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the journal of the southern africa stainless steel development association
ISSUE 4 2026



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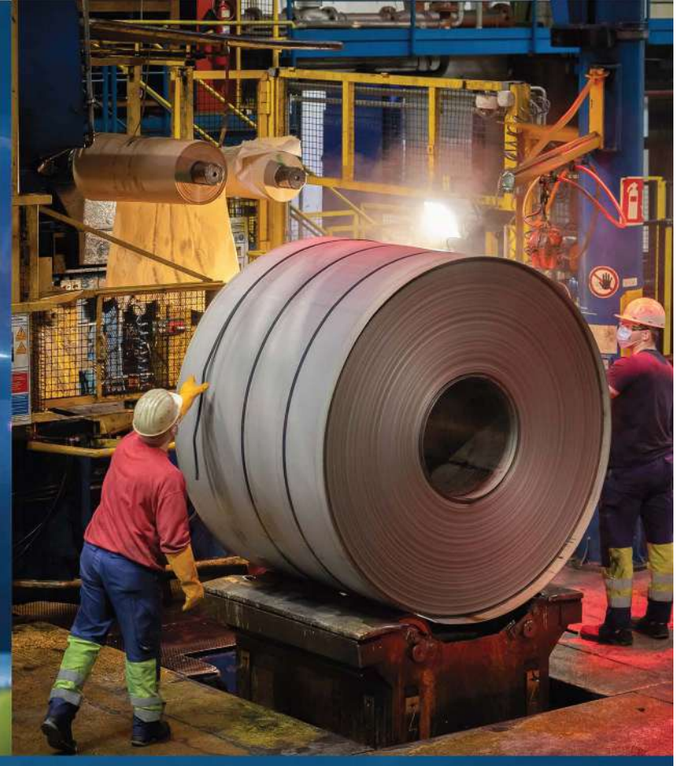

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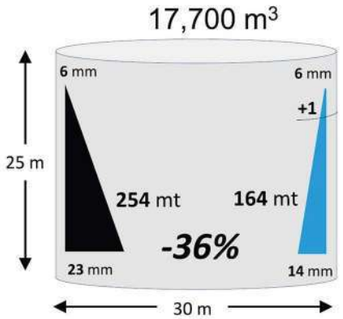

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A Year of Resilience, Renewal and Opportunity



As we reach the final issue of the Sassda Stainless Steel Magazine for 2026, it is a good moment to reflect on a year that began with renewed optimism but soon became more challenging, as weak economic growth, rising costs and persistent pressure on freight, ports and energy kept demand subdued and left many businesses operating in a market that moved sideways rather than forward.

In this environment, resilience has meant finding ways to work smarter, strengthen capability and prepare for opportunities ahead. Companies across the sector continue to invest in productivity and more efficient processes, while drawing on the technical knowledge that helps them deliver quality, reliability and long-term value. These efforts matter in a market where growth cannot be taken for granted.

Tough trade

The pressures facing local manufacturers remain significant, particularly as import competition in stainless steel hollowware places domestic producers under strain and concerns about the volume and declared value of some imports call for careful, evidence-led investigation. Trade measures can help where harm is demonstrated, but they must be applied thoughtfully so that essential inputs remain accessible to local manufacturers.

Trade policy, however, is only part of the answer: a stronger stainless steel value chain will also depend on addressing high energy and logistics costs, building skills, encouraging investment and ensuring that procurement gives local suppliers a fair opportunity to compete. This issue explores where that opportunity may lie, including infrastructure investment in water, wastewater, energy and rail, where projects could create dependable demand for locally made products while supporting more resilient public infrastructure.

A ‘breath of fresh air’

South Africa can also build on its industrial strengths to serve markets across the continent; a theme explored in our Zambia country profile. Our technical articles, meanwhile, show how informed material selection and good design contribute to performance and service life. Together, these stories reflect the breadth of stainless steel’s role, from manufacturing and infrastructure to energy generation.

That range of opportunity also raises important questions for Sassda as the association looks to its future. Our strategic review now under way will examine our purpose, member value, priorities and funding model, with the aim of ensuring that Sassda remains relevant and sustainable and that its work responds to the needs of the sector. To do that well, we need to hear from across the industry: established businesses, current and former members, prospective members, buyers and emerging leaders.

The next generation has a particular role to play in shaping that future, which is why we are inviting nominations of young professionals with the insight, commitment and potential to serve on the Sassda Main Committee. New voices and perspectives will strengthen



the discussions that guide our industry. Please e-mail your nominations to **callum@sassda.co.za.**

As the year starts to draw to a close, I would like to thank our members, partners and contributors for their support and engagement throughout 2026. I wish you and your families a restful festive season and a well-earned break and look forward to returning in the new year with renewed energy to build on the opportunities ahead and continue working together for a stronger stainless steel sector.

Michel Basson, Sassda Executive Director

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Sassda review to define its future role in stainless steel sector



A new research project will test the association's purpose, member value and funding model against the changing needs of South Africa's stainless steel industry...

Sassda has begun a strategic review of its role in South Africa's stainless steel industry, asking a fundamental question: what should the association be doing for the sector in the years ahead?

Subject to approval and the securing of funding by Sassda's Board and Main Committee, the research will examine its purpose, services, membership proposition and funding model, with the aim of producing a practical strategy for 2027 and beyond.

The decision follows a January 2026 workshop with Sassda's board and industry leaders. The discussion began with potential projects but quickly widened into a more consequential examination of the association itself: the value it provides, the industry it represents and the capabilities it will need to remain relevant.

Challenging times

That review comes at a time of structural change. Sassda is funded by its members, and the resignation of a major funding member has underlined the risks of relying too heavily on a small number of contributors. At the same time, weak domestic demand, import pressure and changing opportunities for local manufacturing are reshaping the environment in which members operate.

Sassda Chairperson **Bernard Maguire** explains, "The review is about making clear choices. Sassda has valuable expertise and strong industry relationships, but we need to be precise about where the association can make the greatest difference and what it needs to deliver that value sustainably."

The project is intended to give Sassda an evidence-based view of where it can make the greatest contribution. Its strengths include technical knowledge, industry relationships, training capability and established communication platforms. The research will test how those assets can be directed towards current needs, and where the association should draw the limits of its mandate.

Training, education and technical advice remain important to members. But early consultation has also pointed to demand for stronger networking and practical support in areas such as human resources, finance and logistics. The review will assess these needs alongside the cost, capability and funding required to meet them.

It will also look beyond the existing membership. Current and former members, prospective members, buyers and other industry participants will be consulted, with particular effort made to hear from younger people and emerging leaders. Their views will help establish whether Sassda's offer reflects the realities of the next generation of stainless steel businesses and professionals.

In-depth insight

The consultation programme will include segmented surveys, interviews and workshops, followed by selected sessions to test and verify findings. Where necessary, targeted engagement with government and labour may help confirm assumptions on policy, regulation and trade. The process will include safeguards for competition law and confidentiality.

Maguire adds, "We want members and stakeholders to help shape the outcome from the start. Their experience will show us where Sassda is most useful, where the gaps are, and what a practical strategy for the next phase should look like."

The questions reach beyond which services Sassda should provide. Researchers will examine which parts of the value chain and which end markets the association should prioritise; what it should lead, coordinate, support or leave to other institutions; and what members would be willing to support financially. Governance, staffing, systems, partnerships and data capabilities will also be considered.

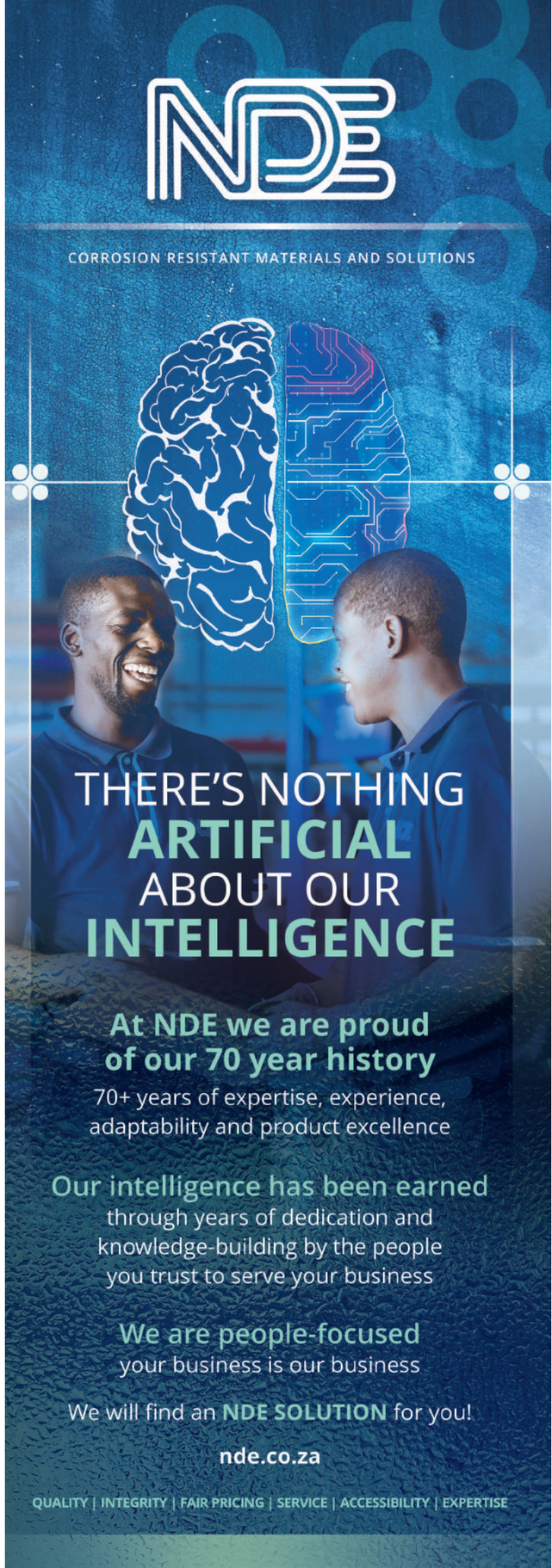
Setting a course for success

The outcome is expected to be an implementable institutional strategy, setting out a clear purpose, mandate, vision and strategic position. It will define what Sassda will and will not do, develop member propositions for different segments, and test those propositions against members' willingness to participate and pay. Three- to five-year financial scenarios will inform a more balanced funding model.

