3CR12 was chosen for the lattice girder masts and beams on the line including the entire system in the harbour area. An inspection of this original application in intervals of 14 and 30 years later found that there has been no measurable corrosion or evidence of pitting corrosion, and the system is expected to remain completely maintenance free for at least the original intended 40 years. This proves that the longevity of the product and minimal maintenance are critical attributes to consider when selecting construction materials.

3CR12 was supplied in the hot rolled and annealed (HRA) black finish. When exposed to elements over time, this surface finish forms a brown patina (discolouration) – which is not corrosion. It is simply aesthetic in nature. For the



**Figure 4:** A carbon steel rail buffer in the same area showing excessive corrosion and subsequent loss of structural integrity.

duration of this installation, the electrification masts have maintained this brownish appearance with no significant metal loss measured. Note: In structural applications where a stained (brownish) appearance is unacceptable or an aesthetic appearance is of importance, 3CR12 can be painted. As far as paint is concerned, 3CR12 has proved to be a substrate which contributes significantly to improved coating performance compared to mild or galvanised steel for numerous generic coating systems. Coated mild steel or galvanised steel sees significant underfilm creep and corrosion, especially in marine environments if the coating becomes damaged. With 3CR12, underfilm creep and corrosion are avoided. 3CR12 does not show a tendency to underfilm creep.

It can thus be seen that conventional wisdom for stainless steel selection for various environments applies where aesthetic concerns are the main criterion. If excellent corrosion resistance and structural integrity are the primary materials selection criteria, then alternative wisdom would suggest that 3CR12 is the obvious choice from a performance and cost point of view.



**Figure 5:** Pictures taken in 2022 illustrate the condition of the pylons over 40 years in operation.

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# Battle of the ‘sips’: Unleashing the power of Stainless Steel in water solutions

## How does Stainless Steel compare to plastic alternatives in drinking water applications?



Stainless steel and plastic are both materials commonly used in various applications, including those related to water management and sustainability. Should one compare these two materials in terms of sustainability, the following needs to be considered:

**Environmental Impact** - The production of stainless steel involves mining and refining raw materials (iron ore, chromium, nickel), which can have environmental impacts. However, stainless steel is highly durable and can be recycled, reducing the overall environmental impact over its life cycle. On the other hand, plastics are derived from fossil fuels and are associated with environmental concerns such as pollution and resource depletion. Some plastics can be recycled, but not all are easily recyclable, leading to issues like plastic pollution.

**Recyclability** - Stainless steel is highly recyclable with a global recycling rate of 96%, and the recycling process is energy efficient. This contributes to the circular economy

and reduces the need for new raw materials. While some plastics are recyclable, the recycling process is not as efficient as that of stainless steel. Moreover, certain types of plastics may not be recyclable at all, contributing to environmental pollution.

**Durability** - Stainless steel is known for its durability and corrosion resistance. It has a long lifespan and can withstand harsh environmental conditions, reducing the need for frequent maintenance and costly replacements. Plastics are less durable than stainless steel, and their integrity can be compromised over time due to factors such as UV exposure and temperature variations. This can lead to the need for more frequent maintenance and replacements.