An operating model and costed implementation roadmap will translate those choices into action, with milestones, responsibilities, risks and performance measures. Some suitable initiatives may begin before the full strategy is complete, provided there is sufficient evidence, resourcing and accountability. Sassda will also receive tools to monitor progress and refresh the strategy as conditions change.

The review is a significant undertaking, but its purpose is practical: to turn a broad set of expectations into choices the association can act on. For Sassda, the test will be whether a clearer mandate can strengthen member confidence, reduce funding concentration and support the stainless steel industry in ways that are relevant, credible and sustainable.







CSIR develops local 316L stainless steel powder for additive manufacturing

The Council for Scientific and Industrial Research (CSIR) has produced spherical 316L stainless steel powder for additive manufacturing, identifying the material as an immediate commercial focus for its ultrasonic atomisation facility.

The development could help reduce South Africa's reliance on imported metal powders and strengthen local advanced manufacturing. It also shows how the CSIR's Future Production: Manufacturing Cluster is connecting research and technical capabilities with industry needs, with the Southern African Stainless Steel Development Association (SASSDA) facilitating engagement with the sector.

The CSIR has characterised the powder and demonstrated its suitability for additive manufacturing by producing 3D-printed components, including a polishing tool and mechanical test specimens. Moving from demonstration to wider industrial use will require consistent quality, qualification against international specifications, reliable local feedstock and commercially viable production volumes and costs.

CSIR Future Production: Manufacturing Cluster Manager **Dr Luyolo Mabhali** explains, "Our engagement with SASSDA is helping us understand the capabilities and needs of the stainless-steel industry, so that the Manufacturing Cluster's work can respond to real opportunities for localisation and industrial application."

Sassda Market Intelligence and Lobbying Specialist **Tebogo Nkwe** adds, "An industry association can help ensure that technology development is informed by the needs of manufacturers and grounded in the realities of the market.

By connecting the CSIR with foundries and other industry players, Sassda can help identify practical interventions that support."

"Our engagement with Sassda is helping us understand the capabilities and needs of the stainless steel industry, so that the Manufacturing Cluster's work can respond to real opportunities for localisation and industrial application."

Collaboration connects research with industry

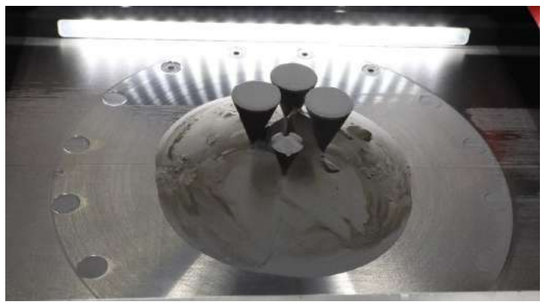
Sassda has facilitated engagement between the CSIR and several stainless-steel industry players and foundries. The discussions are helping the CSIR build a better understanding of local foundry capabilities and identify opportunities to strengthen the sector.

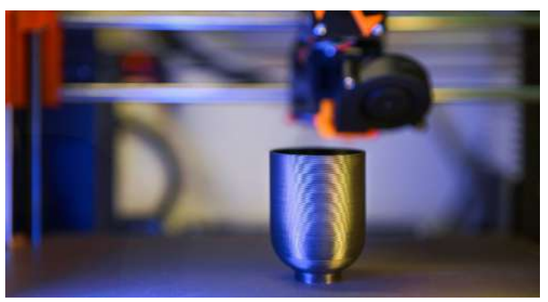
This engagement helps ensure that technology development responds to real manufacturing challenges and market needs. Industry associations can provide access to technical expertise, industry data, foundries, customers and wider stakeholder participation, helping identify practical interventions for localisation and improved competitiveness.

The collaboration forms part of the CSIR's Manufacturing Cluster's strategy, which aims to strengthen the competitiveness and resilience of South African manufacturing through localisation, industrial innovation and the development of high-value technologies that can be supported locally.

The cluster brings together four capability areas: advanced materials and manufacturing; robotics and future production; photonics; and industrial sensors. Its capabilities include materials development and testing, metal processing, additive manufacturing, automation, digital manufacturing, sensing and monitoring.

The CSIR's priorities focuses on strategic sectors where localisation and industrial modernisation could make the greatest impact. These include automotive and new-energy mobility, rail, advanced materials and metals, aerospace and defence, medical devices, industrial machinery, and smart and sustainable manufacturing. Across these sectors, the focus is on strengthening local supply chains, developing future-ready skills and improving production.





"Sassda has facilitated engagement between the CSIR and several stainless steel industry players and foundries. The discussions are helping the CSIR build a better understanding of local foundry capabilities and identify opportunities to strengthen the sector."

From powder to industrial application

The CSIR brings specialised expertise, research infrastructure and technology development capabilities to the initiative, including mechanical testing laboratories and specialised testing and manufacturing facilities. Its role is to help manufacturers address industrial challenges by developing and de-risking technologies, testing and validating materials and components, demonstrating solutions, and creating pathways for technology transfer.

The cluster is also exploring opportunities for greater local processing, recycling and reuse of stainless steel including scrap utilisation, metal recycling, materials recovery, resource efficiency, waste reduction and energy-efficient manufacturing.

In the powder project, off-specification material generated during processing could potentially be recovered and reused rather than disposed of. Scaling this and other localisation opportunities will depend on a clear market need, secure raw-material supply, appropriate industry partnerships, defined product specifications and applications, and a commercially viable approach to production.

The CSIR aims to move more locally developed technologies beyond research and demonstration into industrial application. It says progress will be measured through technologies demonstrated, licensed or transferred to industry, joint technology development agreements, support for small, medium and micro enterprises, industrial adoption, and stronger use of the cluster's technology platforms and facilities.

For South Africa's stainless-steel sector, local production of 316L powder offers a practical test of whether research capability can support new domestic supply and manufacturing opportunities. Its commercial success will depend on meeting industry requirements for quality, qualification, feedstock and cost, with collaboration helping to keep those needs in view as the technology develops.

Market Intelligence to Boost Business Growth

Welcome to the highlights edition of the Sassda GPS eNewsletter, your go-to source for key developments shaping South Africa's business, industrial, and economic landscape. Each month we distribute this popular market intelligence aggregator to an exclusive database of members and associates. This selection of the best articles from the last quarter, aims to extend access to this quality content by highlighting the top stories from the latest issues...

South Africa's finances stabilise, but growth remains the real test

South Africa's public finances have stabilised, with debt forecast to level at 78.4% of GDP in 2025/26 and the budget deficit narrowing. Finance Minister Enoch Godongwana says the harder task is turning that progress into faster growth. Treasury has revised its 2026 growth forecast down to 1.2%, while infrastructure projects worth more than R217-billion are receiving support...**Read more**





IDC nears R10bn deal for ArcelorMittal SA

The Industrial Development Corporation has reached an initial agreement to acquire ArcelorMittal South Africa in a transaction valued at about R10-billion. The proposed terms include R3-billion in cash and the assumption of roughly R7-billion in debt, with completion targeted by year-end, subject to a shareholder vote...**Read more**

South Africa's US$122 billion energy expansion reinforces the importance of transmission infrastructure

The Chinese-backed programme aims to add 105 GW of electricity generation capacity and approximately 14,500 kilometres of transmission lines by 2039. The initiative is expected to stimulate local manufacturing of transformers, cables, batteries and grid equipment. Stainless steel stands to benefit from demand for process equipment, containment systems, structural fabrication and corrosion-resistant components across substations, generation plants and battery-energy-storage installations...**Read more**



SA's infrastructure boom must become an engine for skills and jobs

South Africa must use major infrastructure investments not only to build physical assets, but also to develop the skilled workforce the country needs and create pathways into employment. This is the vision behind the Construction Education and Training Authority's strategic partnership with the V&A Waterfront, where a R24-billion expansion over the next 15 to 20 years is expected to generate approximately 27 000 construction-phase employment opportunities.....**Read more**





Ramaphosa: R1 trillion infrastructure drive must rebuild SA's infrastructure sector

Addressing SEIFSA at a Presidential Business Breakfast, President Ramaphosa highlighted the need for 14,000 kilometres of new transmission lines, together with investment in substations, rail and port upgrades. Government is also investing R24-billion a year in municipal water and sanitation grants. He explicitly called for local manufacturing of fabricated steel, pumps, valves and engineering components. ....
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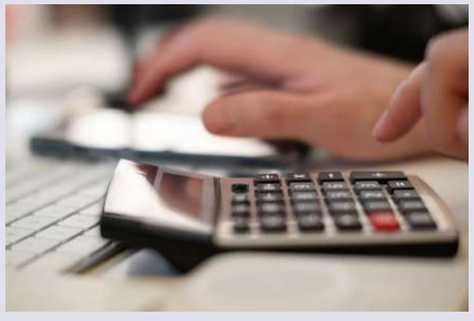

State development finance institutions push for a bright post austerity future

South Africa's development finance institutions are being positioned as an important part of the country's post-austerity growth story, with the potential to back projects that conventional finance may be slow to support. Their role is especially relevant to infrastructure, industrial development and businesses needing patient capital to expand...
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Three year plan to try and save Joburg

National Treasury will undertake a three-year intervention to stabilise Johannesburg, working with the Development Bank of Southern Africa and other institutions despite uncertainty around the November municipal elections. Johannesburg accounts for about 15% of South Africa's economic output, but governance failures, weak finances and unreliable services have left the city unable to meet basic obligations. A credible turnaround would matter to industry because municipal recovery underpins essential urban infrastructure....**Read more**



Coega Steels launches R500m production expansion

A new rolling mill in Nelson Mandela Bay marks a R500-million expansion of Coega Steels' production capacity. With annual output of up to 150,000 tonnes, the plant will turn recycled scrap steel billets into reinforcing bar and other finished products for construction, manufacturing, engineering and infrastructure...**Read more**





R980m Durban amusement park project moves ahead

eThekwini Municipality has secured R980-million to redevelop the former Durban Funworld site on the city's Golden Mile. The new park is planned as a year-round attraction, combining rides with digital and extended-reality experiences, retail and an events amphitheatre...**Read more**

Rail reform policy statement nears finalisation

Transnet Rail Infrastructure Manager has published the fourth version of its Network Statement, a key document setting out how operators can access South Africa's rail network. The updated framework clarifies capacity allocation, commercial arrangements and the responsibilities of rail participants...**Read more**



Eskom unbundling to be carefully sequenced over the next 18 months

National Treasury director-general Duncan Pieterse says the planned transfer of Eskom's grid assets to an independent Transmission System Operator over the next 18 months is a prerequisite for a more competitive electricity market. The process will be carefully sequenced and managed...**Read more**





South Africa names first wave of six green hydrogen projects

The first six priority projects in South Africa's national green hydrogen programme signal a move from planning towards investment and implementation. The portfolio spans sustainable aviation fuel, green ammonia, lower-emissions iron and steel, green methanol and domestic hydrogen demand...**Read more**

Low growth and import pressure put local stainless steel under strain



South Africa's stainless steel sector is contending with sluggish demand, rising costs and questions about the pricing and volume of imported hollowware. Sassda Executive Director **Michel Basson** discusses the latest trading conditions, the practical effect of recent tariff changes and what industry and government can do to strengthen local manufacturing and build a more competitive value chain.

Looking back over the past quarter, what has changed most for South Africa's stainless steel sector?

The year began on a more positive note than previous years, but that optimism was quickly overshadowed by rising fuel prices, higher living costs for workers and increased operating costs for businesses. The wider economy remains in a low-growth cycle. The IMF's October 2026 outlook projected South African growth of between 1.0% and 1.4% for the year. Growth was further affected by a 0.2% contraction in the second quarter, amid freight rail inefficiencies, port congestion and weak private investment.

Public finances have remained relatively stable under tight spending frameworks, while inflation has hovered between 3.4% and 4.0%. These conditions shape the operating environment for industry. Members report little real growth, with market activity largely moving sideways. Business confidence has not disappeared, though. Companies are investing in laser cutters, laser welders and CNC forming equipment. These upgrades are primarily aimed at improving productivity and efficiency, rather than expanding capacity in response to stronger demand.

South Africa increased duties on selected steel imports in May 2026. What has been the practical effect for the stainless steel sector?

The measures were introduced amid concerns about low-priced imports and mounting pressure on local

manufacturing. Imported steel accounted for roughly 36% of South Africa's total consumption, with China responsible for about 73% of those imports. Local producers have struggled to compete with products entering the market at prices that are difficult to match.

The stainless steel sector has been largely unaffected by the changes so far. The revised duties use a tiered structure based on processing, distinguishing raw or semi-finished inputs from finished goods. The dtic also introduced rebates for products not made locally and a permit system for importing domestic hollowware. Members need clear, timely decisions to use these mechanisms effectively. Sassda is helping with rebate applications and awaiting updated SARS statistics to assess the effect.

What have been the effects at a local level specifically?

Our members report that measures offer limited support to local producers and downstream manufacturers facing growing imports of both raw materials and finished products. Stainless steel hollowware is a particular concern. Domestic manufacturers, once an important part of the South African market, are facing intense competition from low-priced imports. Sassda says this has severely damaged local manufacturing, contributing to job losses and business closures.

SARS data for HS 73239320 and HS 73239390, the codes covering these products, appear difficult to reconcile with likely household purchasing patterns. Sassda's analysis suggests that from 2009 to 2023, families bought roughly one pot every four years, a rate considered consistent with international norms. From about 2024, however, the figures imply a much faster replacement rate of one pot every 1.5 years. That appears unlikely when stainless steel hollowware, with reasonable care, often lasts five years or more and household budgets remain under pressure.

The declared import value raises a second concern. At about R13.23 per kilogram, it is below the cost of the raw materials needed to make stainless steel flat product, before the costs of manufacturing, logistics and packaging are included. Taken together, the volume and pricing data raise concerns about possible valuation problems, misclassification or customs misdeclaration. Sassda says targeted, evidence-led verification would help establish whether the market is competing fairly and allow enforcement to focus on substantiated cases.

How should the sector respond to unfairly priced or dumped imports while keeping essential materials affordable for local manufacturers?

Trade measures should be used where there is evidence of harm but applied carefully so they do not make essential inputs more expensive. Sassda can help members approach the dtic and ITAC with evidence to seek targeted duties on specific products or rebates where goods are not made locally. Applications can be complex and require clear supporting information. The aim is to protect viable local production and jobs while keeping necessary materials accessible and avoiding unintended costs elsewhere in the supply chain.



Beyond trade measures, what are the biggest barriers to a stronger local stainless steel value chain?

The sector faces weak domestic demand, high electricity and transport costs, and global oversupply of some products. Low-cost imports add pressure, while freight and port constraints make moving goods harder and more expensive. Trade measures can support industry when used responsibly but cannot resolve these structural problems alone. Political uncertainty weighs on growth across the sector and the wider economy. A stronger value chain will also depend on skills, investment and procurement decisions that give local manufacturers a realistic opportunity to compete.





What would a more resilient and competitive stainless steel sector look like a year from now?

A stronger sector would have an integrated supply chain, with local fabricators able to source specialised inputs reliably and affordably. It would be less dependent on broad tariff protection and better able to compete on quality, delivery and value. South Africa also has an opportunity to move beyond exporting raw chrome and unrefined materials towards producing higher-value stainless steel goods for markets across the African continent.

What would help local manufacturers source the grades and inputs they need?

SARS and ITAC should digitise and speed up the duty-free rebate permit system. Where a grade or gauge is not produced locally, import exemptions should be issued quickly, rather than leaving manufacturers waiting months and tying up cash flow. Industry and the dtic could co-fund local capacity for high-demand, high-grade products, reducing reliance on imported supply. Public procurement should consistently enforce local-content rules so state contracts support South African-made components and provide a dependable market for local manufacturers.

Where can infrastructure investment create dependable demand?

Government can prioritise locally made stainless steel in water and wastewater projects, including municipal pipe upgrades, desalination plants and treatment facilities. Energy projects, new transmission infrastructure and power-station retrofits can create demand for locally manufactured fasteners, structural frames and storage tanks. Rail investment is another opportunity: components for rolling stock and freight and passenger trains could be manufactured locally, supporting durable infrastructure while helping to anchor a stronger domestic manufacturing order book.

What would make South African fabricators more competitive in export markets?

Manufacturers need relief from energy and logistics constraints that undermine their ability to compete internationally. Government could simplify and accelerate refunds on imported raw materials used in exported, value-added products, improving cash flow and recognising the local value added. Incentives could be linked to export growth, with preferential freight allocations or suitable electricity tariffs helping firms expand into regional and global markets. Support with international certification, including ISO standards, would also help local companies qualify for demanding automotive, medical and aerospace .



Experience, Integrity and the Future of Stainless Steel

Daryll Croft's career in the stainless steel industry spans more than two decades, beginning on the production floor and progressing through production planning, industrial sales and senior management. Today, as Sales and Operations Director for Euro Steel Johannesburg, he oversees the full business cycle, from procurement and warehouse logistics to sales and customer service. His experience has given him a practical understanding of the challenges facing South Africa's stainless steel sector, including global competition, supply-chain constraints and the need for specialised skills. In this profile, Croft reflects on his career, the lessons he has learned and the opportunities shaping the industry's future...

Please outline your background, including your education and how you entered the industry?

I was born in Port Elizabeth and moved to Gauteng at a young age to complete my schooling. My commitment to professional development later led me to pursue part-time finance and management studies, including a Management Development Programme through the University of Stellenbosch, followed by an advanced strategic management course at INSEAD Business School in France.

I began my career on the production floor, working night shifts on a cut-to-length line for a carbon steel company in Springs. From there, I moved into production planning before making the transition into industrial sales. My introduction to stainless steel came when I was approached by Stalcor. Although I had limited knowledge of the product at the time, the eight years I spent there were highly formative. I benefited enormously from the guidance and mentorship of experienced people in the industry. In 2003, I joined Euro Steel, a move that has shaped the course of my career.

What are some of the key work experiences or projects that have challenged you, shaped your skills and influenced your career?

The most significant challenge has been adapting to the changing dynamics of global trade, particularly the arrival of high-quality, competitively priced stainless steel products from China. Earlier in my career, market pricing was more stable and local competition was less intense. Operating in today's far more competitive environment requires constant strategic thinking to ensure that both Euro Steel and our customers remain competitive and resilient.

What would you say are the biggest lessons you've learnt so far professionally, and personally?

Professionally, I have learned that people are an organisation's greatest asset. A business can only succeed if it has a strong, capable team behind it.

Personally, I have learned that the stainless steel industry is a close-knit community. Professionalism, integrity and cordiality matter. Relationships endure, and it is important to maintain them as people move between companies and take on new roles over the course of their careers.

"Industrial applications are increasingly moving beyond standard austenitic grades such as 304 and 316, with wider plate in duplex and super-duplex grades being used where greater durability is required"

What is your current position, and what does a typical day in your role involve?