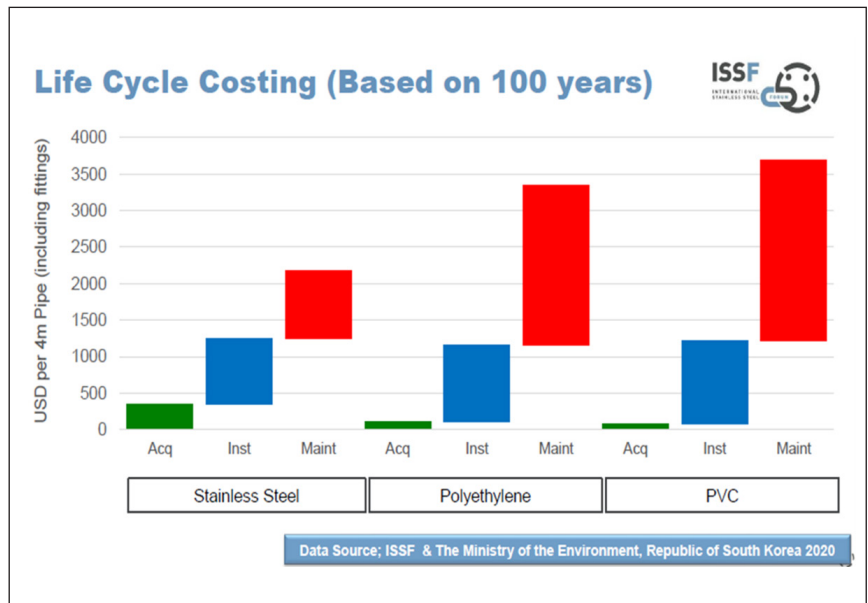
**Life Cycle Costs** - While the initial cost of stainless steel may be higher, its durability and minimal maintenance requirements can result in lower life cycle costs over the life span of the installation. The initial costs for plastics may be lower, but maintenance and replacement costs

can accumulate over time, potentially making the life cycle costs higher. The International Stainless Steel Forum (now known as Worldstainless) published a study in 2020 based on statistics from the Republic of South Korea where stainless steel was compared to plastics in water applications with an expected life span of 100 years. This is illustrated in the graph on the right.

**Chemical Resistance** - Stainless steel is resistant to corrosion and can withstand exposure to various chemicals, making it suitable for applications where water may contain corrosive substances. The chemical resistance of plastics varies. Some plastics may be susceptible to chemical degradation over time, limiting their use in certain water treatment applications.

**End-user or consumer health and safety** - Stainless steel (or its alloying elements) does not leach into the environment due to its passivity. Stainless steel is considered a safe and inert material for contact with drinking water. The risk of contamination through leaching of harmful substances from stainless steel is minimal under normal conditions. Stainless steel is an alloy of metals, primarily iron, chromium, nickel, and molybdenum, which form a protective oxide layer on the surface of the material. This oxide layer, also known as the passive layer, helps prevent the leaching of metals into the water. However, some factors can influence the leaching potential of stainless steel:

- **Grade of Stainless Steel:** Different grades of stainless steel may contain varying amounts of alloying elements. High-quality stainless steel, such as 304 and 316 grades, is commonly used in applications involving water contact due to its corrosion resistance and stability.
- **Water Chemistry:** The chemical composition of the water can affect the corrosion resistance of stainless steel. For example, exceptionally soft or acidic water may lead to more corrosive conditions and could potentially affect the passive layer.
- **Temperature:** Elevated temperatures can sometimes increase the corrosion rate of stainless steel. However, for normal drinking water temperatures, this is typically not a significant concern.
- **Contact Time:** Prolonged contact between water and stainless steel may increase the risk of leaching due to stagnant conditions that lead to oxygen deprivation in the



water, but this is not a concern for typical water usage scenarios.

- **Surface Finish:** The surface finish of stainless steel can influence its corrosion resistance. Smooth, polished surfaces are less prone to corrosion than rough or pitted surfaces.

Microplastic contamination in drinking water is a growing concern worldwide. Microplastics are tiny particles, often less than 5 millimetres in size, that result from the breakdown of larger plastic items or are intentionally manufactured at a small scale. These particles can be found in various environments, including oceans, rivers, and even in the air. There is evidence that microplastics have made their way into drinking water sources, and consequently, into the water we consume. Some key points regarding the extent of microplastic contamination in drinking water:

- **Global Presence:** Studies have detected microplastics in tap water samples from various countries around the world. This indicates that the contamination is not limited to specific regions but is a widespread issue.
- **Water Sources:** Microplastics have been found in various water sources, including rivers, lakes, and groundwater. Some studies have also identified microplastics in bottled water.
- **Particle Types:** Microplastics can be categorised into primary microplastics (manufactured at a small scale, e.g., microbeads in personal care products) and secondary microplastics (resulting from the breakdown of larger plastic items). Both types have been found in drinking water.