As Sales and Operations Director for Euro Steel's Johannesburg office, I oversee the full business cycle. My responsibilities include warehouse logistics, sales performance and strategic procurement. Being involved in every aspect of the operation gives me a direct understanding of the challenges faced by our teams on the frontline. That insight helps me improve processes, encourage innovation and maintain a strong, service-oriented culture..

From your vantage point in the stainless steel supply chain, what changes are you seeing in how South African manufacturers source and use stainless steel?

We are seeing a shift away from domestic sourcing towards imported alternatives, as well as an important change in the mining sector. Industrial applications are increasingly moving beyond standard austenitic grades such as 304 and 316, with wider plate in duplex and super-duplex grades being used where greater durability is required.

The main operational challenges remain domestic logistics, particularly the inefficiencies at our ports and on the rail network. These make inventory management and the optimisation of working capital more difficult. At the same time, there is considerable opportunity to expand into African markets through carefully selected regional partnerships. That growth must be approached with an understanding of the risks involved, as cross-border regulatory requirements and governance standards can differ significantly from those in South Africa.

In your experience, how important is skills development and technical knowledge to the successful use of stainless steel in African industrial projects?

The stainless steel sector is highly technical and metallurgical. At Euro Steel, we regard technical competence as a basic requirement, not an optional extra. We need people who combine a sound understanding of metallurgy with commercial judgement. That combination is essential if we are to support the long-term development and sustainability of industrial infrastructure across Africa.

At a broader level, what do you see as the biggest challenges facing South Africa's stainless steel industry, and what practical or innovative approaches could help address them?

The stainless steel sector is not insulated from the broader socioeconomic and institutional challenges facing South Africa. At Euro Steel, our response is to place accountability at the centre of the business, from the executive level down. We believe in leading by example and building a culture based on ethical behaviour, transparent decision-making and consistent compliance with the law and applicable regulations.

What developments or innovations in stainless steel stand out to you and which sectors do you think offer the greatest potential for future growth?

The global stainless steel industry is being shaped by three powerful forces: decarbonisation, pressure to improve cost efficiency and the need for materials that can perform in increasingly demanding environments. The move towards net-zero emissions is accelerating the adoption of lower-carbon manufacturing methods, including hydrogen-based reduction processes that could reduce reliance on traditional coking coal, and electric arc furnaces powered by renewable energy.

Stainless steel is also 100% recyclable without losing its structural integrity. As environmental requirements become more demanding, mills are therefore looking closely at how they can increase the proportion of scrap used alongside primary material.

Looking ahead, rapid urbanisation will create growing demand for infrastructure that is durable and efficient to maintain. Municipal utilities, including desalination plants, wastewater treatment facilities and bulk fluid transport pipelines, are increasingly turning to stainless steel because it can help prevent leakage and reduce maintenance costs over the life of an asset.



SA's Energy Drive Opens New Markets for Stainless Steel

South Africa's investment in energy infrastructure has implications well beyond the supply of electricity. For the stainless steel sector, it opens a market for locally fabricated equipment, piping and components, although the extent of that opportunity will depend on project delivery and the ability of local suppliers to meet demanding specifications.

Much of the debate centres on which technologies will provide the country's future power. Less attention goes to the equipment needed to keep those plants operating, often for decades, in conditions that are hard on materials. Corrosion in a cooling circuit or the failure of a relatively small component can have consequences far beyond its replacement cost.

Stainless steel's value lies in matching the grade to the application, whether that involves salt-laden coastal air, process water or repeated heating and cooling. The commercial case is strongest where longer service life and fewer maintenance interventions justify the initial outlay.

For local manufacturers and fabricators, the market spans established applications in power generation and water treatment, as well as newer opportunities in hydrogen. These are quite different markets, however, and should not be treated as one assured pipeline of demand.

The cost of keeping plants running

Energy infrastructure is built for long service, but the conditions under which it operates are seldom forgiving. Temperature changes, pressure, mechanical loading and corrosive environments all influence material selection. Access matters too. A component that is straightforward to replace in a workshop becomes a different proposition once installed in a remote plant or at height in a wind turbine.

The purchase price of a material therefore tells only part of the story. Inspection, maintenance, replacement and the cost of taking equipment out of service need to be considered over the life of the installation. Stainless steel can offer an advantage on this basis, provided it is correctly specified and fabricated.

That qualification matters. Stainless steel is a family of materials, and performance depends on the grade, the service conditions and the quality of the finished component. Poor welding or an unsuitable grade can undermine the very benefits for which the material was selected.

Nuclear sets a demanding benchmark

Nuclear power illustrates the importance of getting those decisions right. Plants such as Koeberg rely on equipment that must retain its integrity over long operating periods, with close attention to inspection and maintenance.

Stainless steel applications in nuclear facilities include cooling circuits, heat exchangers, pumps, valves and piping. Austenitic grades such as 304L and 316L are used in appropriate applications for their corrosion resistance and weldability, although material requirements vary considerably between systems.

For suppliers, the attraction of this market comes with exacting requirements. The opportunity is tied to the ability to deliver components to the required specification, with the fabrication quality and documentation that nuclear work demands. Longevity is an engineering requirement here, rather than a general selling point.

"Duplex grades of stainless steel offer a combination of strength and resistance to pitting and crevice corrosion that can be useful in aggressive environments."



Solar and wind bring different demands

Solar installations present a different set of conditions. Equipment is spread across large sites and exposed to the weather for years. Fasteners, mounting components and cable-management systems may be modest items individually, but their durability matters across an installation expected to remain in service for 25 years or more.

Stainless steel has a role in these applications where the exposure conditions and maintenance requirements support its use. It should not be assumed that every solar structure requires stainless steel; the choice has to make engineering and commercial sense for the site.

Concentrated solar power adds the demands of elevated temperatures and thermal cycling. Here, material selection for heat-transfer piping, tanks and process equipment must account for the operating temperature and the medium being handled. Corrosion resistance alone is not enough to establish suitability.

Wind energy brings coastal exposure into sharper focus. Salt-laden air and moisture can make corrosion a persistent maintenance concern, particularly where components are difficult to reach. Stainless steel can be used in fasteners, hydraulic equipment and access components, with grade selection reflecting the severity of exposure.

Duplex grades of stainless steel offer a combination of strength and resistance to pitting and crevice corrosion that can be useful in aggressive environments. Even so, the specification needs to address the actual conditions, including locations where moisture and salts may collect. A broad description such as "coastal" is only a starting point.

"Green hydrogen offers a potentially significant market for stainless steel equipment, but the scale and timing of local demand will depend on projects moving into construction and operation."

Hydrogen warrants closer attention

Green hydrogen offers a potentially significant market for stainless steel equipment, but the scale and timing of local demand will depend on projects moving into construction and operation. For fabricators, that distinction is important when assessing where to commit capacity and develop skills.

The production chain brings together several applications, from water treatment and electrolysers to compression, storage and process piping. Each places its own demands on materials. Pressure, temperature, cleanliness and the behaviour of materials in contact with hydrogen all need to be considered.

Stainless steel has an established role in parts of this chain, but there is no single grade suitable for every hydrogen application. In particular, high strength and corrosion

resistance do not, on their own, establish that a material is suitable for hydrogen service. Selection requires assessment against the relevant operating conditions and design requirements.

The industrial opportunity extends to the fabrication of vessels, piping and associated equipment. Securing that work locally will require manufacturers to engage with project specifications early and demonstrate that they can meet the necessary quality requirements. An announced project does not automatically translate into orders for South African workshops.

Water remains part of the equation

Water infrastructure deserves attention alongside the more prominent energy technologies. Cooling, treatment and process-water systems are essential to many energy installations, while hydrogen production also requires a dependable supply of suitably treated water.

Pumps, tanks, filters and piping offer familiar applications for stainless steel. In desalination and other aggressive water environments, the choice of grade becomes particularly important. Water chemistry and operating conditions have to guide the specification rather than a general expectation that stainless steel will resist all forms of corrosion.

For the local industry, these applications may offer a more immediate route into energy-related work than some of the emerging technologies. They draw on fabrication capabilities already used in water treatment and industrial processing, although each contract will bring its own technical requirements.

Turning investment into local work

The breadth of these applications gives the stainless steel industry reason to pay attention to energy investment. It also calls for a more selective view of the market. Maintenance work at an existing plant, components for a solar installation and equipment for a proposed hydrogen facility involve different procurement cycles and levels of certainty.

Local suppliers will need to identify where their capabilities fit, understand the specifications and establish relationships with the companies procuring the equipment. There is a practical case, too, for making lifecycle costs part of those discussions, particularly where maintenance access is difficult or an unplanned shutdown would be expensive.

South Africa's energy needs create scope for stainless steel to contribute across several technologies. How much of that becomes local manufacturing work will come down to the less glamorous business of project execution, procurement and getting the engineering right.

"The breadth of these applications gives the stainless steel industry reason to pay attention to energy investment. It also calls for a more selective view of the market."



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The Silent Clock Inside Concrete

Why the Morandi Bridge Disaster Demands a Material Revolution

On the morning of 14 August 2018, a 210-metre section of Genoa's Ponte Morandi Motorway Bridge collapsed into the Polcevera river valley. Thirty vehicles fell about 45 metres; 43 people died. The disaster severed a major transport link and prompted a lengthy criminal investigation. For engineers, asset managers and policymakers, the collapse remains a stark reminder of the risks that can accumulate inside ageing infrastructure, out of sight..

When the bridge opened in 1967, it was hailed as an engineering achievement. Designed by Riccardo Morandi, it used an unusual cable-stayed system. Rather than leaving the steel cable bundles exposed, the design encased prestressing tendons in concrete sheaths. Concrete's naturally alkaline environment can help protect embedded steel by forming a passive layer on its surface.

The approach, however, made inspection of the tendons difficult and left the structure dependent on a small number of key stays. These features became central to later debate about the bridge's condition, maintenance and design.

The Morandi collapse should not be reduced to a single material choice or cause; investigations examined a complex combination of design, deterioration, monitoring and maintenance.

The bridge stood less than a kilometer from the Mediterranean. Over time, moisture and chlorides can penetrate concrete through pores and cracks. If they reach

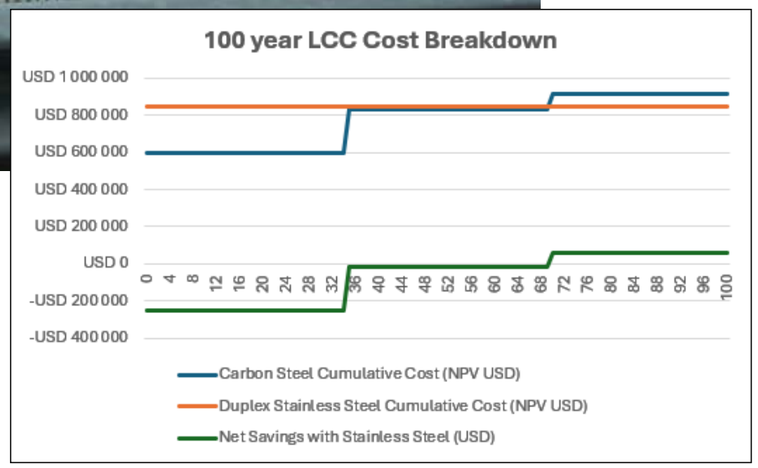
carbon steel reinforcement, they can disrupt its protective passive layer and initiate corrosion, including localised pitting. Corrosion can reduce the steel's effective cross-section and compromise its performance. Where steel is concealed inside concrete, detecting deterioration early can be challenging.

The real cost of "cheap" infrastructure

Carbon steel remains the default reinforcement choice in many projects, in part because its initial material cost is lower. In coastal areas, structures exposed to de-icing salts and other aggressive environments, however, the purchase price is only one part of the calculation. Maintenance, repair, access and disruption over a structure's life also carry significant costs.

To illustrate the difference, the Sassda life-cycle cost calculator was used to model a hypothetical 100-year infrastructure project requiring 100 tonnes of reinforcement

The example applies a 3% public-sector discount rate to future maintenance costs. Its results depend on the assumptions used, but they show how repair costs can change the comparison over time.



What the model shows

The example assumes duplex stainless steel, such as Grade 2205, at $3 500 per tonne, compared with $1 000 per tonne for carbon steel. The stainless steel option carries a higher initial material cost. Once labour, civil works and concrete are included, the model puts the difference in total project cost at $250 000: $850 000 for the stainless steel option against $600,000 for carbon steel.

In the model, a major carbon steel repair in year 35 costs $650 000. Discounted to present value, that repair is $230 999. At that point,

Cost Component	Carbon Steel Reinforcement	Duplex Stainless Steel (DX 2205)
Material Unit Cost	$1 000 /tonne	$3 500 /tonne
Total Rebar Cost (100 tonnes)	$1 000	$350 00
Initial Placement (Concrete & Labour)	$500 00	$500 00
Initial CAPEX Total	$600 00	$850 00
Year 35 Repair Cost (Direct + Traffic)	$650 00	$0
Year 70 Repair Cost(Direct + Traffic)	$650 00	$0
NPV of Future Maintenance	$313 092	$0
Total 100-Year life-Cycle Cost	$913 092	$850 00
Net Financial Savings	Baseline	$630 092 (7.0 % Savings)

the lower initial cost of the carbon steel option has been overtaken by the cost of repair. A second repair cycle in year 70 brings the modelled 100-year cost of the carbon steel structure to $913 092.

The stainless steel option is modelled with no structural maintenance over the same period, leaving its cost at $850 000. On these assumptions, the difference is $63 092, or about 7%, in favour of stainless steel. The calculation does not include wider costs such as traffic delays, lane closures or the consequences of premature structural failure. These should be considered alongside direct repair costs when decisions are made.

Designing for the next century

The wider lesson is not that one material suits every project. It is that material selection should reflect the exposure conditions, design life and consequences of failure. In high-corrosion environments, stainless steel reinforcement can reduce the risk of corrosion-related deterioration and the need for disruptive repairs.





Sassda advocates for three changes in the way public infrastructure is planned and procured:

- **Specify stainless steel where exposure warrants it**. In coastal locations and areas exposed to de-icing salts or other severe corrosion risks, stainless steel reinforcement should be assessed for the most vulnerable parts of the structure.

- **Use life-cycle costing in procurement.** Project bids should be evaluated against realistic maintenance and repair costs over the intended service life, alongside the initial construction price.

- **Reduce risks that cannot be seen.** Reinforcement and other critical components embedded in concrete should be selected with their exposure, inspectability and long-term performance in mind.

Ponte Morandi's collapse had multiple causes, and no single material change can guarantee that a structure will be safe. But the disaster underlines the consequences of allowing deterioration to remain hidden and of judging infrastructure by its initial cost alone. Choosing durable materials, supported by sound design, inspection and maintenance, is an investment in safer, longer-lasting public infrastructure.



Precision by Design: Unlocking the Full Potential of Laser Welding

Laser welding has changed the way stainless steel sheet metal components are designed and manufactured. Once largely confined to specialised industries such as aerospace and automotive manufacturing; modern fibre laser technology is now accessible to fabricators producing everything from electrical enclosures and food-processing equipment to pharmaceutical systems, architectural fabrications and industrial products.

The difference between laser welding and conventional joining methods is not simply speed. It calls for a different design philosophy. Products must be developed with precision, repeatability and manufacturability in mind, rather than relying on the fabrication shop to compensate for design shortcomings.

Traditional TIG and MIG fabrication methods have often allowed fit-up inaccuracies, dimensional variation and complex assemblies to be corrected through operator skill and filler metal. Laser welding, by contrast, rewards accurate design and disciplined manufacturing. Its narrow weld profile, low heat input and small molten pool leave less tolerance for poor fit-up or inconsistent assembly conditions. Good design is therefore central to a successful weld.

Designing for Precision and Repeatability

The first principle of laser-welding design is precision. Laser welds are typically narrow and often autogenous, making the process sensitive to variations in joint gap and component alignment. Components should fit together accurately and consistently, without excessive manipulation, shimming or rework during assembly.

Consistency matters just as much. A manufacturing process can accommodate minor dimensional variation when it is predictable. Problems arise when geometry, material thickness, joint gaps or assembly conditions vary from one component to the next. Designs for laser welding should minimise unnecessary complexity and favour repeatable geometries that support stable manufacturing conditions.

Repeatable components improve weld quality and make automation easier. Many of the benefits of laser welding are realised when it is combined with robotic systems, automated assembly and digital manufacturing technologies. Consistent part geometry allows welding parameters to remain stable, improving productivity and reducing quality variation.

Effective Simplicity

A component may be technically manufacturable and still be unnecessarily costly or difficult to produce. Designers should assess each feature in terms of its contribution to the finished product. Successful laser-welded components generally have simple geometries, clear welding access and efficient assembly methods. Features that add complexity without a functional benefit should be reconsidered.

An effective strategy is to incorporate self-locating features into the sheet metal geometry. Laser-cut tabs and

slots, locating shoulders and folded positioning features can establish alignment during assembly. These features reduce reliance on operator skill, improve dimensional consistency and limit fixture complexity. When components can fit together in only one correct position, assembly is faster, more accurate and better suited to automation.

Designers should also consider how the laser welding head will reach the joint. A well-designed joint is of little use if the welding head, optics or shielding gas system cannot access it effectively. Deep recesses, narrow channels and obstructed corners should be avoided or redesigned to provide clear beam access. Small geometric changes can reduce manufacturing complexity and improve welding consistency.

Joint Design: The Foundation of Laser Welding Success

Joint design is one of the most important considerations when designing stainless steel components for laser welding. Joint geometry affects heat flow, structural performance, weld quality, distortion and long-term corrosion resistance.

For most sheet metal applications, butt joints are preferred. They eliminate overlap, reduce material use and provide a clean appearance. From a corrosion perspective, they avoid concealed crevices and are easier to clean, making them particularly suitable for hygienic, pharmaceutical and architectural applications.

Butt joints demand accurate fit-up. Typical maximum gaps range from approximately 0.05 mm to 0.10 mm for thin sheet below 1.5 mm thick, increasing modestly for thicker sections. Consistent gaps are critical to achieving reliable penetration and fusion.

Corner joints also perform well in laser-welding applications, particularly in enclosure manufacture and folded sheet metal assemblies. Their clean appearance, combined with laser welding's low-distortion characteristics, makes them suitable for cabinets, tanks and architectural products.

Lap joints are simple to assemble but need careful consideration. The overlap creates a crevice that may trap moisture or contaminants. In hygienic or corrosive environments, lap joints should generally be avoided or fully sealed to prevent long-term corrosion problems.