- **Health Concerns:** The potential health impacts of consuming microplastics in drinking water are still under investigation. Some studies suggest that microplastics could carry chemicals and contaminants, and there is concern about their potential to cause harm to human health.

Monitoring and understanding the extent of microplastic contamination in drinking water are crucial steps in developing strategies to mitigate the impact on human health and the environment. Stainless steel would play a critical solution. This risk is already a key topic of discussions around the current South African water 'landscape' and the subject of a comprehensive study of microplastics in freshwater environments by NWU for the Water Research Commission was released in 2018.

As part of the recommendations in the study, it was mentioned that given that microplastics were found in drinking water, there is a need to explore sources as in some cases the water is conveyed using PVC pipes, as well as other types of conduit, pump, and reservoir elements which may also contribute microplastics to drinking water after treatment and release into the reticulation system. In South Africa, water is increasingly being reused, thus the levels of microplastics need to be evaluated within the whole water value chain.

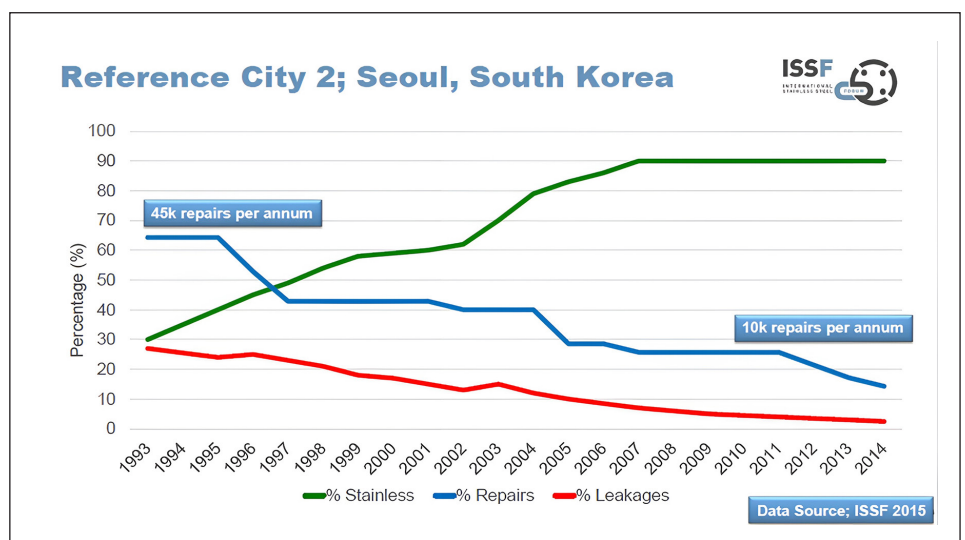
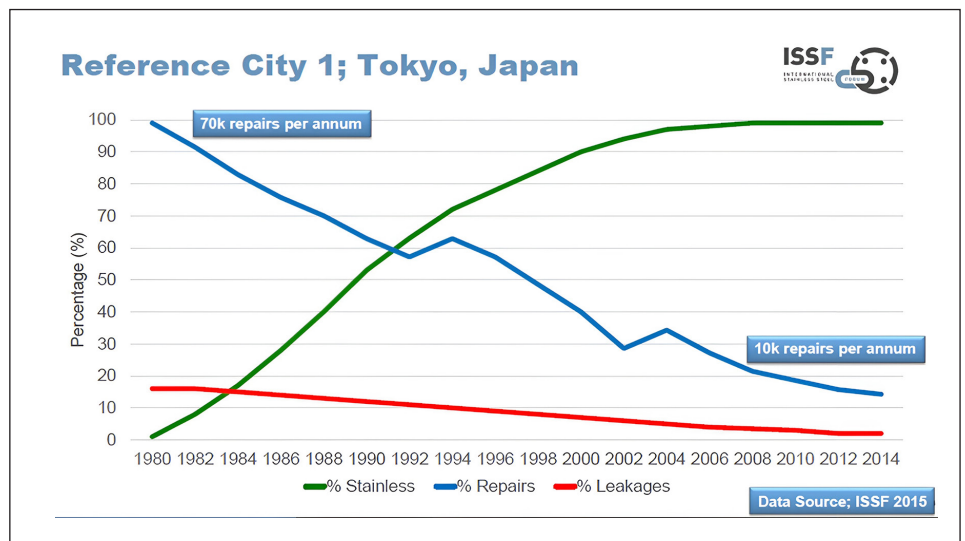
### Saving a critical resource - drinking water