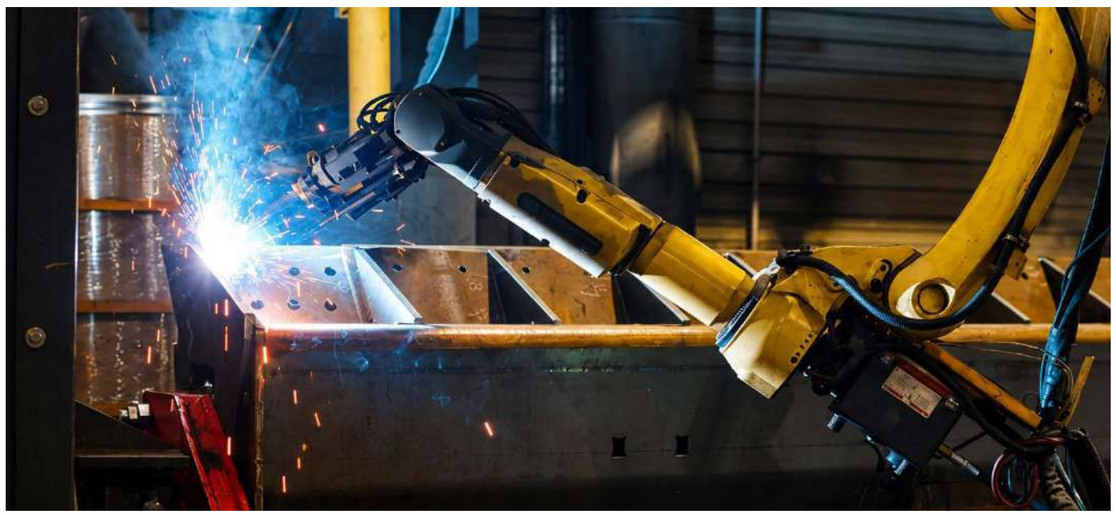
Designing for Distortion Control

Reduced distortion is a major advantage of laser welding. The concentrated heat source produces narrow welds, small heat-affected zones and less thermal loading than conventional welding processes. Distortion is not eliminated, however, and still needs to be considered during design.

The most effective control begins with geometry. Large, flat stainless steel panels are inherently flexible and susceptible to movement. Simple formed features such as flanges, swages, ribs and hat sections can increase stiffness with little impact on cost or weight. These features reinforce the structure and improve its resistance to thermal movement.

Symmetry is also important. Components with balanced weld layouts tend to distribute thermal stresses more evenly, reducing the likelihood of distortion. Designers should consider weld placement from both a structural and thermal perspective. Symmetrical structures generally offer greater dimensional stability than asymmetrical designs.

Unnecessary weld length should also be challenged. Excessive welding increases heat input, manufacturing time and distortion risk without necessarily improving structural performance. Efficient sheet metal structures use geometry, folds and stiffeners to carry loads rather than relying on excess weld metal.



Designing for Corrosion Resistance

In stainless steel fabrication, corrosion performance depends on design as well as alloy selection. Many corrosion problems arise because the geometry allows moisture, contaminants or process residues to collect. Designers therefore have an important role in ensuring long-term durability.

Good laser-welded designs promote drainage, ventilation and accessibility. Moisture traps, enclosed cavities and overlapping joints should be minimised wherever practical.

Continuous welds are often preferred because they eliminate crevices and prevent contaminants from entering concealed areas.

Surface quality should also be considered during product development. Laser welding produces narrow welds, reduced oxidation and smaller heat-affected zones

This can help preserve corrosion resistance compared with conventional welding processes, while reducing the need for post-weld finishing.

Designing for Automation and Lifecycle Performance

Stainless steel fabrication is becoming increasingly automated. Products intended for laser welding should therefore be designed with automation in mind. Repeatable geometries, consistent joint conditions and predictable assembly sequences improve robotic welding performance and benefit manual fabrication too. Automation-friendly design is simply good engineering practice.

Successful design extends beyond manufacturing. Components should be assessed over their full lifecycle, including maintenance, corrosion resistance, cleanability, appearance retention and operating costs. Laser-welded stainless steel products can offer significant lifecycle advantages by combining durable materials with precise







fabrication. Those benefits, however, depend on developing the design around the strengths of the process.

Designing stainless steel sheet metal components for laser welding requires a shift in thinking. The aim is not simply to produce a product that can be welded, but to make full use of laser welding's precision, low distortion, repeatability and potential for automation. Accurate fit-up, efficient joint design, self-locating assemblies, distortion-resistant geometry and corrosion-conscious detailing all contribute to success.

Applied together, these principles can help manufacturers improve productivity and quality, protect corrosion performance and reduce lifecycle costs. With laser welding, some of the greatest gains are made before a component reaches the welding cell, at the designer's workstation.

Image Credit: AI-generated images based on visual reference from FactorySmart **www.factorysmart.co.za**



Duplex Stainless Steel: The High-Performance Workhorse of Modern Industry

For decades, engineers selecting stainless steel had relatively few options. Austenitic grades such as 304L and 316L dominated the market, while ferritic grades offered a lower-cost alternative for less demanding applications. As industries sought materials with greater strength, longer service life and improved corrosion resistance, a family of stainless steels emerged to bridge the gap: duplex stainless steel.

Today, duplex stainless steels are widely used in water treatment plants, mining operations, offshore platforms, desalination facilities and chemical-processing installations. Their growing popularity reflects a distinctive combination of corrosion resistance, mechanical strength and lifecycle value that conventional stainless steels can struggle to match. Duplex stainless steel, however, is not a single material. It is a family with different performance levels, and selecting the right grade is critical. The wrong choice can mean unnecessary cost or premature failure; the right one can deliver decades of reliable service.

A Unique Microstructure

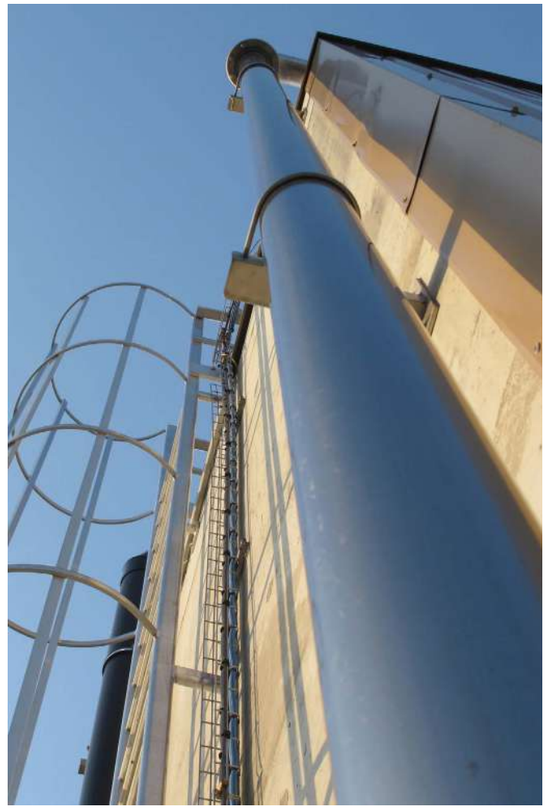
The name “duplex” refers to the material’s two-phase microstructure. Unlike conventional stainless steels, which are predominantly austenitic or ferritic, duplex grades contain approximately equal proportions of both phases. The resulting structure combines the strengths of each. The ferritic phase contributes strength, dimensional stability and resistance to stress corrosion cracking, while the austenitic phase provides toughness, ductility and strong corrosion resistance. Together, these characteristics give duplex stainless steels a balance of properties not found in conventional grades.

- The performance of duplex stainless steels stems from carefully controlled alloy chemistry. Chromium is the most important alloying element, forming the passive layer that gives stainless steel its corrosion resistance. Molybdenum improves resistance to pitting and crevice corrosion, particularly in chloride-containing environments, while nitrogen contributes to both strength and corrosion resistance.

- As the family progresses from lean duplex to standard duplex and then to super duplex grades, the levels of chromium, molybdenum and nitrogen generally increase. This helps explain the marked improvement in corrosion resistance across the duplex range. Lean duplex grades such as 2304 typically contain about 22% chromium, with relatively modest additions of nickel and molybdenum. Standard duplex 2205 has higher nickel and molybdenum levels, while super duplex grades such as 2507 contain around 25% chromium, together with significantly higher levels of molybdenum and nitrogen. This highly alloyed chemistry enables super duplex to perform reliably in some of the most aggressive chloride environments found in industry.

- One of the most striking features of duplex stainless steels is their strength. Conventional austenitic grades such as 304L and 316L typically have minimum yield strengths of about 200 MPa. By comparison, lean duplex grades commonly exceed 400 MPa, standard duplex 2205 has a minimum yield strength of about 450 MPa, and super duplex grades exceed 550 MPa. This strength gives engineers valuable design options. Components can often be made with thinner sections while still meeting structural requirements, reducing weight and material use and, in many cases, lowering total project

technical insight





costs. The savings can be substantial in large structures such as tanks, pressure vessels and processing equipment.

- Duplex stainless steels also generally offer better fatigue performance than conventional austenitic grades. This makes them attractive for applications subject to cyclic loading, vibration or fluctuating stresses.

The Three Duplex Grade Groups

Although duplex stainless steels are often discussed as one category, they are more accurately understood as three distinct groups.

- **Lean duplex grades** were developed as economical alternatives to 316L stainless steel. They offer significantly greater strength, with corrosion resistance broadly comparable to, and in some environments slightly better than, 316L. These grades are attractive for structural applications, water storage systems and general infrastructure projects where chloride levels remain relatively moderate.

- **Standard duplex 2205** is widely regarded as the workhorse of the duplex family. It offers an effective balance of corrosion resistance, strength, weldability and cost. For many water treatment, mining and chemical-processing applications, 2205 provides a strong engineering solution. Where 316L approaches its corrosion limits, 2205 is often preferred.

- At the top end of the range are the **super duplex grades.** These highly alloyed materials were developed for demanding environments, including seawater systems, offshore platforms, desalination plants and aggressive chemical-processing installations. Their higher chromium, molybdenum and nitrogen content provides exceptional resistance to pitting, crevice corrosion and chloride stress corrosion cracking.

Why Material Selection Matters

A common mistake in materials engineering is to assume that the highest-performance alloy is automatically the best choice. Duplex stainless steels are application-specific materials.

A municipal water reservoir may achieve a 40-year design life using lean duplex or standard duplex stainless steel. Specifying super duplex could add considerable cost without delivering meaningful additional value. Conversely, choosing a lean duplex grade for a seawater desalination plant could lead to premature corrosion and expensive maintenance.

Successful material selection requires a thorough understanding of the operating environment. Chloride concentration, operating temperature, process chemistry, mechanical loading and design life all need to be considered. The best engineering solution is rarely the most expensive material. It is the material that delivers the required service life at the lowest total lifecycle cost.

Looking to the Future

As industries focus increasingly on sustainability, durability and lifecycle economics, duplex stainless steels continue to gain importance. Their combination of high strength and strong corrosion resistance enables engineers to design lighter structures, reduce material use and extend service life. In wastewater treatment plants, mining equipment, pharmaceutical facilities and offshore infrastructure, duplex stainless steels demonstrate that long-term performance depends not simply on choosing stainless steel, but on choosing the right grade for the application.

The value of duplex stainless steel lies not only in its metallurgy, but also in its ability to provide reliable service for decades when the right grade is matched to the right environment. For designers, engineers and asset owners, understanding those differences is key to unlocking the potential of this family of materials.





Zambia's infrastructure pipeline opens new doors for stainless steel

From water and sanitation to solar power and mining, Zambia's development agenda points to growing demand for durable materials and regional engineering capability.

Zambia's infrastructure ambitions are creating opportunities across water, energy, transport and mining.

For the stainless steel sector, the significance lies not only in the scale of individual projects, but in the operating conditions they must withstand: water scarcity, climate variability, corrosive environments and the need for reliable services over the long term.

The African Development Bank Group's Country Strategy Paper for Zambia for 2024–2029 sets out support for the country's socio-economic transformation, aligned with Vision 2030 and the Eighth National Development Plan. Its priorities include private-sector development through infrastructure investment and the development of agricultural value chains, with job creation for women and young people among the stated aims.

That broad direction is reflected in a pipeline of projects that could matter to suppliers, consultants, fabricators and engineering businesses across the region. Stainless steel will not be the right material for every component. But where water quality, corrosion resistance, hygiene, strength or long service life are central to performance, material selection can have a direct bearing on the reliability and lifetime cost of an asset.



Water systems under pressure

The proposed Kabwe Water Supply and Sanitation Project is intended to develop climate-resilient infrastructure and improve access to safe drinking water and sanitation for more than 460,000 people. It also aims to strengthen the performance of local water utilities so they can provide more resilient services.

Water infrastructure brings a broad range of material requirements, from treatment equipment and pipework to pumps, valves, storage and distribution systems.

The correct specification depends on water chemistry, operating pressures, treatment processes and maintenance conditions. Stainless steel can be an important option where corrosion resistance, cleanability and dependable service are required, but grade selection must be based on the actual environment rather than assumed from the application alone.

For suppliers and project teams, the opportunity is therefore not simply to promote a material. It is to contribute technical knowledge early enough to help designers and operators compare lifecycle performance, maintenance needs and total cost of ownership.

Powering a more diverse energy mix

Zambia's reliance on hydropower has made electricity supply vulnerable to drought. The country is now pursuing a more diverse generation mix, with solar investment moving quickly. Its National Energy Compact sets a target of 10,000 MW of installed generation capacity by 2030, according to the source material supplied for this article.

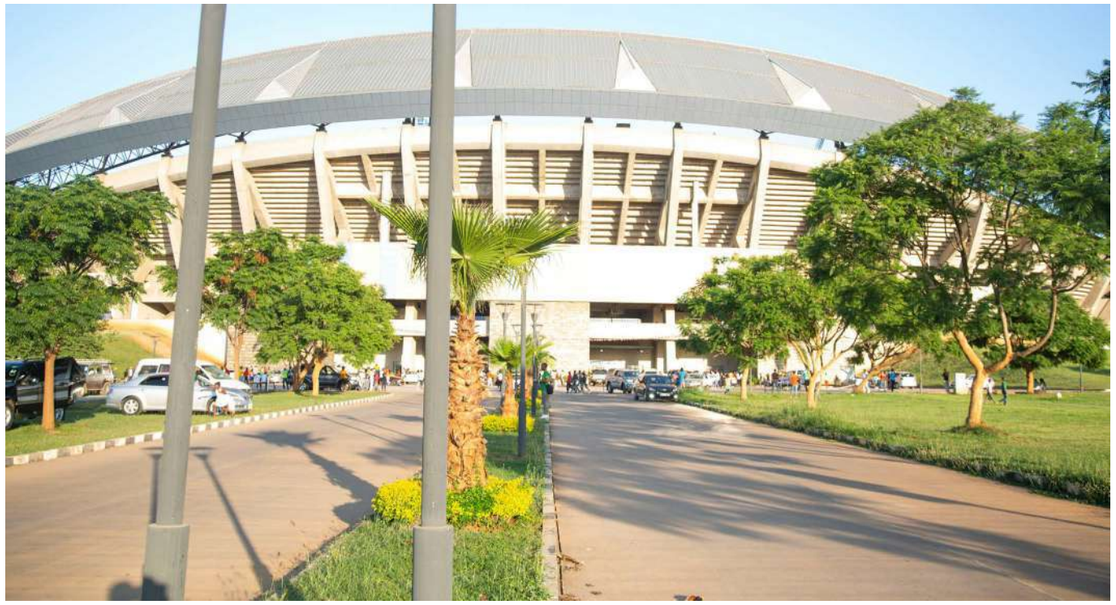
Two projects illustrate the pace of change. The Chisamba Solar Power Plant's second phase was reported as adding 100 MW in July 2026, bringing the facility's total capacity to 200 MW. Copperbelt Energy Corporation (CEC) commissioned the 136 MW Itimpi II Solar Plant in Kitwe in April 2026, taking its solar capacity to 230 MW. CEC has also stated an ambition to exceed 500 MW of solar capacity by 2027 and to use remaining Green Bond funding for battery energy storage systems.

The shift from generation alone to storage and dispatchable power is significant for industrial development.

It raises demand for equipment and infrastructure across the energy value chain, including electrical enclosures, cable management, process systems and water services. Stainless







steel may be suitable for selected applications where exposure, corrosion or durability requirements justify it; the choice will depend on design conditions and competing materials.

A separate proposal for a 450 MW thermal power plant in Ndola points to the continuing need for dependable baseload generation as Zambia expands its energy capacity.

The Zambia Development Agency has signed an Investment Promotion and Protection Agreement with Ndola Vioqua Energy Company for a project valued at US$450 million. The project is expected to be developed in two phases, with CEC identified as the intended electricity off-taker. The company has indicated that construction and operations could create 640 jobs, alongside opportunities for suppliers and service providers.

Mining diversification and regional capability

Copper remains central to Zambia's economy, but the country is also seeking to broaden its minerals portfolio. ZCCM Investments Holdings and the Democratic Republic of the Congo's Mining Mineral Resources have established Kyalo Goldfields Limited to explore, finance and develop the Kilonge mining area. ZCCM-IH holds a 51 per cent stake in the joint venture, with MMR holding 49 per cent.

Mining projects create demand across exploration, processing, water management and supporting infrastructure. In the plant environment, stainless steel can be specified for applications exposed to corrosive water, chemical processes or combinations of abrasion and corrosion. As with water and energy projects, the commercial case depends on matching the grade and design to the service conditions and weighing initial cost against maintenance, replacement and downtime.

For Southern African stainless steel businesses, Zambia's project pipeline is a reminder that regional opportunities are shaped by more than headline investment figures.

They depend on the ability to understand local operating conditions, work with project owners and engineering teams, and provide materials and technical support that are fit for purpose.

The strongest role for the industry is to be part of those conversations early. That means helping project teams make informed material choices, building local skills and supply relationships, and demonstrating where stainless steel can contribute to durable infrastructure. As Zambia invests in water security, a broader energy mix and diversified mining, those capabilities could help translate project plans into assets built to perform.

INFORMATION SOURCES:

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- Copperbelt Energy Corporation, Itimpi II Solar Plant
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- ENSafrica, "Africa Business in Brief", Kyalo Goldfields joint venture



Sassda Positions Training as a Strategic Investment

As South Africa's stainless steel sector faces pressure to compete on quality, performance and lifecycle value, Sassda is using its training programme to address a skills need specific to the material. Its 2027 vision is to strengthen that role across the value chain, from first-time users to technical specialists.

Stainless steel is often selected for its durability and corrosion resistance, but those qualities do not deliver value by themselves. Performance depends on choosing the right grade for the environment, understanding how the material behaves, and handling, processing and maintaining it correctly. Gaps in that knowledge can lead to avoidable costs, poor product performance and advice that focuses on purchase price rather than whole-life value.

The challenge for the sector is that stainless steel knowledge is needed well beyond engineering departments. Buyers and specifiers influence material selection; sales teams advise customers; workshop and warehouse employees handle and process the product; and managers make decisions about investment, maintenance and quality. Each role can affect the outcome.

This gives Sassda a strategic role that extends beyond promoting stainless steel. As the industry association focused specifically on stainless steel, it can help build a shared base of knowledge across companies and occupations, connecting technical understanding with the practical decisions made throughout the supply chain.

Building knowledge across the value chain

Sassda's 2027 training programme is therefore structured as a progression, from introductory awareness to advanced technical expertise. The self-paced Introduction to Stainless Steel course is aimed at newcomers and non-technical employees who come into contact with the material. It covers stainless steel's basic properties, grades and uses, production, handling and maintenance.

The Fundamentals of Stainless Steel course takes learners further through three weekly live online sessions. Its six modules cover classifications, grades, composition, properties and applications, as well as corrosion, manufacturing, product forms, contamination and handling. Participants complete an assessment, and the course carries one SAIMechE CPD point.

For people who require deeper technical knowledge, the Advanced Stainless Steel course examines metallurgy, manufacturing, corrosion, mechanical properties, forming, machining and welding. Participants can choose a two-day online course or a three-day option that includes a visit to the SAIW Materials Testing Laboratory. The Fundamentals course is a prerequisite.