Stainless steel itself does not directly contribute to saving drinking water; rather, it is a material commonly used in various applications that support water conservation efforts. The impact on water conservation comes from how stainless steel is used in different water-related systems and applications. Tokyo and Singapore have implemented various measures to manage and conserve drinking water, and the use of stainless steel in certain applications has played a role in these efforts. While the specific details of water management strategies can vary between cities, here are some general points about how Tokyo and Singapore have utilised stainless steel in their water management practices:

### Tokyo, Japan:

**Water Infrastructure:** Tokyo has invested in a robust water infrastructure system, including the use of stainless steel pipes for water distribution. The durability and corrosion resistance of stainless steel contributes to the longevity of the water distribution network, minimising leaks and losses.

**Water Treatment Plants:** Stainless steel is commonly used in the construction of water treatment plants and equipment. Tokyo's water treatment facilities utilise stainless steel for components such as tanks and piping, ensuring the reliability and efficiency of water treatment processes. **Water Conservation Initiatives:** Tokyo has implemented water conservation measures, including public awareness campaigns, to encourage residents to use water efficiently. While stainless steel may not directly contribute to these initiatives, the overall efficiency of the water infrastructure, which may include stainless steel components, minimise water losses.





## Singapore:

### 'New' Water and Desalination:

Singapore faces challenges with limited freshwater resources, and it has implemented innovative solutions such as 'New' Water (reclaimed water) and desalination. Stainless steel is often used in the construction of equipment for water treatment processes, contributing to the reliability and efficiency of these technologies.

**Water Recycling:** Singapore places a strong emphasis on water recycling and reuse. Stainless steel, with its corrosion resistance and durability, is suitable for use in the construction of pipes and tanks in water recycling systems, helping maintain water quality and minimising the need for frequent replacements.

**PUB's Active Management:** The Public Utilities Board (PUB) in Singapore actively manages water resources, including monitoring and reducing water losses in the distribution network. The use of durable materials like stainless steel in infrastructure contributes to minimising leaks and losses.

Both Tokyo and Singapore have adopted a combination of technological innovation, infrastructure development, public awareness, and policy measures to ensure sustainable water supplies and efficient water use. The selection of materials like stainless steel contributes to the overall effectiveness and reliability of their water systems.

## South Africa:

In South Africa, the issue of water conservation will remain critical as we enter the future of climate change. The graph on the right shows how effective stainless steel can be in curbing losses of drinking water in distribution systems according to Worldstainless.

The Drakenstein Municipality in the Western Cape adopted a similar approach to the conservation of drinking water two decades ago. The municipality brought down water losses through leakages from more than 35% to

## Headline Guidance Numbers



Headline Indicator	Value	Comments
Installation Cost per 100k of Population	Around 80m USD	Based on Tokyo and Seoul experiences
Break-Even (B/E) Installation Proportion	45%	Proportion of stainless service pipework out of total service pipework
Typical Time to Deliver B/E Proportion	10 years	
Annual Saving for each 1% Stainless Proportion Above B/E	150m USD	
Annual Saving at 90% Stainless Service Pipework	6.8bn USD	

The above data is for guidance only.