Making technical knowledge work commercially

Sassda's half-day Selling of Stainless Steel Workshop brings technical understanding into the commercial conversation. It covers grades and applications, environmental conditions, the sales process and life-cycle costing. The aim is to equip salespeople to give customers informed advice and explain why the correct grade and application matter.

That distinction is central to the material's value proposition. If customers assess stainless steel only on its initial cost, they may overlook durability, maintenance requirements and service life. A salesperson who can explain these factors is better placed to make a credible case for the material and help the customer make an appropriate choice.

Sassda Training Manager **Mankabe More** says, "Stainless steel has specific properties and requirements that people need to understand if they are going to specify it, sell it or work with it properly. Sassda's role is to make that knowledge accessible across the value chain, so members can make better decisions and help their customers realise the material's full value."

Sassda's training programme includes in-house shop-floor training for warehouse, workshop and quality-assurance teams. Delivered at a company's premises, sessions can address workplace needs directly and are limited to 15 participants. This allows training to focus on the people and processes that influence how stainless steel is stored, handled and processed.

Strategic Training in 2027

For Sassda, training is a practical way to support the competitiveness of the sector. Better-informed employees can help reduce errors in selection and handling, improve the quality of customer advice and support more consistent standards across organisations. The benefits extend beyond individual learners: businesses strengthen their internal capability, while customers receive better guidance on specifying and using stainless steel.

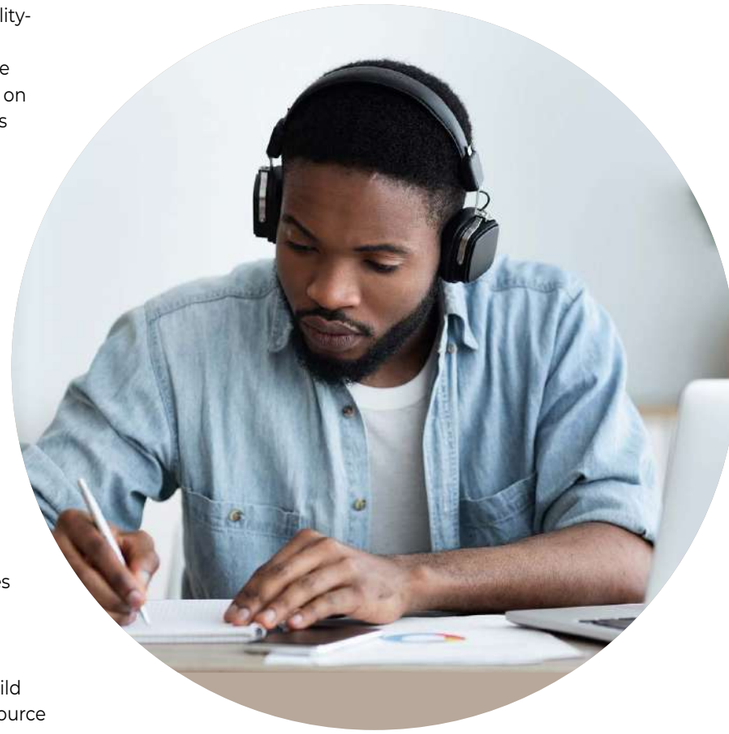
The association's member model is designed to support participation. Depending on membership tier, Sassda members qualify for free training, with a 25% discount for staff members not covered by their Sassda membership tier benefit. This gives companies an incentive to develop skills across roles and levels, rather than concentrating specialist knowledge in a small group.

Looking to 2027, the strategic opportunity is to build on this foundation and reinforce Sassda's place as a source of stainless steel-specific expertise. The training programme already spans introductory, commercial, technical and shop-floor needs. Its breadth reflects the reality that the material's performance depends on informed decisions at multiple points, from selection and purchase to fabrication and maintenance.

"Member value means helping companies apply stainless steel knowledge where it matters in their business. Training gives people the confidence to ask the right questions, make informed choices and explain the reasons behind them," says More.

As the sector looks to improve productivity and compete on quality and lifecycle performance, that knowledge becomes an industry asset. Sassda's role is to cultivate it: making stainless steel expertise accessible, relevant and useful to the people whose decisions determine how well the material performs.

To find out more about Sassda's Training Programmes in 2027 click here





Business, Bogeys and a Glorious Gauteng Day!

A strong industry is not only built by the work we do, but by the relationships that help us do it. This year's Sassda's Gauteng Golf Day at Randpark Golf Club brought together members and partners for an incredible day of conversation, connection and friendly competition.

The event welcomed 112 players to the course, with 13 watering holes offering welcome refreshment on a typically hot Gauteng day with not a cloud in the sky. This was followed by our awards evening where 148 guests joined the dinner, extending the opportunity to reconnect with colleagues, meet new people and share perspectives across the stainless steel value chain.

Those connections support collaboration, encourage the exchange of ideas and help strengthen the relationships on which a resilient sector depends.

Thank you to everyone who played, sponsored and joined us for dinner. Your support made the day a brilliant success and we're already looking forward to our next one in Cape Town in April 2027 next year!















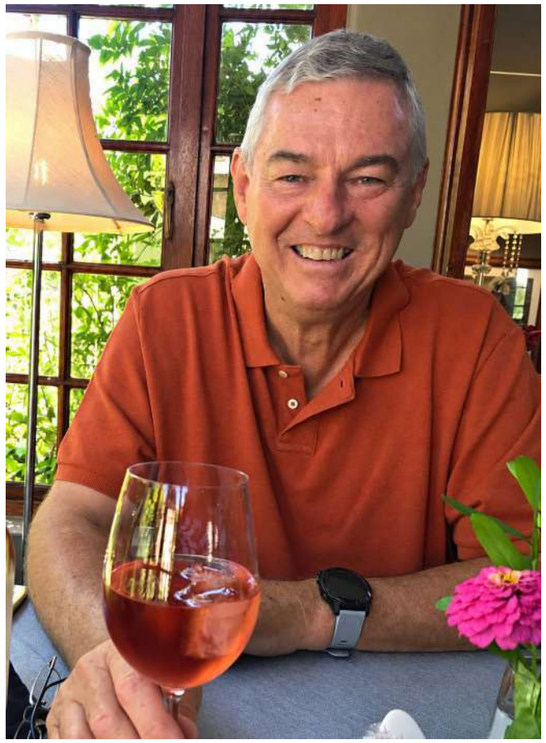






Dave Martin the people's CEO

South Africa's stainless steel industry has lost a highly respected leader following the death of former Columbus Stainless chief executive David Martin on 5 July 2026. Dave spent 37 years with the Middelburg-based producer, including 17 as CEO, yet those who worked with him remember more than his title and achievements. To many at Columbus Stainless, he was simply "the People's CEO".



Born in 1955, Dave graduated from the University of Port Elizabeth with a BSc Honours in Engineering Materials, specialising in metallurgy, before joining RMB Alloys Southern Cross Steel as a trainee metallurgist in March 1978. Promoted to senior metallurgist by January 1980, he became closely involved in the development of 3CR12, the corrosion-resisting utility ferritic stainless steel that became a South African industrial innovation. Today, it is used locally and internationally across mining, rail, infrastructure and other demanding applications.

In March 1989, Dave moved into senior management to lead the Cold Products Area, making the transition from respected technical specialist to business leader without losing the engineer's eye for detail. He understood the plant and the product, but he also understood people and had a rare ability to encourage them to take on more responsibility and believe in what they could achieve.

> ***"Every Christmas Eve, he would spend hours walking through the plant to personally wish every member of staff, from the cleaners to senior management, a wonderful and safe festive season. It was a simple gesture, but one that captured exactly who he was: thoughtful, gracious and deeply respectful of people."*** *- Lizel Greyling*

As CEO, Dave guided Columbus Stainless through years of changing ownership, difficult markets and growing international competition, while continuing to argue for the capability of South African manufacturing. He supported local beneficiation and the use of locally produced stainless steel in infrastructure, rail, mining, energy and manufacturing. During his leadership, Columbus Stainless supplied material for Transnet's coal and ore wagons and major power, water and infrastructure projects, while developing more cost-effective grades for new applications.

Dave's contribution extended well beyond Columbus Stianless. He served within the International Stainless Steel Forum (ISSF) and was respected by industry peers around the world for his technical knowledge, sound judgement and straightforward manner. He could hold a firm view while still listening to others, and former colleagues remember him as someone who remained calm under pressure and found a practical way forward.

> ***"He had a remarkable ability to bring out the best in people, not by giving them all the answers, but by guiding them with such grace that they developed the confidence to form their own judgement, find solutions and grow in their own abilities."*** *- Diane Fincham*

He was also a committed mentor who gave generously of his time, helping to develop people who would later take on senior leadership positions of their own.

His family remember a kind, hardworking and patient man who never placed his own achievements ahead of other people, and who was happiest at home with his family and dogs, on fishing trips, sharing a good bottle of wine or planning another adventure. They describe his greatest gift as the way he made people feel valued, heard, supported and loved.

> ***"Even when someone made a mistake, he had a special way of giving feedback with such kindness and respect, that the person understood where they had gone wrong but still walked away feeling valued and capable. That was one of his greatest gifts as a mentor and teacher."*** *- Verina Roach*

> ***"The one thing I learned very quickly when reporting to Dave, was to be prepared. Dave focussed on the detail and that trait pushed us and challenged us to be prepared. His insights were always well reasoned and whilst he sometimes frustrated me as a 'typical salesman' with his question wherever we went … why can't we make that in stainless? Whether it was a bucket, wheelbarrow, fence etc. His passion for his people, community and stainless steel were inspiring."*** *- Charles Cammell*

A plaque presented by Columbus Stainless describes Dave as "a mighty tree", grounded by strong values and humility, providing strength in difficult times and offering shelter and support to others. It is a fitting description of Dave and of a legacy that lives on, not only in the company and industry he helped to shape, but in the many people he encouraged along the way.