Every city is a different in terms of;

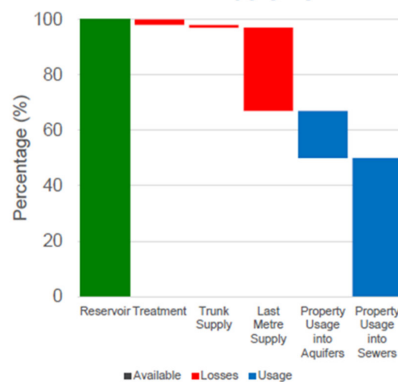
- Starting treated water losses
- Starting water loss profile .... loss locations, loss types, repair capability
- Available reservoir stocks and annual variations

## Comparison of Water Losses

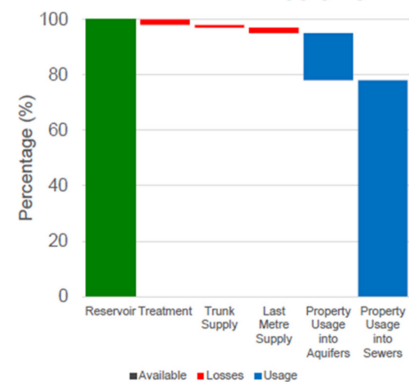


Data Source: ISSF 2020

### Traditional Water Supply Systems



### Stainless Steel Water Supply Systems



around 10% by strategically using stainless steel for key applications above and below street level.

## Conclusion:

In summary, both stainless steel and plastics have their advantages and disadvantages in sustainable water applications. Stainless steel is more durable and recyclable, with a longer life cycle, but it may have a higher initial cost. Plastics, while initially cost-effective, pose environmental challenges and have limitations in terms of recyclability and durability. The choice between the two materials should be based on the specific requirements of the water application and broader sustainability goals. However, this choice sometimes call for tough decisions. Bad material choices today can add to the financial and environmental burden of tomorrow.

# Highlights from the 2023 Manufacturing Indaba

## Unlocking Opportunities and Shaping the Future



Industry leaders, manufacturers, and innovators convened for the 2023 Manufacturing Indaba which Sassda also attended to represent the voice and vision of stainless steel in South Africa. The two-day event consisted of a conference and exhibition and provided a platform for thought-provoking discussions, networking, and the showcase of cutting-edge products and services.

### Diverse hubs and enlightening panel discussions

The conference featured hubs dedicated to trade and investment, knowledge sharing, and exhibitions. Panel discussions, a highlight of the event, delved into crucial topics, including the journey from globalisation to

'glocalisation', skills development, digitalisation, financing opportunities, and China's transformation into an advanced manufacturing powerhouse.

### The journey from globalisation to 'glocalisation'

One of the most intriguing discussions focused on the shift from globalisation to 'glocalisation'. The speakers explored the psychological shift needed to encourage buying local products, emphasising the role of marketing narratives in shaping Africa's success. Key considerations included creating compelling narratives, the readiness to be self-reliant in production, and the importance of bold and deliberate choices in policy-making.

### Skills development and digitalisation

Another pivotal topic addressed the intersection of skills development and digitalisation in the manufacturing sector. The need for continuous skilling and reskilling to adapt to evolving technologies was emphasised. The



ageing workforce was a key concern, with discussions centering on creating environments of curiosity, addressing soft skills, and measuring competencies. The importance of a collaborative approach to unlock the potential of the nation's youth and propel the country forward was underscored.

### China's advanced manufacturing transformation

Insights into China's advanced manufacturing journey were shared, emphasising the reduction of costs and the simultaneous increase in skills. The role of innovation, research, and eCommerce in China's manufacturing success was highlighted. The strategic use of Special Economic Zones (SEZs) and the emphasis on technology transfer and skills development were noted as crucial factors in China's manufacturing prowess.

### B2B Connect: A gateway to growth

The B2B Connect initiative facilitated face-to-face meetings between delegates and exhibitors, providing a unique opportunity for manufacturers to engage with key stakeholders. These interactions were aimed at fostering collaboration and offering a platform for manufacturers to connect with entities that could contribute to the growth of their businesses.

### Financial solutions for manufacturing challenges

The event also shed light on financial solutions available to manufacturers. ABSA, a prominent player, showcased holistic business solutions through its Commercial Bank. Financial support for energy solutions was emphasised, with organisations like ECIC providing funding to address energy-related challenges in the manufacturing sector.

### Charting the future of African manufacturing

As the event concluded, a vision for the future of African manufacturing emerged. Leveraging the African Free Trade Agreement was highlighted as essential, with a call for proactive dissemination of information about the agreement to manufacturers. Collaboration on a regional level and alignment of trading blocks were seen as crucial steps in creating a unified front for African manufacturers. In conclusion, the 10th Edition Manufacturing Indaba 2023 proved to be an invaluable platform for fostering collaboration, sharing knowledge, and showcasing the innovation driving the South African manufacturing sector. As the industry continues to evolve, the lessons learned from this event will undoubtedly play a pivotal role in shaping the future of manufacturing in Africa.





# Sassda's 2023 Gauteng Golf Day: A Triumph of Industry Collaboration and Excellence

On the 23rd of August 2023, Sassda together with SAIW held its annual Gauteng Golf Day. With a full field of 112 golfers and an additional 160 esteemed dinner guests, the day was the perfect platform to foster professional relationships and promote excellence within the stainless steel sector.

A key highlight of the event was the unwavering support from sponsors, each playing a pivotal role in the day's success. The "Watering Holes," strategically placed throughout the course to keep participants refreshed and energised, were sponsored by Sassda and SAIW members and associates; Columbus Stainless, NDE, Grinding Techniques, TÜV Rheinland, Air Liquide, Innox-V-Africa, Techtra Engineering Consultants, Pferd SA, and Lincoln Electric. Their contribution not only elevated the overall experience for participants but also highlighted their dedication to advancing the stainless steel industry.

BAMR sponsored the event banners and Novametal South Africa (Pty) Ltd, formerly known as WPSS, generously provided giveaways and prizes. Lucky participants had the opportunity to take home premium stainless steel products, courtesy of Novametal South Africa (Pty) Ltd.

The prize-giving dinner, attended by 160 guests, provided a platform for networking and knowledge exchange. Industry leaders and professionals engaged in meaningful discussions, further solidifying the sense of community, and shared purpose within the stainless steel sector.

In conclusion, the Sassda/SAIW 2023 Gauteng Golf Day was more than a sporting event; it was a showcase of industry unity, collaboration, and excellence. As participants walked away with memories of a day well spent, the echoes of clinking clubs and lively conversations lingered, promising a bright future for our industry as we head towards a new year.



# Columbus Stainless awarded SAIW gold medal for pioneering 3CR12 stainless steel



Columbus Stainless has been honoured with the esteemed 2023 SAIW Gold Medal Award for the invention and development of 3CR12 stainless steel. This proudly South African material has not only revolutionised the stainless steel industry but has also garnered international acclaim for its exceptional toughness and weldability, even in thick gauges.

3CR12 stainless steel features in international specifications such as ASTM S41003 and EN 1.4003. The evolution of this transformative material unfolds as follows:

- **Conceptualisation and Birth (1976 - 1977):** The foundation for 3CR12 stainless steel, a low-chromium ferritic stainless steel with outstanding weldability, was laid. A pivotal moment occurred with the production of an off-spec 409 heat, leading to the discovery of a tough, fine-grained dual-phase ferrite-martensite heat-affected zone when welded.
- **Plant Production and Breakthrough (1978 - 1980):** A significant breakthrough was achieved with the production of the first plant heat, leading to the launch of internal grade 41211 in 1980. This variant exhibited unparalleled weldability, even in thicker sections.
- **Continuous Refinement and Innovation (1988 - 1990s):** Continuous refinement of the chemistry of 3CR12,

## Newsflash!

The World Steel Association has recognised Columbus Stainless for its innovation in resolving a safety challenge that was detected after a near-miss on a mill machine roll that posed an unexpected risk to personnel and equipment. The solution consisted of designing a cover made from recycled materials to cool the roll, thereby protecting it from possible breakage and preventing splashing during the cooling process.

resulted in the development of chemistry 41214. This innovative step involved the removal of nickel and titanium while maintaining austenite potential, enabling cost-effective production and positioning 3CR12 as a bridge between mild steel and alloyed stainless steel.

- **Advancements in Weldability and Sensitisation Prevention (2000s):** Collaborative research efforts with institutions like the University of Pretoria led to an in-depth understanding of sensitisation modes post-welding.
- **Recent Innovations (Past 10 Years):** The introduction of 3CR12HP400, a higher yield strength variant, opened new design possibilities for thinner sections while maintaining outstanding weldability.



# John Rowe: A Lifetime of Dedication to the Stainless Steel Industry

It is with heavy hearts that we announce the passing of **John Rowe**, a true pioneer and lifetime achiever in the stainless steel industry. John, who was 76 years old, leaves behind a legacy that will forever be celebrated and cherished. His contributions to the world of stainless steel were immeasurable, and his dedication and passion for his work were an inspiration to all who knew him.

John's journey in the stainless steel industry began in 1986 when he joined Middelburg Steel and Alloys. As an Export Manager, he displayed an unwavering commitment to his work. He was known to arrive at the office at the crack of dawn and often stayed long after others had left. This dedication earned him the respect and admiration of his colleagues and set the stage for a remarkable career.

Following the sale of Middelburg Steel and Alloys, John embarked on a new chapter in his career. He moved to Oreport, an international metals trading house, where he continued to excel. His passion for the industry was evident in every endeavour he pursued. Later, he joined Thyssen Krupp, where he expanded his horizons and made a significant impact.

While John was born in the UK, he spent most of his life in South Africa, a place he lovingly called home. It was in South Africa that he and his beloved family made memories that would last a lifetime. He was not just a dedicated professional but also a devoted family man, always ensuring that his loved ones came first.

John's career took another remarkable turn when he joined Thyssen Krupp in Germany. This move broadened his horizons and allowed him to engage with the global stainless steel community. He was a well-respected figure in the industry, known for his expertise and unwavering dedication to stainless steel.



Perhaps the pinnacle of John's illustrious career was when he was appointed as the Secretary General of International Stainless Steel Forum (ISSF); now Worldstainless. In this role, he played a pivotal role in shaping the industry's future and fostering international cooperation. His leadership was marked by a commitment to excellence and a relentless pursuit of innovation. It was during his tenure as Secretary General that he was nominated for a Lifetime Achievement Award.

In October 2018, John's remarkable contributions were recognised when he was awarded the Lifetime Achievement Award at the prestigious Stainless Steel Awards Gala dinner. The honour was a testament to his decades of hard work, passion, and innovation within the industry.

John eventually retired from his role at ISSF in October 2019. His retirement marked the end of an era in the industry, and he left behind a lasting legacy that will continue to inspire and influence generations of stainless steel professionals.

John's passing is a loss not only to his family and friends but also to the entire stainless steel community. His dedication, passion, and commitment to excellence were unparalleled. Sassda extends its deepest condolences to John's family, friends, and all who had the privilege of knowing him. John will be remembered as a true legend in the stainless steel industry, and his legacy will forever shine as a beacon of inspiration for all those who follow in his footsteps.



# IDEAL SURFACE FINISHES

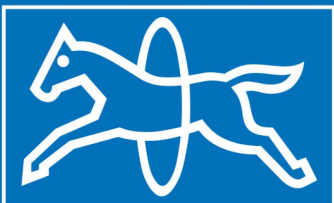
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